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EDITORIAL NOTE

I have the delight and privilege to write as Editor-in-chief of the *Rima International Journal of Education (RIJE)*, an official research publication of the Faculty of Education, Sokoto State University. This edition (Volume 4: No. 3) of the *RIJE* has sixteen (16) articles from distinguished scholars and educators, poised to report cut-edge research findings and discourse on contemporary educational issues with implications for pedagogy, national and global development.

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

Prof. M. U. Tambawal,
Editor-in-chief

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i. **Language**: Manuscripts meant for submission should be written in English language with strict adherence to British standard.

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iv. **Abstract**: Manuscripts must be accompanied with an abstract of not more than
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Management-Community Aids and School Efficacy in Primary Schools: Implications for Sustainable Educational Practices in Zuru, Kebbi State

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Abstract

This study examined the relationship between management-community aids and school efficacy in primary schools' location urban and rural with the purpose of identifying the implications for sustainable educational practices in Zuru Kebbi State. Two research questions were answered and two hypotheses were tested in the study. Descriptive research design of the survey type was adopted in the study. The population comprises of some selected primary schools in Zuru Kebbi-State, Nigeria. The study had a total of 780 participants comprising 720 teachers and 60 management staff. Multistage procedure was followed in selecting the participants. A self-designed questionnaire titled "Management-Community aid and School Efficacy of Primary Schools Questionnaire" (MCASEPSQ) was used in collecting data for the study. Face and content validity of the instrument was ascertained. The instrument's reliability was ensured through test-retest method a reliability coefficient of 0.76 was obtained after correlating the two tests with Pearson Product Moment Correlation. All hypotheses were tested at 0.05 level of significance. Findings revealed that the level of management-community aid and primary school efficacy was relatively high. It was equally discovered that a significant positive relationship existed between management-community aid and primary school efficacy. It concluded that the extent to which primary school will achieve effectiveness is dependent on the relationship between the management and the community stakeholders. It was recommended among others that; school management should be mandated by the state educational authority to involve the community members in the administration of the schools.

Keywords: Management, community aid, Sustainable Education, School Efficacy, Primary School

Introduction

Primary school needs to function both effectively and efficiently at all times. Efficacy refers to doing the right things to achieve the desired results while school efficacy could easily be referred to as the ability of a school to successfully achieve its goals and objectives in providing quality education and fostering the development and learning of its students. Dahiru, Basri, Aji

and Asimiran (2018), saw school efficacy as the level at which the school is able to accomplish its pre-determined objectives with a view to solving the obstacles that might hinder the smooth running of schools. In a similar conceptualization, Laila (2015) sees effective school in which the facilities, materials, equipment and physical environment enhance teachers' capability to work towards attainment of goals set for the students. Oyewole and Fadele (2018) opined that school efficacy refers to the level of goal attainment of a school which may be measured with the use of variables such as teachers' performance and efficiency, teachers' productivity and students' academic achievements. From foregoing, the school should be an avenue where all stakeholders perform their roles effectively towards the attainment of the school goals. Ajayi, Ekundayo and Osalusi (2010) stated that school effectiveness refers to the extent to which schools are able to accomplish their pre-determined objectives, transcends beyond students passing final examinations and also encompasses students' attainment in other domains of learning (the affective and the psychomotor domains).

School effectiveness according to UNESO (2010) is judged by the extent to which schools generally meet the expectations of the society within which they are established. Indicators of school effectiveness as pointed out by Saleem, Naseem, Ibrahim, Hussam and Azeem (2012) are high school goals attainment, full implementation of curriculum, effective instructional activities, objective assessment and evaluation, good class room management, leadership, safe and orderly environment, performance in external examinations, disciplined students, qualitative co-curricular activities and cordial relationship between teacher and management among others. These objectives must be achieved if the desired national primary education goals of preparing students for further education and paraprofessional services would be achieved. Observation shows that these indicators are not supportive of the attainment of national development. Tertiary institutions in Nigeria set the baseline of minimum entry requirements for their schools. This means that students who want to proceed to tertiary institutions from secondary schools must possess the minimum requirements in relevant subjects for entry as well as the primary schools must create a solid foundation for this race.

The situation is becoming pathetic that stakeholders keep on wondering why this level of education has persistently failed to meet the yearning and aspirations of the society. Apart from the fact that the mass failure of students in public examinations as well as the number of out of school children right

from the primary school level which in-turn constitutes wastage on investment in education, it puts a big question mark on the effectiveness of school education in the states each time the results of students in the state ascertained. The perceived ineffectiveness of primary schools could be attributed to several factors, out of which management-community contribution may be included. Kladifko (2013) asserted that schools cannot be isolated from their local communities, implying an inherent partnership between the school and the community, even before considering additional collaborations. School-community contribution and partnerships are respectful and collaborative partnerships between schools and outside organizations and agencies that can help school districts meet the needs of all students, especially those most marginalized by our current political and social systems. According to Sepanik and Brown (2021), contributions, partner organizations and agencies can provide additional academic enrichment activities during and outside of normal school hours, tutoring and behavior support for students, a variety of services and referrals to additional social and health services for students and their families who need them, and additional opportunities to engage families and community members. Management-community contributions/partnerships come in different forms (Valli, Stefanski and Jacobson, 2016). Castro (2016) added that the connections among students, schools, and the community can distribute social capital to students and their families, regardless of where the students attend school.

Ogundele, Oparinde and Oyewale (2012) investigated the relationship between community-school relations and principal's administrative effectiveness of secondary schools in Kwara State using a correlation survey method. Participants in the study were selected through stratified random sampling method. Data were collected with researcher-designed questionnaires. Finding from the study showed that significant high relationship existed between school-community relation and principal administrative effectiveness in the area of plant provision and maintenance, and instructional development of secondary schools. This study however failed to point out how school-community partnership and school effectiveness interact.

Statement of the problem

Recent observation shows that primary schools appeared ineffective going by the nose-diving flow of student performance in external examination, no more

encouragement by the government in offering free educations, school feeding of students have been abused, lack of discipline among students, poor quality of extra-curricular activities and lack of cordiality in the relationship between school and the community. Consequently, the attainment of primary education goal of preparing students for further education and provision of Para-professionals for economic activities are been threatened. The bulk of the blame for this worrisome state of affair with primary education often goes to the school management saddled with the responsibility of no motivation from the management and the government in both internal and external environment of the school. Attempt have been made to established the relationship between the school effectiveness and other variables but there is a lack of consensus among scholars on the possible influence that management community partnership could exert. In the same vein, there is a dearth of evidence within the literature relating to the extent to which variation existed in the level of school effectiveness and management community contribution/partnership. Hence, the need to provide empirical evidence to possibly explain the relationship in Primary schools in Kebbi State.

Research objectives

The objectives of the study are to:

1. To find out the level of management-community aids and efficacy of primary schools' location in Zuru Kebbi State?

2. To find out the level of efficacy of Primary Schools' location urban and rural in Zuru in Kebbi State schools?

Research questions

The following questions are therefore pertinent to solving this problem:

1. What is the level of management-community aid and efficacy of primary schools' location in Zuru Kebbi State?

2. What is the level of efficacy of Primary Schools' location urban and rural in Zuru Kebbi State schools?

Research hypotheses

1. There is no significant relationship between management-community aid and efficacy of primary schools' location in Zuru Kebbi State?

2. There is no significant difference based on efficacy of Primary School location of Urban or Rural in Zuru Kebbi State

Methodology

Descriptive research design of the survey type was adopted in this study. The population comprise sixty primary schools in Zuru Kebbi-State, Nigeria. The study had a total of 780 participants comprising 720 teachers and 60 management staff. Multistage procedure was followed in selecting the participants. Four Local Government council were selected from each the education zone in Zuru, as well as primary schools were selected from these Local Government council for the study by using simple random sampling technique. While management staff of these selected schools in the education zone were purposely selected and 10 teachers were selected from each of the 60 primary schools earlier selected using simple random sampling technique. The simple random was achieved through a ballot system.

A self-designed questionnaire which was validated by experts in the field of educational management is vetted okay as a result of the corrections, comment and observations made in order to ensure a standard copy, the questionnaire becomes valid for both content and construction titled "Management-Community Aid and School Efficacy of Primary School Questionnaire" (MCASEPSQ) was used in collecting data for the study. The MCASEPSQ has two parts. Part A comprises of three items standing as background information such as Name of School, Age and Location. While Part B contained items on management-community aid and efficacy of Primary school location with fifteen items in each case, a Face and content validity of the instrument was ascertained. The instrument's reliability was ensured through test-retest method. The instrument was administered to a set of respondents outside the study area twice. The result obtained were subjected to reliability test with Pearson Product Moment Correlation (PPMC) and a reliability coefficient of 0.76 was obtained.

The data analysis in answering this question, responses to items in Part B of the MCASEPSQ were subjected to descriptive analysis involving frequency

count, percentages, means score and standard deviation. All analysis was performed using the version 20 of the Statistical Package for Social Sciences (SPSS). All hypotheses were tested at 0.05 level of significance.

Results

RQ 1: What is the level of management-community aid and efficacy of primary schools' location in Zuru Kebbi State?

The level of Management-community aid was determined using a criterion mean score of 2.50 as the cutoff point. This was used to rank each item as low, undecided or high Extent. The result obtained is presented in the table 1

Table 1: Level of management-community aid and primary schools' location in Zuru Kebbi State

S/N	Item Statement	Mean	SD.	Decision
1	Invitation of community members to curriculum day	2.25	0.92	Low extent
2	Support building of community library	2.83	0.79	High extent
3	Invite community members to give lecture	3.00	0.76	High extent
4	Invite elected representatives to give motivational talk	2.08	0.86	Low extent
5	Network with local offices	2.84	0.81	How extent
6	Network with industries for student visitation	2.25	1.08	Low extent
7	Engage business leaders to talk to students on future career	2.61	0.84	High extent
8	Allow students to participate in community development	2.00	0.87	Low extent
9	Promotes cultural values in terms of dressing and language	2.77	0.79	High extent
10	Allows students to participate community services	2.60	0.88	High extent
11	Release school facilities for community program	2.38	1.09	Low extent
12	Old students are involved in school management	3.14	0.77	High extent
13	Religious organizations are engaged in administering students	2.55	0.97	High extent
14	Engage local association leaders in decision-making	2.51	0.87	High extent
15	Collaborate with local artisans to maintain school plant	1.94	0.83	High extent
	Weighted Mean	2.52	0.87	H E

Table 1 shows that the means score obtained for items 2, 3, 5, 7, 9, 10, 12, 13, and 14 on management-community aid were high. This means the respondents were of the view that management-community aid was high in terms of support building of community library (2.83); Invitation of community members to give lecture (3.00); networking with local offices (2.84); engaging business leaders to talk to students on future career (2.61); promotes cultural

values in terms of dressing and language (2.77); allows students to participate in community services (2.60); Old students are involved in school management (3.14); religious organizations are engaged in administering students (2.55); and engage local association leaders in decision-making (2.51). On the contrary, the result shows that the means score obtained for items 1, 4, 6, 8, 11, and 15 on management-community partnership were low. This means the respondents were of the view that management-community partnership was low in terms of Invitation of community members to curriculum day (2.25); Invitation of elected representatives to give motivational talk (2.08); Network with industries for student visitation (2.25); Allow students to participate in community development (2.00); Release school facilities for community program (2.38) and collaborating with local artisans to maintain school plant (1.94). In all, the average mean score (2.52) was greater than the criterion mean. This implies that the level of management-community partnership was moderately high during the period investigated.

RQ 2: What is the level of efficacy of Primary Schools location in Zuru Kebbi State schools?

The level of school efficacy was determined using a criterion mean score of 2.50 as the cutoff point. This was used to rank each item as low, undecided or high Extent. The result obtained is presented in the table 2:

Table 2: Level of efficacy of primary schools' location in Zuru Kebbi State

S/N	Item Statement	Mean	SD.	Decision
1	Teachers are ethically upright	2.69	0.84	High extent
2	Teachers are regular in the school	3.14	0.77	High extent
3	Teachers attend to their classes regularly	2.55	0.97	High extent
4	Rules on dressing are obeyed by the students	2.51	0.87	High extent
5	Students are regular in the school	2.76	0.81	High extent
6	Students are punctual in the school	3.11	0.70	High extent
7	Teacher-student relationship is impressive	2.94	0.71	High extent
8	Parents are regularly provided with feedback on their children	2.39	0.90	Low extent
9	Students have won prizes at local competition	2.31	0.99	Low extent
10	Students have won prizes at national competition	2.21	0.78	Low extent
11	Students have won prizes from sport competition	2.28	0.95	Low extent
12	Students have represented the state at national competition	2.09	0.83	Low extent
13	Students performed well in external examinations	2.31	0.82	Low extent
14	School received award of excellence from state	2.58	1.00	High extent

15	School receives commendation from government organizations	2.65	0.89	High extent	
	Weighted Mean	2.57 ($\bar{x}$)	0.86	ME	

Table 2 shows that the means score obtained for items 1, 2, 3, 4, 5, 6, 7, 14, and 15 on school efficacy were high. This means the respondents were of the view that school effectiveness was high in terms of teacher ethic uprightness (2.69); teachers regularity in school (3.14); teachers regular attendance to classes (2.55); students obedience to rule of dressing (2.51); students regularity in school (2.76); students punctuality in school (3.11); teacher-students relationship (2.94); School received award of excellence from state government (2.58); and School receives commendation from organizations (2.65). On the contrary, the result shows that the means score obtained for items 8, 9, 10,11, 12, and 13 on school efficacy were low. This means the respondents were of the view that school efficacy was low in terms of provision of parent with feedback on their child (2.39); prizes won at local competition (2.31); prizes won at national competition (2.21); prizes won at sport competition (2.28); representing the state at national competition (2.09) and performance in external examinations (2.31). In all, the average mean score (2.57) was greater than the criterion means. This implies that the level of school efficacy was moderately high during the period investigated.

Research hypothesis 1: There is no significant relationship between management-community aid and efficacy of Primary School location in Zuru Kebbi State

Table 3: Relationship btw management-community aid and efficacy of Primary School Location.

Variables	**No of School**	**Mean**	**SD**	**r-cal.**	**P-value**
Mgt-community aid.		38.52	12.83		
	60			0.717	0.000
Efficacy Pri. Sch location		37.74	13.12		

Table 3 showed that the r-cal value of 0.717 is statistically significant at 0.05level of significance with a p-value of 0.000. The null hypothesis is thus rejected in this instance. This implies that there was a significant relationship between management-community aid and school efficacy.

Research Hypothesis 2: There is no significant difference based on Primary School location Urban or Rural in Zuru Kebbi State

Table 4: Significant Difference based on Primary School location on Urban or Rural

Location	N	Mean	SD	df	t.	P-value
Rural based primary schools	342	38.2836	7.6563	778	.763	.447
Urban based primary schools	438	38.7100	7.8629			

Table 4 shows that the mean scores of rural schools (mean = 38.2836, SD = 7.6563) and Urban Schools (Mean 38.7100, SD = 7.8629) is not statistically significantly different, because the "p-value of 0.447 was higher than the 0.05 level of significance (df =778, t = .763, p = 0.447). Thus, the null hypothesis is not rejected, indicating that there is no significant difference in school efficacy based on location

Discussion of findings

The study's first finding showed that the level of management-community aid was of high extent during the period investigated. This implies that the school management highly partner with the community contribution by supporting building of community library, inviting community members to give lecture, networking with local offices, engaging business leaders to talk to students on future career, promoting cultural values in terms of dressing and language, allowing students to participate in community services, and involving Old students of the school management among others. This finding may not be surprising going by the initial position of scholars such as Kladifko (2013) position that schools cannot be isolated from their local communities, this clearly indicated that an inherent partnership between the school and the community, even before considering additional collaborations must be achieved.

Finding equally revealed that the level of school efficacy was moderately high in term of student discipline, teacher's professionalism and curricular performance. This implies that school effectiveness in terms of teacher ethical compliance, regularity in school, regular attendance to classes, students' obedience to rule of dressing, regularity in school, punctuality in school, teacher-students' relationship, award of excellence from state government and commendation from organizations. This apparently confirms the finding of Saleem, Naseem, Ibrahim, Hussam and Azeem (2012) that high school goals attainment, full implementation of curriculum, effective instructional activities, objective assessment and evaluation, good class room management,

leadership, safe and orderly environment, performance in external examinations, disciplined students, qualitative co-curricular activities and cordial relationship between teacher and management among others are the indicators of school efficacy.

While in testing the hypothesis, it was discovered that there was a significant relationship between management-community aid and school efficacy. This implies that the stronger the contribution between the management and the school community, the more efficacy the school would achieve. This finding confirmed the position of Sepanik and Brown (2021) that school-community partnerships are a widely recognized, evidence-based approach for bringing additional resources and services into schools. It equally affirmed Ogundele, Oparinde and Oyewale (2012) position that significant high relationship existed between school-community relation and principal administrative effectiveness in the area of plant provision and maintenance, and instructional development of secondary schools. The study further showed that there was no significant difference in management-community aid based on location. This indicated that management of schools in rural and urban locations do not differ in their level of contribution/partnership with community members and organization in the administration of their schools. This finding could be attributed to the existing policy on school-based management committee which mandates all school to have this board in place. In the same vein, it was showed that there is no significant difference in school efficacy based on location. This implies that their variation does not exist in the extent to which rural and urban schools were effective.

Conclusion

Based on the finding from this study, it was concluded that attainment of efficacy in primary school is dependent on the management collaboration with relevant stakeholder within the hosting community. Recommendations The following were recommended based on the findings: 1. School administrators should be mandated by the education zone to involve the community members in the administration of the schools. This can be achieved by getting parent involved in policy making on student services. 2. Standardized evaluation criteria should be developed by the state quality assurance agency in evaluating the performance of school heads irrespective of the location of their school, 3. For improved school efficacy, active and available member of the community should be appointed as member of SBMC in each school. 4.

Teachers should be mandated to engage community members on how to improve teaching learning activities.

Implications of Findings for Sustainable Educational Management Practices.

The interactions between management-community aid and school efficacy as reported in this study lend empirical credence to the following practices potential of meeting the present needs without jeopardizing future opportunities:

1. school administrators must provide necessary technical and professional supports for community projects that are related to academic development of the younger generation. Such project that should enjoy the support of the school manager could include community library, sport center, resources centers among others. Other form of support could be in the sphere of allowing students to participate in community services which provide them opportunity to gain hand-on experience while contributing to the transformation of their community.

2. school management should explore the immediate community for resource persons when planning training programmes for teachers and students. Inviting community members to give lecture is sustainable because the cost of bringing consultants from other place would be reduced and the target of training would still be achieved.

3. school administrators should maintain cordial relationship with necessary government offices in order to obtain needed support for teachers and students when necessary. Lastly, a tree does not make a forest, thus, in the spirit of collectivism, school managers should engage business leaders to talk to students on future career, and involve Old Students Association in managing students behaviour.

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Quality Assurance Strategies as Predictors of Colleges of Education Effectiveness in North-central, Nigeria

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Abstract

High-quality Education is essential for the effective development of any country. It plays a crucial role at both national and global levels by empowering individuals with knowledge, skills, and critical thinking abilities. The aim of the study was to examine the quality assurance strategies as predictors of colleges of education effectiveness in north-central, Nigeria. The correctional research design was used for this study. The population of the study was 2,347 Lecturers of the colleges of education, while the sample was 467 Lecturers drawn from the population using multistage sampling techniques. Quality Assurance Strategies Questionnaire (QASQ) and College of Education Effectiveness Questionnaire (CEEQ) were used for data collection, the instruments were adapted and validated by three experts of educational management and of one of measurement of evaluation. The reliability indices were established at 0.931 and 0.926 for QASQ and COEQ respectively. Data collected was analyzed using Multiple Regression Analysis at 0.05 significance level. The results of the findings revealed that QAS predict CEE at 58.2% variability. The study was hereby concluded that QAS predict CEE. It was therefore, recommended that the government and college management should establish a robust system for continuous supervision, periodic evaluation and maintenance of infrastructure and provide more opportunities for Professional development programmes and necessary measures should be taken to handle the problems associated with learning environment.

Keywords: Quality Assurance, Strategies, Effectiveness, Predictors

Introduction

High-quality education is a cornerstone of sustainable development in any nation. It plays a pivotal role both locally and globally by equipping individuals with knowledge, practical skills, and critical thinking abilities. These attributes empower citizens to participate meaningfully in economic activities, make informed decisions, and contribute productively to society.

Moreover, education fosters the transmission of knowledge and promotes mutual understanding among individuals, families, communities, and nations (Team Leverage Edu, 2023). Recognizing its importance, the United Nations Convention on the Rights of the Child identifies education as a fundamental right of every child (Abulencia, 2023). Quality education contributes significantly to socio-economic development by improving employment opportunities, reducing crime rates, and enhancing social cohesion. These outcomes, in turn, support the development of prosperous and resilient societies (Smith, 2023).

In Nigeria, Colleges of Education were established to train professional teachers, particularly for the basic education sector. These institutions form a crucial part of the nation's tertiary education system, offering non-degree yet professional teaching qualifications. They are the primary source of trained educators for pre-primary, primary, and junior secondary schools and are, therefore, instrumental in determining teaching and learning quality across these levels. The origin of colleges of education in Nigeria can be traced to the 1959 Ashby Commission Report, which sought to address the acute shortage of qualified teaching personnel in the country (Olafere, Lawrence, & Fakorede, 2017; ClassNotes.ng, 2023; Myschoolgist, 2024). To ensure these institutions meet their mandates, robust quality assurance mechanisms must be implemented. Quality assurance in education refers to systematic processes and strategies designed to maintain and improve educational standards. These measures may be internal conducted by the institutions themselves or external, carried out by regulatory agencies responsible for overseeing educational quality (Mukta, 2022).

Despite their importance, empirical evidence reveals that many Colleges of Education in Nigeria face numerous challenges. These include brain drain, insufficient in-service training, ineffective monitoring systems, inadequate infrastructure, lack of motivation among lecturers, and generally poor learning environments (Adeniyi & Olowoyeye, 2014; Ademola et al., 2018; Martina & Ogunode, 2020; Jibrin & Faruk, 2021). Additionally, the National Universities Commission (NUC) Accreditation Reports (2023) highlight deficiencies such as the shortage of qualified lecturers, which compromises the quality of teacher training. Many graduates of the Nigeria Certificate in Education (NCE) programmes reportedly lack the skills required for entrepreneurship training centers (Oviawe, 2021). Consequently, private schools often favor

degree holders over NCE graduates, perceiving the latter as less competent (Eze et al., 2022).

These issues have contributed to the perceived decline in educational standards in Nigeria. Several reports have highlighted this downward trend. For instance, Nigeria was excluded from the list of the top ten African countries with the best education systems (The Sun, 2022). The World Economic Forum (2017/2018) ranked Nigeria 120th out of 137 countries for primary education quality and 117th for tertiary education. Furthermore, UNESCO (2021) and the National Senior Secondary Education Commission (NSSEC, 2022) estimate that the country requires over 277,000 additional teachers to meet the minimum teacher-pupil ratio.

In light of these challenges, this study investigates the predictive role of quality assurance strategies on the effectiveness of colleges of education in Nigeria. Specifically, it examines key quality assurance indicators in colleges of education within North-Central Nigeria. These indicators include: (a) the monitoring and evaluation of instructional delivery such as regular classroom observations and assessments; (b) inspection of college facilities including routine maintenance of infrastructure and teaching tools; (c) professional development programmes for lecturers including workshops, conferences, and in-service training; and (d) supervision of the teaching-learning environment including classroom conditions, student engagement, and the availability of instructional materials.

Objectives

To examine the Quality Assurance Strategies (monitoring of instructional activities, professional development programme, inspection of college facilities and teaching and learning environment supervision) as predictors of Colleges of Education Effectiveness in North-central, Nigeria

Research Hypotheses

Ho: Quality Assurance strategies (Monitoring of instructional activities, Professional development programme, College facilities inspection and teaching and learning-environment supervision) do not significantly predict the Colleges of Education Effectiveness in North-central, Nigeria

Methodology

This study focused on public Colleges of Education in the North-Central geopolitical zone of Nigeria. To ensure fairness, equity, and balanced representation, one College of Education was selected from each of the six states in the zone, and Federal Capital Territory (FCT), resulting in a total of seven participating institutions. The population comprised all lecturers in these Colleges, totaling 2,347. The sample size 467 lecturers was determined through multistage sampling techniques. The purposive sampling was used to select lecturers from the seven Colleges of Education. Proportionate stratified sampling ensured balanced representation based on the size of each College, while simple random sampling was used to objectively select respondents (Lecturers) (Hibberts, Johnson, & Hudson, 2012). Data collected using two structured instruments: the Quality Assurance Indicators Questionnaire (QASQ) and the College of Education Effectiveness Questionnaire (CEEQ). To establish the validity, the instruments were reviewed by 3 experts in Educational Management and 1 of Measurement and Evaluation. The reliability coefficients obtained were 0.931 for the QASQ and 0.926 for the CEEQ, indicating high internal consistency. The study's hypotheses were tested using Multiple Regression Analysis at the 0.005 level of significance.

Results

The results of data analysis and discussion of the findings on Quality Assurance Strategies for prediction of Effectiveness of Colleges of Education in North-central, Nigeria. Hypothesis was tested using inferential statistics of Multiple Regression at 0.05 level of significance. Therefore, the QAS and ECE have five scales.

Ho: Quality Assurance strategies (Monitoring of instructional activities, Professional development programme, College facilities inspection and teaching and learning-environment supervision) do not significantly predict the Colleges of Education Effectiveness in North-central, Nigeria

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763[a]	.582	.577	.42555

Predictors:(Constant),Teaching learning environment, Monitoring of Lecturers' instructional activities, Professional Development Program, College Facility Inspection

Table 1 reveals 0.763 and 0.582 as the Coefficient of Multiple Regression and Coefficient of Determination (R-square) respectively. The R square value of (0.582) implying that the independent variables Quality Assurance Strategies (Teaching learning environment supervision, Monitoring of Lecturers' instructional activities, Professional Development Programme and College of education facilities), jointly explained the total variability of the dependent variable which is the effectiveness of colleges of education in the north-central, Nigeria. The high percentage of variability (58.2%) is an indication of model adequacy.

Table 2: Analysis of Variance (ANOVA) .

Model	Sum of Squares	df	Mean Square	F	P-value.
1 Regression	86.862	4	21.715	119.916	.000[b]
Residual	62.476	345	.181		
Total	149.338	349			

In the Table 2 the result of the ANOVA table indicates an F-value of 119.92 which is significant with p-value of .000 which is less than 0.05. Hence, the null hypothesis which stated that there is no significant prediction of Quality Assurance Strategies on the Effectiveness of colleges of education is rejected. Thus, there is significant prediction of Quality Assurance Strategies on the Effectiveness of colleges of education in the North-central Nigeria.

Table 3: Relative contribution of each strategy of the independent variable (Quality Assurance Strategies)

Model		**Unstandardized Coefficients**		**Standardized Coefficients**		
		B	**Std. Error**	**Beta**	**T**	**Sig.**
1	(Constant)	.980	.119		8.225	000
	Monitoring of' inst. Activities	.406	.040	.493	10.069	000
	College Facility Inspection	.250	.045	.331	5.563	000
	Professional Dev. Program	.179	.041	.214	4.339	000
	Teaching-learning environmet.	-.126	.054	-.160	-2.339	020

To determine the relative contribution of each independent variable, standardized Beta weights were calculated, and the results are presented in Table 3. The table shows the contributions of the quality assurance strategies namely, monitoring of instructional activities recorded the highest positive contribution with a Beta weight (β) = 0.493, t = 10.07, $p < 0.05$. Inspection of college facilities also made a substantial positive contribution ($\beta = 0.330$, t = 5.56, $p < 0.05$), while professional development programmes showed a

moderate positive contribution ($\beta = 0.214$, $t = 4.34$, $p < 0.05$). However, supervision of the teaching-learning environment recorded a negative contribution ($\beta = -0.160$, $t = -2.34$, $p < 0.05$).

Discussion of findings

The findings of this study demonstrate a nuanced understanding of the contributions of Quality Assurance Strategies to institutional effectiveness in Colleges of Education in North-central, Nigeria. Notably, monitoring of instructional activities emerged as the most influential factor, followed by inspection of college facilities and professional development programmes, while supervision of the teaching-learning environment contributed negatively. These findings align with, contradict, or extend existing literature in various ways.

The strong positive contribution of monitoring of instructional activities ($\beta = 0.493$) in this study supports earlier research emphasizing its pivotal role in ensuring educational quality. For instance, Chika and Ojorka (2020) highlighted that consistent monitoring enhances content delivery and supports improved pedagogical practices. Similarly, Yusuf et al. (2022) documented that classroom observations, lesson plan reviews, and performance appraisals significantly bolster teaching quality. This study reinforces those conclusions and affirms that monitoring is not only a best practice but a critical component of institutional effectiveness. It also corroborates Makiya et al. (2023) who emphasized the importance of feedback and professional support provided during monitoring, which helps improve instructional delivery.

The second strongest predictor, inspection of college facilities ($\beta = 0.330$), aligns well with several studies that have linked infrastructure quality with learning outcomes. Owolabi and Okebukola (2018) found that schools with structured inspection systems had better-maintained facilities and improved student achievement. Adepoju and Akinola (2017) also emphasized that regular inspection facilitates early detection of infrastructure decay, supporting continuous learning. This study's findings confirm that the physical environment, when systematically managed, contributes positively to institutional performance. Moreover, Ajayi et al. (2016) concluded that periodic facility assessments lead to better use and maintenance, aligning directly with this study's emphasis on the strategic role of infrastructure oversight in enhancing educational outcomes. Professional development programmes ($\beta = 0.214$) showed a moderate but significant positive influence.

This is consistent with prior studies, such as those by Omosidi et al. (2020) and Akinsola and Sa'idu (2023), who identified teacher training and continuous learning as key drivers of school improvement. Bua et al. (2019) similarly reported that structured professional development enhances teacher capacity and academic staff performance. However, the relatively lower Beta weight in this study suggests that while professional development is important, its impact may be contingent upon the quality, frequency, or relevance of the programmes implemented. It may also reflect challenges in translating training into practice without adequate support structures a concern echoed by Ugolo and Onukwu (2019).

The negative contribution of the supervision of the teaching-learning environment ($\beta = -0.160$) is striking and diverges from several studies that reported positive outcomes. For instance, Ihekoronye (2020) noted that conducive and well-supervised environments enhance learning, while Adekoya et al. (2020) and Heikkilä et al. (2018) emphasized the role of structured, supportive environments in fostering academic success. This contradictory finding suggests potential issues in how supervision is being implemented in the study context. It may indicate superficial, punitive, or misaligned supervisory practices, rather than developmental and supportive ones. Alternatively, the negative contribution could reflect inadequate physical learning conditions or poor administrative structures that undermine supervision's intent, an observation somewhat supported by Olugbenga (2019), who found that substandard facilities negatively affect both teaching and learning.

The study confirms existing literature in terms of the importance of monitoring and infrastructure oversight, yet challenges assumptions regarding the universal effectiveness of supervision and professional development. For instance, while Kihara (2021) and Makiya et al. (2023) emphasize the empowering role of supervision, the findings here suggest that its implementation may lack coherence or support. The contradiction with studies such as Akinsola and Sa'idu (2023) regarding the teaching-learning environment may also highlight contextual factors unique to North-Central Nigeria such as overcrowded classrooms, outdated facilities, or ineffective supervisory personnel that dampen the intended benefits of supervision. This study's findings enrich the discourse on quality assurance by confirming the centrality of monitoring and infrastructure management in enhancing institutional effectiveness. However, it also raises critical questions about the

implementation fidelity and contextual realities surrounding supervision and professional development. The negative impact of environment supervision suggests the need for a qualitative approaches.

Conclusion

This study found out that quality assurance predicts the effectiveness of colleges of education in the North-Central, Nigeria by jointly predicted the 58.2% which is a high variability. Quality assurance strategies such as monitoring instructional activities, inspection of facilities, and lecturers' professional development programs were identified as positive contributors to the effectiveness of colleges. However, challenges in the teaching-learning environment, such as inadequate infrastructure and resources, negatively influenced institutional effectiveness. The findings underscore the importance of integrating quality assurance practices to achieve improved outcomes in colleges of education.

Recommendation

1. The government and college management should establish a robust system for continuous supervision, regular classroom observations, peer reviews, and student feedback mechanisms should be implemented to improve instructional quality.

2. There should be periodic evaluation and maintenance of infrastructure, including classrooms, laboratories, libraries, and ICT resources, to provide a conducive learning environment.

3. Lecturers should be provided with more opportunities for capacity-building workshops, seminars, and advanced training in pedagogical skills, research methodologies, and technological integration in teaching.

4. To address negative impact of teaching-learning environment as revealed by the current study, the stakeholders should invest in modern classroom facilities, adequate instructional materials and well-equipped libraries to create an engaging and conducive learning environment.

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Resource integration for Enhancing Teaching and Learning Geography on Secondary School Students' Academic Performance in Kaduna State

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Abstract

The objectives of the study was to evaluate the integration of resources in teaching and learning geography in Secondary Schools of Kaduna State, and determine the level of Student Engagement and Learning Outcome in geography in Secondary schools in Kaduna State, A reconnaissance survey of the study area will be used in sourcing for data from the study area. The study comprised of 88 randomly selected Geography teachers from 55 purposively selected schools across 11 systematically selected Local Government Areas in the State. Descriptive statistics namely; frequencies, percentages, mean and standard deviation were used to analyze data. The findings of the study revealed that the major instructional resource available for the teaching geography in the Secondary Schools in the State is textbooks (mean score of 3.43). The study also revealed that most schools lack adequate geography resources, and the resource integration is limited with (67%) respondents attested to that. The study concludes that resource integration in geography leaning is inadequate and recommends increasing resource availability, there should be frequent Staff development opportunities such as workshops and conferences and regular monitoring and evaluation of geography resource integration.

Keywords: Geography Resource Integration, Secondary Schools, Enhancing Students performance

Introduction

Geography education plays a vital role in shaping the understanding of students about their environment, spatial relationships and global perspectives. In secondary schools, geography learning is crucial for fostering critical thinking, problem-solving, and informed decision-making skills. However, the effectiveness of geography education largely depends on the availability and integration of relevant resources

For learning to take place effectively, it must be backed by a variety of learning materials. In this study, these learning materials or teaching aids are referred to as geographic instructional resources. Instructional Materials or

Teaching and Learning Materials are resources that a teacher may use in teaching and learning situations to help achieve desired learning objectives and to facilitate the teaching and learning process. Broadly, the term refers to a spectrum of classroom educational materials teachers use to achieve specific learning objectives. (Open Learn, 2022).

According to Kadzera (206), Instructional materials bring life to learning by stimulating students to learn. The use of instructional materials in the classroom has the potential to help the teachers explain new concepts clearly, resulting in better student understanding of the concepts being taught. However, they are not ends in themselves but they are means to an end. It is held that good teaching resources can never replace the teacher but the teacher uses them to achieve their teaching and learning objectives (Kadzera, 2006). Some of the instructional materials necessary for effective teaching and learning of Geography include textbooks, video/audio and visual aids, printed and graphic materials, Maps, sketch maps, pictures, photographs, film stripes, tape recording, radio, films, diagrams, thermometer, barometers, wind vain, rain gauges, geography laboratory equipment, projectors, and computers (Ashaver & Mwuese, 2013). The importance of the use of these materials cannot be underscored. They are designed to make the learning process effective and efficient for both educators and students.

These instructional resources are important in students' learning as they attend to various learners' needs. They provide learners with skills of critical thinking, problem-solving creativity, memorization, and problem-solving, as well as stimulate learning in a fun and inclusive manner (Mugisha, 2020). Instructional resources are thought (Dhakal, 2017) to make the teaching process easier, especially teaching geography. Teachers should use diverse types of instructional materials for the teaching of geography to be effective. The disciplinary change in basic assumptions in Geography has made using instructional materials in teaching and learning the subject necessary. According to Mzinga and Onyango (2021), it helps learners to fully participate in the learning process as well as interact with their teachers and fellow students which is very important for the improvement of teaching and learning geography.

Similarly, Dhakal (2020), emphasized the importance of instructional resources and stressed that learning cannot be concrete or meaningful if instructional materials are absent and that teaching and learning can only be

effective if teachers teach students to visualize what they are taught or manipulate what they are taught in practical terms. The absence of instructional materials in our schools makes it difficult for teachers to teach especially science subjects effectively. It was further revealed that the use of instructional materials foster early specialization as the students begin to find an aspect of the subject taught with instructional materials interesting. For curriculum to be well implemented effectively teachers must select the instructional procedures and materials that will enable leaners internalize, retain and apply what has been learnt (Hilda and Bernard, 2015).

It is generally acknowledged that students' performance in ordinary-level geography examinations conducted by the West African Examination Council (WAEC) was poor over the year 2006-2018 (WAEC results statistics, 2018). This trend is not only disturbing but also very discouraging especially based on the persistent nature of the problem as reflected in WAEC Chief Examiners' reports from 2006 – 2018, (Eze, 2020). Studies by Anlimachie (2019), blame weak performance in Geography at WASSCE on the low level of practical and fieldwork, while linking the same to a shortage of ideal teachers, poorly stocked Geography resources rooms, instructional materials, and other school resources. The impact of these on students' learning, is the creation of a missing link between classroom learning experiences and real-world situations. Thus, inadequate preparation can be explained partly by inadequate ideal teacher supply, and shortage of an array of Geography teaching and learning resources. Harping on these same points, Rilwani, Akahomen, and Gbakeji 2014) identify inadequate teachers and a lack of requisite teaching facilities/aids as major factors that translate to poor teaching of Geography and students' increasing unwillingness to offer the subject.. Also, the Secondary School Curriculum has made geography an optional subject for both Science and Arts students. According to Eze, (2020) reports, students encounter problems in the areas of map reading, map interpretation, survey, and remote sensing, among others, which have been recurrent challenges for students. This persistent low performance of students in some aspects of Geography leaves one in doubt about the effectiveness and teacher's level of compliance with the implementation of the senior secondary school Geography curriculum. The low performance has been attributed to poor methods of instruction (Sharma, 2013), wide coverage of the subject (Ofodu, 2010), insufficient instructional materials (Abidoye & Oguniyi, 2012), and inadequate qualified teachers (Balogun, 2006). In essence, to achieve the objectives of teaching Geography in senior secondary schools, a variety of

methods and instructional materials should be employed. In light of the above, this study sets out to assess the extent to which instructional materials are available and being used in Secondary Schools in Kaduna State.

Research Objective

The main objective of this paper is to:

1. Evaluate the effectiveness of resource integration in enhancing geography learning in secondary in schools across Kaduna State.
2. Level of students' engagement and learning outcome in geography in secondary schools across Kaduna State

Research Methodology

A reconnaissance survey of the study area was carried out by the researcher to have an adequate insight of the study area. During the survey, the researchers held discussions with major stakeholders in the Secondary School sub-sector such as Quality Assurance Officers, Supervisors, and principals of selected schools. It was at this stage that the researchers were able to obtain the list of all Government secondary schools in the state.

The main research instrument here is the questionnaire which was administered in different schools across the study area. The questions were designed for the geography teachers. The questionnaire deals with the demography of the respondents, the integration of geographic resources into lessons and student's engagement and learning outcomes.

A list of Kaduna state government secondary schools was obtained at the headquarters of the Quality Assurance Unit of the Ministry of Education. Other relevant information was sourced from existing official statistics from both national and international publications, including books, journals, conference papers, theses, and the Internet.

The sample size consists of 88 geography teachers randomly selected from 55 schools across 11 Local Government Areas in Kaduna State. There are 23 Local Government Areas in the state which were arranged in alphabetical order and assigned numbers from 1-23. Only the LGAs on even numbers were selected, hence the 11 LGAs. Five schools were purposively selected from each LGA, totaling 55 schools. In each of the 55 schools, 2 Geography

teachers were to be randomly selected, however, some of the selected schools didn't have any geography teacher, while others had only 1 teacher which gives the total number of 88 respondents. The data collected was analyzed using percentages, mean, and standard deviation in the SPSS environment to determine the extent of utilization and integration of the geographical resources in teaching and learning of geography.

Results

This section deals with the results obtained from the data analyzed. It also discusses the outcome of the analysis.

Table 1: Available Geographic Resources in Sec. Schools

Resources	N	Minimum	Maximum	Mean	Std. Deviation
Maps	88	1.00	5.00	2.45	1.42
Globes	88	1.00	5.00	2.76	1.55
Computers	88	1.00	5.00	2.76	1.74
Internet	88	1.00	5.00	2.22	1.63
GIS	88	1.00	5.00	1.57	1.09
Textbooks	88	1.00	5.00	3.43	1.50
Fieldtrip	88	1.00	5.00	2.04	1.36
Abney Level	88	1.00	4.00	1.44	.75
Arrow	88	1.00	5.00	1.60	1.00
Compass	88	1.00	5.00	1.77	1.20
Projector	88	1.00	5.00	1.89	1.33
Tables	88	1.00	5.00	1.88	1.29
Rocks	88	1.00	5.00	2.45	1.58
Theodolite	88	1.00	5.00	1.81	1.30
Thread	88	1.00	5.00	2.73	1.62
Ranging Poles	88	1.00	5.00	1.70	1.23
Slides	88	1.00	5.00	1.45	.95
Flash Cards	88	1.00	5.00	1.77	1.27
Charts	88	1.00	5.00	2.79	1.59
Chain	88	1.00	5.00	1.95	1.49
Rulers	88	1.00	5.00	2.56	1.65
Microphone	88	1.00	5.00	1.75	1.29
TV	88	1.00	5.00	1.61	1.21
Weather Station	88	1.00	5.00	1.78	1.37
Garden	88	1.00	5.00	1.79	1.35

Field Work: 2023.

From table 1 above, the only resource with a mean value above 3.00 is textbooks (3.43), implying that the major instructional resource available for the teaching of geography in Secondary Schools in the State is textbooks. Other resources identified and classified as inadequate include maps, globes, charts, rocks, thread, and rulers. Most other resources required for teaching geography as a subject are not available for use in Secondary Schools.

Table 2: Integration of Geographical Resources

Responses	Frequency	Percent
Rarely	20	23
Occasionally	37	42
Often	22	25
Very often	9	10
Total	88	100

Field Work, 2023

Table 2 above presents the frequency of the incorporation of geographical resources into lessons by respondents. An overwhelming majority (42%) occasionally incorporate resources into their geography lessons; however, there is a very slim margin separating those who do it often (25%) from those who rarely incorporate resources into their lessons (23%). The last category (10%) is respondents who very often incorporate resources into their lessons.

Table 3: Effectiveness of resources alignment with curriculum

Responses	Frequency	Percent
Not effective	6	7
Somewhat effective	15	17
Effective	39	44
Highly effective	28	32
Total	88	100

Field Work, 2023.

Respondents' opinion was sought on the effectiveness of the alignment of geographic resources with the curriculum. The responses (table 5) were varied as very few (7%) opined that it is not effective, while the majority (44%) believed resources are effectively.

This section deals with student engagement and learning outcomes. It tries to find out if respondents have observed any difference in students' learning outcome when using geographical resources in their lessons.

Table 4: Student Engagement and Learning Outcome

Learning outcome	Frequency	Percent
Yes, a significant improvement	50	57
Yes, a moderate improvement	29	33
No noticeable difference	6	7
No, a moderate decline	3	3
Total	88	100

Field Work: 2023.

From the table, an overwhelming majority (57%) opined that there was a significant improvement in students' learning outcomes while those who observed a moderate improvement were 33% of the respondents. However, an insignificant group (3%) observed a moderate decline in students learning outcomes.

Teachers were asked to share specific examples or their observations regarding changes in students' learning outcomes when using geographical resources. Their observations were varied as presented in the table below.

Table 5: Observed changes in students' learning outcomes.

Observation	Frequency	Percent
Enhances students' learning	25	28
Encourages learning through participation	21	24
Connects classroom experiences with real-life situations	6	7
Arouses students' interest/Motivation	20	23
Better performance in WAEC/NECO	6	7
None	10	11
Total	88	100

Field Work: 2023.

The most observed learning outcome by teachers in Kaduna State is that it enhances students' learning (28%), as well as encouraging learning through participation (24%) and arousing students' interest (motivation) in the subject (23%). Other learning outcomes observed includes; connecting classroom experiences with real life situations and better performance in national examinations (7% respectively). There was also a group of teachers who could not observe any changes in learning outcome (11%). This result contrasts sharply with that of Mugisha (2020) who found out that improvement in students' grade/ performance is the major observed learning outcome in Rwanda.

Discussion of Findings

The study revealed several key insights into the availability, usage, and effectiveness of geographical instructional resources in public secondary schools in Kaduna State.

Availability of Geographic Resources

Table 1 shows that textbooks were the most readily available resource, with a mean score of 3.43. This suggests that while traditional resources like

textbooks are present, other critical instructional materials such as GIS tools (M = 1.57), theodolites (M = 1.81), and fieldwork instruments such as ranging poles (M = 1.70) and chains (M = 1.95) are significantly lacking. This finding aligns with prior studies that indicate educational institutions in sub-Saharan Africa often depend on textbooks as the primary, and sometimes sole, teaching resource (UNESCO, 2019).

The low availability of tools like Abney levels, compasses, and globes underscores a serious gap in the implementation of experiential and field-based geography learning, which is essential for building spatial thinking and analytical skills (NRC, 2006).

Integration of Resources in Teaching

As shown in Table 2, only 10% of teachers reported using geographical resources very often, while the majority (42%) admitted to occasional usage. This suggests that while some teachers make an effort to integrate resources, constraints such as lack of access, insufficient training, or time limitations may hinder frequent application. According to Adeyemi (2018), resource integration is more effective when supported by adequate infrastructure and continuous professional development.

Alignment with Curriculum

A large proportion of respondents (44%) affirmed that the resources currently in use are effectively aligned with the curriculum (Table 3). However, a significant number (17%) found them only somewhat effective, and 7% believed the alignment was not effective. This could reflect the discrepancy between curriculum expectations and the actual teaching conditions, a pattern observed in similar studies on curriculum-resource gaps in Nigeria (Ofoegbu & Nwadiani, 2020).

Impact on Student Engagement and Learning Outcomes

The findings from Table 4 indicate that the use of geographic resources has a positive impact on student learning. A majority of teachers (57%) observed a significant improvement in students' academic outcomes, while 33% noticed a moderate improvement. Only 3% perceived a decline. These results reinforce the importance of instructional materials in enhancing learning engagement and retention (Bruner, 1966).

Table 5 further reveals that teachers observed improvements such as enhanced student learning (28%), increased participation (24%), and aroused interest/motivation (23%). However, only 7% attributed these improvements to better performance in national exams (WAEC/NECO), which contrasts with Mugisha's (2020) findings in Rwanda, where examination performance was the primary observed benefit.

Comparative Perspective

While the findings from Kaduna State show some progress in the use of instructional materials, the extent and quality of available resources remain inadequate. Compared to contexts like Rwanda where ICT integration in geography education is prioritized (Mugisha, 2020), Kaduna State still lags in equipping schools with modern tools such as GIS and multimedia devices.

Conclusion

Geography is a discipline that examines the relationships between people and the earth, what people are doing because of these relationships, and what they can do. Geographic concepts should be taught using different instructional materials. These instructional materials are, however, either completely not available or grossly inadequate in most of the Public Secondary Schools in Kaduna State. To enhance geography education, schools need to prioritize resource allocation, provide teacher training and promote practical learning experiences.

Recommendations

Based on the findings of this study regarding the availability, integration, and effectiveness of geographical instructional resources in public secondary schools in Kaduna State, the following recommendations are proposed:

1. **Improvement in Resource Provision**

The State Ministry of Education and relevant stakeholders should prioritize the procurement and distribution of modern geography teaching resources such as GIS tools, theodolites, weather stations, compasses, and other essential fieldwork instruments. The current over-reliance on textbooks (mean = 3.43) should be supplemented with diverse, interactive materials that promote hands-on and spatial learning.

2. **Teacher Training and Capacity Building**

Professional development programs should be organized to train geography teachers on how to effectively use instructional resources, including digital tools and field equipment. Teachers' limited integration of resources—only 10% reported frequent use—suggests a need for training that bridges the gap between availability and utilization.

3. **Curriculum-Resource Alignment Audits**

Regular reviews should be conducted to ensure that instructional materials are aligned with curriculum goals. While 44% of respondents believe the resources are effective in supporting the curriculum, there is still room for improvement. Developing a resource guide tailored to the curriculum can enhance consistency in instructional delivery.

4. **Integration of ICT in Geography Education**

Given the low availability and usage of technological resources like computers and the internet (means = 2.76 and 2.22 respectively), integrating ICT in the teaching of geography should be a priority. This can include the use of virtual globes, satellite imagery, and GIS software, which are increasingly important in modern geographic analysis.

5. **Promoting Practical Learning through Fieldwork**

Schools should encourage field trips and outdoor learning, as these activities are known to enhance student engagement. The low mean scores for fieldtrip resources (2.04) and related tools highlight the need for logistical and financial support to facilitate field-based instruction.

6. **Monitoring and Evaluation**

Establishing a system for regular monitoring of how resources are used in classrooms can help identify gaps and best practices. This can be done through lesson observations, teacher self-reports, and student feedback mechanisms.

7. **Policy Advocacy**

Stakeholders in the education sector should advocate for education policies that recognize geography as a core subject requiring specialized resources.

Increased budgetary allocation for geography education could significantly address the deficiencies in resource availability and utilization.

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Assessment of Examination Anxiety Disorder among undergraduate students in Federal College of Education (Technical) Asaba: Implications for Counselling Psychologist

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Abstract

This paper examined the prevalent of examination anxiety among Undergraduate students in Federal College of Education (T) Asaba: Counselling Implications. Three research questions were raised for this study. The study adopted a descriptive survey research design. The Population of the study comprised four hundred and one (401) students in Federal College of Education (Technical), while one hundred and ninety-six (196) students were selected using random sampling technique to represent the entire population. The instrument for data collection was a structured questionnaire, tiled: Examination Anxiety Disorder Among Undergraduate Students Questionnaire (EADSQ). The validated questionnaire was subjected to reliability test. Fifteen copies of the validated questionnaire were administered on students in Federal College of Education Umunze, Anambra State, using split-half method. Data collected weree analyzed using Pearson Correlation to ascertain the level of consistency whihch yielded a correlation coefficient of 0.79 indicating that the instrument is reliable. One hundred and ninety-six (196) Questionnaire were administered in Federal College of Education (Technical), Asaba on the respondents by the researcher and were retrieved and analyzed. The data collected were analyzed using frequency count and mean statistics. Findings revealed that, there are different types of examination anxieties and it prevalent among Undergraduate Students in the College. It was recommended that School management should establish and promote regular counselling orientation, and information services for the new and existing students specifically aimed at helping students manage examination anxiety.

Keywords: Examination anxiety, Prevalent, Undergraduate

Introduction

Education serves as the foundation of human advancement, and students training to become teachers occupy a distinct role in society. Their college journey goes beyond personal accomplishments; it's about gaining the skills and knowledge essential for shaping future generations. Yet, this honorable pursuit often comes with significant pressure and stress, especially during examination periods.

Examinations are structured assessments that measure a learner's understanding of a topic or skill, typically requiring them to answer questions or solve problems within a set timeframe. These assessments allow educators to evaluate students' retention and mastery of content (Singh, 2016). In educational settings, exams aim to measure students' ability to recall, apply, and analyze the information learned, serving as an essential indicator of academic progress and success. Examinations also offer feedback on the effectiveness of teaching methods (Cohen & Swerdlik, 2018). Typically standardized, exams provide a uniform way to assess students across institutions, aiming to minimize bias and give all candidates a fair chance to demonstrate their knowledge. Such standardized exams contribute to accountability within the education system (Hill, 2020). Beyond formal education, exams are used in professional and certification contexts to confirm competency in specific fields, ensuring individuals meet industry standards. In this way, examinations help uphold the integrity and credibility of various professions (Troutman & Grace, 2017). Examination anxiety is an intense emotional response experienced by students in the lead-up to exams, often marked by worry, fear, and tension, which can hinder their performance. This anxiety can disrupt clear thinking, memory recall, and task execution. It is a common issue that, if unmanaged, can be overwhelming. Factors contributing to this anxiety include fear of failure, insufficient preparation, and high expectations from parents or teachers. Adewale (2018) describes examination anxiety as situational stress triggered by the prospect of evaluation, leading to psychological and physiological responses that impact concentration and memory. Symptoms may include racing thoughts, sweating, and an increased heart rate—responses rooted in the body's fight-or-flight mechanism that can impair academic performance. Strategies like relaxation techniques and time management can help students mitigate anxiety. Obi (2019) defines examination anxiety as an intense fear arising from exam anticipation, which can damage a student's confidence and lead to poor performance. This anxiety can create a negative cycle where fear of failure diminishes confidence, further increasing anxiety.

Furthermore, Nwachukwu (2020) views Examination Anxiety as a psychological condition marked by apprehension and worry, which arises before or during exams and often results in decreased academic achievement. The negative impact of examination anxiety on academic achievement highlights the importance of addressing this issue within the educational system. Students experiencing anxiety may avoid studying or engage in

cramming, both of which can hinder learning. Schools can implement workshops that focus on study skills, emotional regulation, and anxiety management to support affected students. Yusuf (2021) defines Examination Anxiety as a mental and emotional response that includes nervousness and self-doubt, occurring when students perceive exams as threats to their self-worth or future prospects. Examination anxiety can be intensified by a student's perception of exams as high-stakes assessments that determine future success. When students internalize the idea that exams measure their worth, the pressure can escalate, leading to intense anxiety. Educators can help alleviate this by promoting a growth mindset and emphasizing learning over grades. Ibrahim (2022) describes Examination Anxiety as a debilitating worry specific to test situations, affecting cognitive processes such as memory recall and analytical thinking, which are essential for exam success. When anxiety disrupts cognitive functions, students may struggle to retrieve information or process questions effectively during exams. This can result in mistakes and lower scores, even if the student knows the material well. Techniques like deep breathing, visualization, and systematic desensitization can help in reducing cognitive disruptions caused by anxiety. Addressing these disruptions can enable students to perform to their potential in exam settings. Adesina (2023) defines Examination Anxiety as a form of academic stress that affects students' ability to perform in tests, often resulting from unrealistic expectations, lack of preparation, and personal insecurities. Unrealistic expectations, whether self-imposed or from external pressures, can drive students to feel overwhelmed and incapable, leading to examination anxiety. Examination anxiety among students are of different types. According to Okoye and Oladapo (2021), examination anxiety could be in a form of buildup of fear and worry in the days or weeks before an exam often detracts from productive study time (Anticipatory Anxiety); a sudden onset of fear right before or during the exam, frequently accompanied by physical symptoms like sweating and a rapid heartbeat, interferes with concentration (Situational Anxiety); anxiety specifically arising during the problem-solving or question-answering phase of exams can lead to mental blocks that impede information retrieval (Test Performance Anxiety); concerns about judgment or unfavorable comparisons by peers or instructors based on exam results can undermine self-confidence (Social Anxiety), among others. Each type of anxiety presents specific challenges, affecting students' examination experiences and academic outcomes.

Causes of examination anxiety among students in colleges of education are multi-dimensional. The fear of failure is one of the most common triggers of examination anxiety, especially in competitive academic environments where success in exams is directly tied to future opportunities such as employment or graduate studies. This fear often stems from the belief that academic performance is a measure of self-worth, and failure could lead to feelings of inadequacy or rejection by peers, family, or society. Zeidner (2018) highlights that this fear is not only personal but is often reinforced by external factors such as parental expectations and societal pressures, which can amplify the student's anxiety. A lack of effective study habits and time management skills can contribute significantly to anxiety. When students procrastinate or fail to organize their time well, they are often left cramming large amounts of information in a short period. This ineffective preparation can lead to a sense of helplessness, as students feel they are unprepared or overwhelmed. Owens (2019) found that students with better time management and study techniques tend to experience lower levels of anxiety, as they are able to approach exams with greater confidence and reduced stress. Perfectionism is another key factor driving examination anxiety. Students with high perfectionist tendencies often equate their worth with flawless academic performance. They are not only concerned with passing an exam but also with excelling, often setting unrealistic expectations for themselves. Eum & Rice (2017) explain that this relentless pursuit of perfection increases the likelihood of students feeling anxiety before exams, as the thought of not reaching their high standards creates stress and fear of disappointing themselves or others. Students are often in direct competition with one another for limited resources such as scholarships, internships, or placement in postgraduate programs. As noted by Putwain (2020), the constant comparison with peers and the drive to outperform others can increase stress, leading to chronic anxiety, especially during exam periods. Social influences play a significant role in the development of examination anxiety. Students frequently compare themselves to their peers, and this comparison can lead to a fear of underperforming relative to others. According to Von der Embse (2018), students may feel that their social standing, friendships, or respect from peers are at risk if they do not achieve certain academic outcomes.

Examination anxiety can severely hinder a student's academic performance by impairing cognitive processes essential for success, such as memory recall, attention, and problem-solving. When students are anxious, their working memory becomes less efficient, making it harder to retrieve information or

focus on the task at hand. Sarason & Pierce (2020) argue that even well-prepared students may underperform in high-pressure exam situations if they are unable to effectively manage their anxiety. This phenomenon is often referred to as the "choking under pressure" effect, where anxiety causes students to perform below their actual ability. The mental health consequences of sustained examination anxiety can be severe. Students who constantly experience anxiety during exams are more likely to develop chronic stress conditions, which can lead to other mental health issues such as depression or generalized anxiety disorder. Furlong (2021) emphasize that students in higher education who experience regular anxiety episodes during exams are at higher risk of developing long-term psychological problems, especially if they do not have access to appropriate mental health resources or coping strategies. These physical symptoms not only make it harder to focus during exams but can also affect students' overall health, leading to chronic fatigue or weakened immune systems. According to Owens (2019), students who experience persistent anxiety are more likely to suffer from burnout, which can have long-term consequences on both their physical and mental well-being. Examination anxiety often erodes students' confidence in their academic abilities. Students who perform poorly due to anxiety may begin to doubt their intelligence or capability, leading to a decline in self-esteem. Over time, this can lead to a negative academic self-concept, where students believe that they are incapable of succeeding in their studies. Eum & Rice (2017) explain that the link between anxiety and self-esteem is cyclical: the more anxious a student becomes, the more likely they are to perform poorly, and the lower their self-confidence becomes, further increasing their anxiety. In severe cases, students may begin to avoid situations that trigger their anxiety, such as skipping exams, avoiding studying, or procrastinating. This avoidance behavior can lead to a cycle of academic disengagement, where students withdraw from their studies in an attempt to avoid the stress associated with exams. Putwain (2020) suggest that in extreme cases, students may even drop out of school altogether if their anxiety becomes unmanageable, leading to negative long-term consequences for their academic and professional futures. As Furlong (2021) point out, social support is a crucial factor in managing anxiety, and students who isolate themselves are less likely to receive the emotional or psychological support they need from friends or family.

Hence the need to examine the prevalent of examination anxiety among Degree students in Federal College of Education (T) Asaba: Counselling Implications.

Statement of the Problem

Examination anxiety has emerged as a critical concern among student's teachers and counsellors in colleges of education, undermining both their academic performance and psychological wellbeing. These aspiring educators face a unique double burden: they must not only master academic content but also develop the professional competencies needed to teach future generations. Even well-prepared students often find themselves paralyzed by anxiety during exams, their hearts racing and minds blanking – a particularly troubling phenomenon given their future role in helping students manage similar academic pressures. This is so evident among degree students in Federal College of Education (Technical) Asaba. Why students demonstrate examination anxieties? What could be the causes of those anxieties? Are there consequences of those anxieties? Many questions begging for answers.

It is against this backdrop that this study seeks to examine the prevalent of examination anxiety among Degree students in Federal College of Education (T) Asaba: Counselling Implications.

Objectives of the Study

Specifically, the study seeks to:

1. Identify the examination anxieties prevalent among degree students in Federal College of Education (T) Asaba.

2. Determine the causes of examination anxiety among degree students in Federal College of Education (T) Asaba

3. Examine the consequences of examination anxiety on degree students in Federal College of Education (T) Asaba.

Research Questions

The following questions were raised to guide the study:

1. What are the examination anxieties prevalent among degree students in Federal College of Education (T) Asaba**?**

2. What are the causes of examination anxiety among degree students in Federal College of Education (T) Asaba?

3. What are the consequences of examination anxiety on degree students in Federal College of Education (T) Asaba?

Methodology

The study adopted a descriptive survey research design. Population of the study comprised four hundred and one (401) students in Federal College of Education (Technical), Asaba while one hundred and ninety-six (196) students were selected using random sampling technique to represent the entire population. The instrument for data collection was a structured questionnaire, tiled: Prevalent of Examination Anxiety Among Degree Students Questionnaire (PEADSQ). The questionnaire had two sections; section "A" comprised of the respondent's personal data and section 'B' had structured questionnaire items with their corresponding response options. The questionnaire is a four-points rating scale which were coded and weighted as follows: Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1); The instrument was validated by an expert in Educational Measurement and Evaluation, Federal College of Education (Technical) Asaba. The corrections and suggestions made by the experts reflected on the final copies of the instrument. The validated questionnaire was subjected to reliability test. Fifteen copies of the validated questionnaire were administered on lecturers in Federal College of Education Umunze, Anambra State, using split-half method. Data collected weree analyzed using Pearson Correlation to ascertain the level of consistency. The result yielded a correlation coefficient of 0.79 indicating that the instrument is reliable. One hundred and ninety-six (196) in Federal College of Education (Technical), Asaba copies of the validated questionnaire were administered on the respondents personally by the researcher with the help of two research assistants and same were retrieved and analyzed. The data collected were analyzed using frequency count and mean statistics. The decision rule is such that any mean score of 2.50 and above were regarded agree and mean scores less than 2.50 were deemed as disagree.

Results

Research Question One: What are the examination anxieties prevalent among degree students in Federal College of Education (T) Asaba?

Table 1: Mean and Standard Deviation Responses on Types of Examination Anxieties among Degree Students in Colleges of Education

S/N	Statement	Mean	STD	Remark
1	Students express fear and worry days or weeks before the actual examination (Anticipatory Anxiety)	3.09	1.01	Agree
2	There high level of sudden fear that arises immediately before or during the examination among students (Situational Anxiety).	2.97	1.06	Agree
3	Students are known for the fear of answering questions or solving problems under exam conditions (Test Performance Anxiety).	3.17	0.90	Agree
4	Fear of judgment or comparison by peers or teachers based on exam performance is common among students (Social Anxiety).	2.89	1.09	Agree
5	There is high level of anxiety resulting from the need to achieve a perfect score or meet very high standards (Perfectionism Anxiety).	2.99	1.02	Agree
6	Stress caused by fear of not completing the exam within the given time limit is common among students (Time Pressure Anxiety)	3.02	1.04	Agree
7	Students are known for anxiety arising from fear of forgetting important information during the examination (Memory Loss Anxiety).	2.98	1.03	Agree
	Grand Mean and Standard Deviation	3.02	1.02	Agreed

Source: Researcher's Compilation, 2024

Table 1 revealed that respondents agree with items 1 to 7. This is because the mean score for items all the items in the table were significantly higher than 2.50 bench mark for determination of a value as agree or disagree. Grand mean of 3.02 revealed that there are different types of examination anxieties among Degree Students in Colleges of Education. The grand mean of 1.02 support the results.

Research Question Two: What are the causes of examination anxiety among degree students in Federal College of Education (T) Asaba?

Table 2: Mean and Standard Deviation Responses on Causes of Examination Anxiety among Degree Students in Colleges of Education

S/N	Statement	Mean	STD	Remark
8	Lack of adequate preparation for exams due to poor time management leads to heightened anxiety.	2.96	1.05	Agree
9	Fear of failure, especially when tied to family expectations or societal pressure, increases anxiety levels.	3.08	1.01	Agree
10	High-stakes nature of examinations, where results significantly impact future opportunities, causes stress.	2.97	1.03	Agree
11	Past negative experiences or poor performances in exams create anxiety about current or future exams.	3.04	1.07	Agree
12	Inadequate understanding of the subject matter	3.15	0.94	Agree

	contributes to feelings of unpreparedness and anxiety.			
13	Unrealistic expectations from lecturers, peers, or self can create undue pressure and anxiety.	3.09	0.92	Agree
14	Limited access to academic resources (e.g., textbooks, study guides) makes students feel unprepared.	2.98	1.03	Agree
	Grand Mean and Standard Deviation	3.04	1.01	Agreed

Source: Researcher's Compilation, 2024

Table 2 revealed that respondents agree with items 8 to 14. This is because the mean score for items all the items in the table were significantly higher than 2.50 bench mark for determination of a value as agree or disagree. Grand mean of 3.04 revealed that examination anxiety among degree students in Federal College of Education (T) Asaba is caused by several factors. The grand mean of 1.01 support the results.

Table 3: Examination anxiety among degree students in Federal College of Education (T)

S/N	Statement	Mean	STD	Remark
15	Physical symptoms such as headaches, nausea, and fatigue, which can further hinder performance.	2.99	1.09	Agree
16	Impaired academic performance, as anxiety interferes with concentration and recall during exams.	3.11	0.91	Agree
17	Increased likelihood of engaging in exam malpractice as a way to cope with overwhelming anxiety.	3.14	0.95	Agree
18	Reduced self-confidence, as repeated experiences of anxiety can lead to self-doubt and low self-esteem.	2.72	1.00	Agree
19	Avoidance behaviors, where students may skip classes or avoid exams to escape anxiety-provoking situations.	2.89	0.95	Agree
20	Development of long-term psychological issues, such as chronic stress or anxiety disorders.	2.84	1.06	Agree
21	Disruption in academic progress, potentially leading to delayed graduation or discontinuation of studies.	2.91	1.10	Agree
	Grand Mean and Standard Deviation	2.94	1.01	Agreed

Table 3 revealed that respondents agree with items 15 to 21. This is because the mean score for items all the items in the table were significantly higher than 2.50 bench mark for determination of a value as agree or disagree. Grand mean of 2.94 revealed that examination anxiety among degree students in Federal College of Education (T) Asaba comes with several consequences. The grand mean of 1.01 support the results.

Summary of Findings

Findings of the study can be summarized thus:

1. There are different types of examination anxieties among Degree Students in Colleges of Education.

2. Examination anxiety among degree students in Federal College of Education (T) Asaba is caused by several factors.

3. Examination anxiety among degree students in Federal College of Education (T) Asaba comes with several consequences.

Discussion of Findings

Analysis of data revealed that there are different types of examination anxieties among Degree Students in Colleges of Education. Students express fear and worry days or weeks before the actual examination (anticipatory anxiety); there high level of sudden fear that arises immediately before or during the examination among students (situational anxiety); students are known for the fear of answering questions or solving problems under exam conditions (test performance anxiety); fear of judgment or comparison by peers or teachers based on exam performance is common among students (social anxiety); there is high level of anxiety resulting from the need to achieve a perfect score or meet very high standards (perfectionism anxiety); stress caused by fear of not completing the exam within the given time limit is common among students (time pressure anxiety); students are known for anxiety arising from fear of forgetting important information during the examination (memory loss anxiety). This is in agreement with Okoye and Oladapo (2021) who reported that examination anxiety could be in a form of buildup of fear and worry in the days or weeks before an exam often detracts from productive study time (Anticipatory Anxiety); a sudden onset of fear right before or during the exam, frequently accompanied by physical symptoms like sweating and a rapid heartbeat, interferes with concentration (Situational Anxiety).

Analysis of data also revealed that examination anxiety among degree students in Federal College of Education (T) Asaba is caused by several factors. The factors are identified to be lack of adequate preparation for exams due to poor time management, fear of failure, especially when tied to family expectations or societal pressure, high-stakes nature of examinations, where results significantly impact future opportunities, past negative experiences or poor performances in exams, inadequate understanding of the subject matter, unrealistic expectations from lecturers, peers, or self and limited access to

academic resources (e.g., textbooks, study guides). This agrees with Zeidner (2018) who highlighted that this fear is not only personal but is often reinforced by external factors such as parental expectations and societal pressures, which can amplify the student's anxiety.

Analysis of data further revealed that examination anxiety among degree students in Federal College of Education (T) Asaba comes with several consequences. This is because physical symptoms such as headaches, nausea, and fatigue, which can further hinder performance;

impaired academic performance, as anxiety interferes with concentration and recall during exams; increased likelihood of engaging in exam malpractice as a way to cope with overwhelming anxiety; reduced self-confidence, as repeated experiences of anxiety can lead to self-doubt and low self-esteem; avoidance behaviors, where students may skip classes or avoid exams to escape anxiety-provoking situations; development of long-term psychological issues, such as chronic stress or anxiety disorders and disruption in academic progress, potentially leading to delayed graduation or discontinuation of studies. This is in line with Owens (2019) who reported that students who experience persistent anxiety are more likely to suffer from burnout, which can have long-term consequences on both their physical and mental well-being.

Conclusion

In conclusion, examination anxiety among students presents a significant challenge that affects students' academic performance, emotional well-being, and overall learning experience. The findings of this study reveal the multifaceted nature of this issue, with various contributing factors and wide-ranging consequences.

Addressing this problem requires a comprehensive, collaborative effort from school management, educators, and students.

Recommendations

It is therefore recommended that:

1. School management should establish and promote regular counselling services specifically aimed at helping students manage exam anxiety.

2. Regular workshops should be focused on causes of Examination Anxiety offered by the college. These could include sessions on stress management techniques, relaxation exercises, mindfulness, and breathing practices.

3. School counsellor should create awareness of consequences of Examination Anxiety welcoming atmosphere where students feel comfortable.

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Impact of Security Management on Students' Safety in Public Secondary Schools in Faskari Lga, Katsina State

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Abstract

School security management is a crucial aspect of educational administration, particularly in conflict prone environment like Faskari Local Government Area (LGA) of Katsina State, Nigeria, where banditry poses a significant threat to student safety and learning continuity. This study examines School Security Management and Student Safety in Public Secondary Schools in Banditry Affected Areas of Faskari LGA, Katsina. The population of the study was 264 comprising the Principal, Vice Principal and teachers from all the 19 secondary schools in Faskari Local Government Area. Using a descriptive survey research design, data was collected from 119 respondents, including principals, vice principals, and teachers, across 19 secondary schools in Faskari LGA. The study used a self-designed questionnaire of School Security Management and Student Safety in Public Secondary Schools in Banditry-Affected Areas of Faskari Questionnaire (SSMSSPSSBAAFQ) was used for data collection. The instrument was validated by three experts from Educational Administration and Planning and the other from Educational Measurement and Evaluation. The data was collected and analyzed using mean and standard deviation, , and the null hypothesis was examined at 0.05 significance level using analysis of variance (ANOVA). Findings revealed that security measures such as reliance on local vigilantes, incomplete perimeter fencing, and lack of surveillance cameras are common but insufficient in mitigating security threats. The study further highlights how weak security infrastructure fosters fear among students, reduces attendance, and disrupts academic activities. To enhance security, the study recommends Public secondary schools should prioritize completing perimeter fencing and installing surveillance cameras to deter unauthorized access and monitor school premises effectively, Schools should establish formal partnerships with law enforcement agencies, including developing rapid response protocols and emergency communication channels, Regular training programmes should be conducted for teachers, security personnel, and students on crisis management, emergency

response, and evacuation procedures, and Schools should involve parents, local leaders, and community-based security groups in security initiatives.

Keywords: School security management, student safety, banditry, public secondary schools, Katsina State.

Introduction

School security management is a critical component of educational administration, especially in conflict-prone regions. In recent years, banditry has emerged as a significant security threat in Nigeria, particularly in the northern states such as Katsina, where the education sector has suffered from increased violence, kidnappings, and attacks on schools. This situation has heightened the need for effective security management in public secondary schools, as ensuring student safety has become a major concern for educational stakeholders. The purpose of this research was to explore the current state of school security management in Faskari Local Government Area (LGA) of Katsina State, which is one of the areas hardest hit by banditry. School security management refers to the strategies, policies, and measures implemented to protect students, staff, and school properties from security threats, including violence, theft, and abductions. Key components include physical security measures (such as fencing, surveillance cameras, and the presence of security personnel), emergency preparedness plans, and collaboration with local law enforcement (Adebayo, 2022). The overarching goal of school security management is to create a safe environment that fosters academic success and psychological well-being. Effective security management requires the coordination of multiple stakeholders, including school administrators, government bodies, and local communities, particularly in areas prone to insecurity.

Banditry in Nigeria has evolved from isolated incidents of cattle rustling to organized crime involving large-scale kidnappings, extortion, and violent attacks. This phenomenon is especially prevalent in the North-Western region, where states like Zamfara, Sokoto, and Katsina have experienced a surge in banditry-related violence over the past decade. In Katsina State, the issue of banditry has escalated since 2015, affecting local communities, displacing thousands, and severely disrupting daily activities, including education (Yahaya, 2020). According to reports, over 200 schools have been closed due to insecurity in the region (Nwabueze & Abubakar, 2023). Faskari LGA, a rural district in Katsina, has been one of the epicenters of these attacks, with schools becoming frequent targets for bandits who abduct students for ransom

(Amnesty International, 2021). The continuous threat of banditry has significantly undermined the safety and functionality of schools in this region, making security management a top priority for educational administrators.

The impact of insecurity on education in Nigeria cannot be overstated. Banditry, which has escalated in northern Nigeria, especially in Katsina State, has severely affected the operations of schools. Empirical studies indicate that frequent banditry attacks lead to the closure of schools, disruptions in the academic calendar, and fear among students and teachers, resulting in a sharp decline in attendance (Ibrahim, 2022). Banditry also causes physical damage to school infrastructure, including the destruction of classrooms, theft of educational resources, and the abduction of students and staff. Studies show that between 2020 and 2022, over 1,000 students were abducted from schools in Northern Nigeria, leading to extended school closures and creating a climate of insecurity around educational institutions (UNICEF, 2022). The psychological trauma suffered by students due to these incidents has long-term effects, impeding their cognitive development and emotional well-being. In banditry-affected areas such as Kankara, Faskari, Sabuwa, Funtua, Dutsin-ma Safana among other schools are often forced to shut down, leading to prolonged disruptions in the academic calendar and high dropout rates, especially among girls. Students, teachers, and school staff live in constant fear, and this fear directly affects their academic performance and emotional well-being. The high rate of abductions has also led to a decline in school attendance, as parents are reluctant to send their children to school, fearing for their safety. According to the United Nations Children's Fund (UNICEF), over 1,000 students were kidnapped in Northern Nigeria between 2020 and 2022, with many of these incidents occurring in Katsina State (UNICEF, 2022). In addition, the destruction of school infrastructure, theft of educational materials, and displacement of school staff have compounded the challenges faced by educational institutions in managing day-to-day operations.

In the face of growing insecurity, the role of school security management has become more crucial than ever. Effective security management in schools involves not only physical measures, such as securing school premises with fences and employing security personnel, but also establishing communication networks with local authorities and crisis response plans (Adewale & Salihu, 2021). A well-coordinated security strategy can help prevent attacks, protect students and staff during emergencies, and restore a sense of normalcy in school environments. Student safety is inherently tied to the effectiveness of

security management in schools, as students can only learn and thrive in an environment where they feel safe (Ogundare & Aluko, 2022). In regions like Faskari LGA, where banditry poses an imminent threat, implementing strong security measures is essential for ensuring that schools remain functional and that students' right to education is upheld. As the educational landscape continues to face challenges from banditry, this study will examine how school administrators in Faskari LGA are managing security and the effectiveness of these measures in ensuring student safety.

In banditry-affected regions like Faskari LGA, various strategies have been employed to manage school security. These include the deployment of local vigilantes or security personnel to guard school premises, constructing perimeter fences, and increasing surveillance with the help of technology (Nwabueze & Abubakar, 2023). Community partnerships have also emerged as critical components of school security, where local leaders and parents work together with school administrators to ensure the safety of students. In some areas, schools have partnered with local security forces and law enforcement agencies to implement rapid response mechanisms in the event of an attack. Schools are also encouraged to develop comprehensive emergency preparedness plans, which include drills, crisis communication strategies, and the establishment of safe zones (Auwal, 2023).

Despite the importance of school security management, several barriers hinder its effective implementation in banditry-affected areas. A significant challenge is the lack of financial resources to implement necessary security measures such as building fences, installing surveillance systems, or employing professional security personnel (Bello & Musa, 2022). In many public secondary schools in Faskari LGA, the available security personnel are often untrained or under-resourced, making it difficult to prevent or respond to attacks effectively. While there have been policies addressing school safety, the implementation has been slow and inconsistent due to budget constraints and bureaucratic inefficiencies. Additionally, the geographical isolation of some schools in rural areas further exacerbates security challenges, as these schools are more difficult to monitor and protect.

Statement of the Problem

The issue of inadequate security in public secondary schools in Faskari LGA, Katsina State, is critical due to escalating banditry. Schools are frequently targeted for violence, leaving students, teachers, and staff vulnerable to

kidnappings, attacks, and other threats. Most schools lack essential security infrastructure like fencing, surveillance systems, and trained personnel, increasing the risk to students' safety. This situation has led to a decline in attendance, psychological trauma, and disruption of academic activities. Banditry has also caused mass abductions, school closures, and damage to infrastructure. Existing security measures, such as employing local vigilantes, are insufficient in countering the growing threat. Schools suffer from inadequate funding and weak coordination between management and local security agencies, leaving them exposed to serious risks.

While the government, local communities, and educational managers have taken steps to address the issues such as introducing fencing policies, deploying local security forces, and conducting security awareness training, challenges persist. Without addressing the security gaps, the consequences include further school closures, rising dropout rates (especially among girls), declining academic performance, and increased mental health issues for students. The continued insecurity threatens to exacerbate poverty, unemployment, and instability in the region, undermining long-term development and public trust in the education system.

Objectives of the Study

The study examines the School Security Management and Student Safety In Public Secondary Schools In Banditry-Affected Areas of Faskari LGA, Katsina State. Specifically, the study is to:

1. examine the impact of current security management practices on students' safety in public secondary schools of Faskari LGA, Katsina State

2. assess ways through which the security measures impact the safety of Public Secondary school students in Faskari LGA

3. propose strategies for improving Public Secondary school security and ensuring the safety of students in Faskari LGA

Research Questions

The following research questions serve as a guide to this work

1. What is the impact of current security management practices on students' safety in public secondary schools of Faskari LGA, Katsina State?

2. In what ways do the security measures impact the safety of Public Secondary school students in Faskari LGA?

3. What strategies can be put in place to improve security and ensure the safety of in public secondary school students in Faskari LGA?

Research Hypothesis

The level of school security management does not significantly influence students' perceptions of safety in public secondary schools in banditry-affected areas of Faskari LGA.

Methodology

The study adopted a descriptive survey research design. The design is suitable because it helps in describing the existing conditions, challenges, and effectiveness of security measures in the schools. The population of the study was 264 comprising the Principal, Vice Principal and teachers from all the 19 secondary schools in Faskari Local Government Area. Stratified random sampling techniques were used to select 119 out of 264 respondents used for the study as the sample size. Three research questions were raised for the study while, one research hypothesis was formulated to guide the study. School Security Management and Student Safety in Public Secondary Schools. The content validity of the School Security Management and Student Safety in Public Secondary Schools in Banditry-Affected Areas of Faskari Questionnaire (SSMSSPSSBAAFQ) was established through expert judgment. The instrument was subjected to validation by three experts, one expert from the Department of Educational Management and Two experts from the Department of Psychology and Counseling at Federal University Dutsin-Ma, Katsina State. These experts assessed the clarity, relevance, coverage, and appropriateness of the items in line with the research objectives and variables. Based on their suggestions, necessary modifications were made to ensure the instrument measured what it was intended to measure. The research issues

were addressed using mean and standard deviation, and the null hypothesis was examined at 0.05 significance level using analysis of variance (ANOVA). An interpretive cutoff point of 2.50 was established for the outcomes.

Results

This section presents the analysis of data gathered through the School Security Management and Student Safety in Public Secondary Schools in Banditry-Affected Areas of Faskari Questionnaire (SSMSSPSSBAAFQ). The results are organized according to the research questions and hypothesis that guided the study. Descriptive statistics, including mean and standard deviation, were used to answer the research questions, while inferential statistics (ANOVA) were employed to test the hypothesis at a 0.05 level of significance. A mean rating of 2.50 was adopted as the decision benchmark

Research Question One: What is the impact of current security management practices on students' safety in public secondary schools of Faskari LGA, Katsina State?

To provide insight into the effectiveness of existing security strategies, respondents were asked to rate the impact of current security management practices on student safety. The data collected were analyzed using mean and standard deviation to determine the level of agreement among respondents.

Table 1: Mean and Standard Deviation on the impact of current security management practices on students' safety in public secondary schools of Faskari LGA, Katsina State

S/N	Item Statements	Mean	Standard Deviation	Remark
	Public secondary schools in Faskari LGA rely heavily on local vigilantes for security during school hours.	2.77	.66	Agree
	Many schools have started building fences, but these are often incomplete or poorly maintained.	2.65	.63	Agree
	Most schools lack surveillance cameras, limiting their ability to monitor premises effectively.	2.86	.69	Agree
	Security drills and emergency plans are rarely practiced, leaving schools unprepared for attacks.	2.76	.66	Agree
	Collaboration with law enforcement is minimal, and many schools lack formal security protocols or communication channels with the police.	2.48	.57	Disagree
	Average Mean	2.70	0.64	Agree

N= 119

Table 1 Showed that item 1, 2, 3, and 4 had mean scores above the acceptable mean of 2.50, this implies that the respondents were of the opinions that public secondary schools in Faskari LGA rely heavily on local vigilantes for security during school hours, that many schools have started building fences, but these are often incomplete or poorly maintained, that most schools lack surveillance cameras, limiting their ability to monitor premises effectively, and that security drills and emergency plans are rarely practiced, leaving schools unprepared for attacks. Moreso, item 5 had mean score below the acceptable mean of 2.50, this implies that the respondents were of the opinions that collaboration with law enforcement is minimal, and many schools lack formal security protocols or communication channels with the police. However, from the responses of the respondents one can find that there are current security measures in place in public secondary schools in Faskari LGA as indicated by the average mean score of 2.70.

Research Question Two: In what ways does this security measures impact the safety of Public Secondary school students in Faskari LGA?

Table 2: Mean and Standard Deviation on the ways security measure impact the safety of Public Secondary school students in Faskari LGA

S/N	Item Statements	Mean	Standard Deviation	Remark
	Lack of complete perimeter fencing makes schools easy targets, putting students and staff at high risk.	2.44	.56	Disagree
	Reliance on untrained vigilantes leads to poor security responses, causing frequent school closures and kidnappings.	2.64	.62	Agree
	Weak security measures increase fear, reducing attendance and disrupting academic performance.	2.78	.67	Agree
	Absence of surveillance and emergency systems leaves students vulnerable to abductions and attacks, harming their physical and emotional well-being.	2.51	.58	Agree
	Inconsistent security implementation creates unequal safety, leaving some schools more exposed to threats.	2.69	.64	Agree
	Average Mean	2.61	0.61	Agree

N= 119

Table 2 Showed that item 7, 8, 9, and 10 had mean scores above the acceptable mean of 2.50, this implies that the respondents were of the opinions that reliance on untrained vigilantes leads to poor security responses, causing frequent school closures and kidnappings, that weak security measures

increase fear, reducing attendance and disrupting academic performance, that absence of surveillance and emergency systems leaves students vulnerable to abductions and attacks, harming their physical and emotional well-being, that inconsistent security implementation creates unequal safety, leaving some schools more exposed to threats. Moreso, item 1 had mean scores below the acceptable mean of 2.50, this implies that the respondents were of the opinions that lack of complete perimeter fencing does not makes schools easy targets, putting students and staff at high risk. However, from the responses of the respondents one can find that security measure affect public secondary school students' safety in banditry-affected areas in several ways as indicated by the average mean score of 2.61.

Research Question Three: What strategies can be put in place to improve security and ensure the safety of public secondary school students in Faskari LGA?

Table 3: Mean and Standard Deviation on strategies can be put in place to improve security and ensure the safety of in public secondary school students in Faskari LGA

S/N	Item Statements	Mean	Standard Deviation	Remark
	Strengthening partnerships with law enforcement and developing rapid response protocols will improve school security.	2.89	.70	Agree
	Completing perimeter fences and installing surveillance systems will help deter threats.	2.56	.60	Agree
	Training staff and security personnel in crisis management will improve response to security incidents.	2.67	.63	Agree
	Regular security drills and evacuation plans will better prepare students and staff for emergencies.	2.91	.71	Agree
	Involving parents and local leaders in security initiatives will enhance school safety.	2.69	.64	Agree
	Average Mean	2.74	0.66	Agree

N= 119

Table 3 Showed that item 11, 12, 13, 14, and 15 had mean scores above the acceptable mean of 2.50, this implies that the respondents were of the opinions that strengthening partnerships with law enforcement and developing rapid response protocols will improve school security, that completing perimeter fences and installing surveillance systems will help deter threats, that training staff and security personnel in crisis management will improve response to

security incidents, that regular security drills and evacuation plans will better prepare students and staff for emergencies, and that involving parents and local leaders in security initiatives will enhance school safety. However, from the responses of the respondents one can find that there are strategies that can be implemented to enhance security and public secondary school students' safety as indicated by the average mean score of 2.74.

Hypothesis. The level of school security management does not significantly impact students' perceptions of safety in public secondary schools in Faskari LGA .

Table 3: Analysis of Variance (ANOVA) on the level of school security management does not significantly impact students' perceptions of safety in public secondary schools in Faskari LGA.

Sources	Sum of squares	DF	Mean Square	F	P- value
Treatment	8.17	2	4.09	8.78	.001
Error	68.42	116	.46541		
Total	76.59	118			

Table 3 showed that the p-value (0.001) is less than the alpha value of 0.05 P>0.05. This implies that the null hypothesis which states that the level of school security management does not significantly influence students' perceptions of safety in public secondary schools in Faskari LGA is thereby rejected. It implies that the level of school security management does significantly influence students' perceptions of safety in public secondary schools in banditry-affected areas of Faskari LGA.

Discussion of findings

The study's findings provide a comprehensive overview of the current security measures in public secondary schools in Faskari Local Government Area (LGA), their impact on student safety, and potential strategies for enhancement. The findings on research question One revealed that these schools predominantly rely on local vigilantes for security during school hours. While some schools have initiated the construction of perimeter fences, many remain incomplete or poorly maintained. Additionally, there is a notable absence of surveillance cameras, and security drills or emergency plans are seldom practiced. Collaboration with law enforcement is minimal, with many schools lacking formal security protocols or communication channels with the police. These findings align with existing literature on school security in Nigeria. For instance, a study by Anebi and Igwebuike (2019) highlighted that

most public secondary and primary schools in Nigeria lack perimeter fencing, iron gates, and other essential security measures, making them vulnerable to security threats.

The results of the study on research question two revealed that the reliance on untrained vigilantes has led to inadequate security responses, resulting in frequent school closures and instances of kidnappings. Weak security measures have heightened fear among students, leading to reduced attendance and disruptions in academic performance. The lack of surveillance and emergency systems leaves students vulnerable to abductions and attacks, adversely affecting their physical and emotional well-being. Inconsistent implementation of security measures creates disparities in safety across schools, leaving some institutions more exposed to threats. These results align with several empirical studies in conflict-affected regions of Nigeria and Sub-Saharan Africa.

For example, Umar and Adamu (2023) in their study on school security and student vulnerability in Northwestern Nigeria found that the absence of trained security personnel and proper surveillance mechanisms significantly contributed to the rise in school-related attacks, especially in Katsina and Zamfara States. Their findings showed that 74% of schools studied lacked structured emergency plans, leading to delayed or ineffective responses during attacks. Furthermore, the current study's finding that poor security has negatively affected students' attendance and academic performance is supported by UNICEF (2021), which documented that over 1,500 schools were closed across Northern Nigeria due to banditry and insurgency, leaving more than one million children out of school. This disruption has caused long-term educational gaps, psychological trauma, and fear of returning to school, especially among girls.

The findings from Table 3 indicate that respondents strongly agree on the necessity of implementing various security strategies to enhance student safety in public secondary schools. The mean scores of all five items were above the acceptable threshold of 2.50, with an overall mean of 2.74. These findings align with existing literature on Securing Students for Learning Effectiveness: The Closed-Circuit Television Angle by Adeoluwa, Ogunmodede, and Ajayi, 2019). This study examines the role of closed-circuit televise on (CCTV) in preventing crime and enhancing teaching and learning effectiveness in secondary schools in Ekiti State, Nigeria. The findings suggest that the

implementation of CCTV systems can significantly reduce incidents of bullying, kidnapping, and other criminal activities within school premises.

The study's hypothesis testing reveals that the level of school security management significantly impact students' perceptions of safety. This underscores the critical importance of effective security management in fostering a safe learning environment. Effective security management has been shown to enhance students' sense of safety, which is crucial for their academic success and well-being. When students feel secure, they are more likely to attend school regularly and perform better academically.

Conclusion

The findings highlight significant security challenges in public secondary schools in Faskari LGA, including reliance on untrained vigilantes, inadequate physical infrastructure, and minimal collaboration with law enforcement. These deficiencies adversely affect student safety and academic performance. Implementing comprehensive strategies, such as strengthening law enforcement partnerships, improving infrastructure, providing crisis management training, conducting regular drills, and involving the community, is essential to enhance security and ensure a safe learning environment.

Recommendations

Based on the findings from the research questions, the following recommendations are made to improve security and enhance student safety in public secondary schools in Faskari LGA:

1. Public secondary schools should prioritize completing perimeter fencing and installing surveillance cameras to deter unauthorized access and monitor school premises effectively.

2. Schools should establish formal partnerships with law enforcement agencies, including developing rapid response protocols and emergency communication channels.

3. Regular training programmes should be conducted for teachers, security personnel, and students on crisis management, emergency response, and evacuation procedures.

4. Schools should involve parents, local leaders, and community-based security groups in security initiatives. Establishing school-community security committees can help address vulnerabilities and provide local intelligence on potential threats.

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Influence of Parental Domestic Violence on Social Adjustment and Academic Performance among Secondary School Students in Asaba Urban, Delta State

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Abstract

The study examined the Influence of Parental Domestic Violence and Social Adjustment on Academic Performance among Secondary School Students in Asaba Urban. The study adopted descriptive survey design. Three objectives and three research questions were raised. The population of this study involved all the entire SS II students both male and female in the nine (9) public senior secondary schools within the Asaba Urban, Simple random sampling techniques were used to select 30 SS II students across the 6 selected public senior secondary schools making one hundred and eighty-(180) sample size. Self-Developed Questionnaires were used to collect the data these included Parental Domestic Violence Scale (PDVS) and Social Adjustment Scale (SAS), Preformat was used to collect the SS II Mock result of English Language. Two experts validated the scales for both face and content validity. The reliability of the instruments was determined through the split-half method, subjected to Cronbach alpha level coefficient of 0.88 and 0.78 obtained respectively. Frequency Count and Percentage were used to analyse the demographic data and the research question three, while Pearson Product Moment Correlation coefficient (PPMC) were used to answers research questions 1 and 2. The findings of this study revealed that the level of parental domestic violence was high. The level of Social Adjustment and Academic Performance were both low. The following recommendations were made; School Counsellor, psychologist, and administrators should intensity efforts at initiating programme that could increase social adjustment of students who exposed to parental domestic violence. Parents and guardian should desist from having domestic violence and make sure that every marital challenging issue is resolved amicably.

Keywords: Domestic Violence, Social Adjustment, Academic Performance

Introduction

The home undeniably plays a critical role in shaping a child's academic journey. It is the primary environment where habits, routines, and access to resources are established. Family dynamics, parental involvement, and the overall learning atmosphere at home all contribute significantly to a student's

success. However, the factors influencing academic performance extend beyond the home. The family as a major unit of socialization is very vital for the development of children. Today, violence and conflicts in the family have threatened family relationships. Many odd things have taken place in the family system. It is not strange to see members of the same household such as father and mother, children and parents, brothers and sisters who are not in talking terms. The family is the smallest unit to which human beings belong and acquire the social norms of the society. Through the process of socialization, problems may arise from the family such as disagreement between parents leading to divorce, infertility problem, infidelity, fighting and quarrel among others. This may have some social and psychological effects on the offspring John, and Daniel (2019).

Violence consists of actions, words, attitudes and sociocultural damages that prevent people from achieving their full human potentials as a family. The act could be deliberate or non-deliberate. Violence in the family is a deliberate pattern of abusive and accusative tactics used by one member(s) of the family in an ultimate relationship to obtain or maintain power and absolute control or independence within the family. According to John, and Daniel, (2019), violence in the family covers a broad range of controlling behavior, which typically involve fear, harm, intimidation and emotional deprivation, which might affect children's academic performance in schools. Violence in the family could be physical, psychological, sexual, violence based on gender and socioeconomic status of parents. Parental Domestic violence can be broadly defined as a pattern of abusive behaviour by one or both partners in an intimate relationship, such as marriage, cohabitation, dating or within the family. It is a complex phenomenon that related to patterns of behaviour, which shared by a multitude of forces within families. There are many possible ways to define domestic violence, depending on the individual perspective. Domestic violence can take many forms, including physical aggression, or assault such as hitting, kicking, pushing, biting, torture, shoving, slapping, battery, throwing objects or threats, sexual abuse, controlling or domineering, intimidation, stalking, passive covert abuse (neglect), and economic deprivation Michele, (2018). The home environment where a child grows up has a powerful influence on the child's moral and mental development. It viewed as consequential for child developmental outcomes, such as cognitive ability, school readiness, academic achievement, and emotional adjustment. Whereby the academic performance of any child cannot separated from the home environment in which the child grows up

Michele, (2018). There are pieces of evidence from all parts of the world that some homes are witnessing severe domestic violence, which found to influencing seriously the children from such homes. Domestic violence is a devastating social problem that affects every segment of the population. Studies estimate that IO to 20 percent of children are at risk for exposure to domestic violence. Children's exposure to inter-familial violence has been linked to depression and more ·negative self-concept. Studies have shown that both witnessing and/or being a victim of community violence may put children at risk for increased anxiety and depressive symptoms. Research also indicates children exposed to domestic violence are at an increased risk of being abused or neglected, and that a majority of studies reveal there are adult and child victims in 30 to 60 percent of families who experience domestic violence. Children are living in most homes where there is Domestic violence. Children witnessing violence in the home suffer serious cognitive, behavioral, emotional and developmental impairments, which significantly alter their lives. In addition, school-aged children who have witnessed domestic violence are prone to poor academic performance, constant fighting with peers, and rebellion against adult authority Violence exposure can be interpreted by the child to mean not only that the world is unsafe but also that the child is unworthy of being kept safe. Whether related to violence in the home or in the community, these attitudes can undermine children's school adjustment and academic achievement by contributing to negative self-perceptions and problems with depression and anxiety Childhood exposure to violence is associated with a variety of aggressive and otherwise mal-adaptive behaviors that can disrupt children's school adaptation and academic competence.

Academic performance is an active demonstration that assesses students learning progress. Academic performance has defined and explained by several authors, according to Narad and Abdullah (2016), academic performance is the knowledge gained which assessed by marks, by a teacher and/or educational goals set by students and teachers to be achieved over a specific period. Exposure to marital conflict might influence students directly or indirectly through its effect on their academics. It would appear, then, that broken homes may present a very serious danger to the emotional, personality, and mental adjustment of the young adolescent. Marital conflict is associated with heated quarrels, violence, and separation and in extreme cases divorce. The effect of marital conflict on children has fast become a central point for both discussions and research among Social Scientists. According to Banjo (2010), the home influences the child at the most impressionable time of his

life, at a time when his mind is most receptive it provides the first impression on it. It is in the home that a child learns his earliest lessons in obedience, politeness, and consideration for others. If the home and the schoolwork in the same direction towards the best development of the child, the result will be excellent, b u t if the school pulls in one direction while the home in another, the child is true development is bound to be handicapped. It is t h e n true that, a conflict-riddled family or broken home cannot be conductive for the smooth learning of the child, because the home will only succeed in pulling down what the child has learn in school because of lack of reinforcement from the home.

As Narad and Abdullah (2016), noted, if the child from broken home fails to make necessary adjustment at school, he becomes maladjusted and this might make him resort to change the situation violently and as a student he would see both teachers and seniors as threat to his existence in the school and would attack them. The child may turn his mind to other things, to forget his failure to adjust to the situation as a student and develop hatred for participation in any school activity. The child may decide to avoid the unfavourable situation by refusing to go to school or become a truant. Children that grow up in a broken home are unlikely to develop their academic potentials to the fullest while children brought up in a stabilized and organized home are more likely to develop to a full fledged human being, being able to discover their academic and other attributes leading to success in life endeavor. According to Odolo (2013), a child from broken home may lead to feelings of insecurity that continues throughout his childhood to adolescence. However, many factors and reasons have given as being responsible for the continuous low social adjustment of students in the present educational system. These include the quality of teachers, non- commitment of the students to their studies. Family structure, parenting styles, school environment and motivation factors. No study seems to have been carried out on the Parental domestic violent and secondary school students' social adjustment in Asaba Urban, Delta State Based on the above increasing evidence that parental involvement. It is beneficial for children's success in school, this study, therefore, seeks to find out the Influence of Parental Domestic Violence on Social Adjustment and academic performance among Secondary School Students in Asaba Urban, Delta State.

Statement of the Problem

In the secondary school system, some students appear socially adjusted while others are not. Reports as discovered by the researcher through physical visits and interviews with some school discipline masters indicate serious maladjusted behaviour of students. Among the behaviour commonly discovered and reported are fighting, destruction of school property, classroom disturbance, stealing, and examination malpractice. This may lead to absenteeism, truancy, and low academic achievement. The displays of this social mal-adaptive behaviour have become an issue of great concern to well-meaning citizens including researchers. Schools established to impart knowledge and skills to those who go through them and behind all this is the idea of enhancing good academic performances. Despite all programs and initiatives like Parent Teacher Association (PTA), educational programs like debate, quiz and counselling strategies made or devised in schools to improve students' academic performance, poor academic performance recorded yearly. It becomes necessary and imperative to examine the possible causes of poor social adjustment among secondary school students. Social adjustment has attributed to various factors such as the student's attitude to academic-related activities in the school, approach to learning and academic self-concept, punctuality, and relationship with peers. Apart from the mentioned factors, domestic violence which means the pattern of abusive behaviour in any relationship that is used by one partner to gain or maintain control over another intimate partner, according to Teseletso, (2015)., has been considered to have a negative influence on the social adjustment of children that are exposed to it. Children who grew up in a toxic environment tend to perform below average academically due to psychological and mental-attributed stress they undergo in the home due to the violence experienced. It is as result of the foregoing, this study seeks to investigate the Influence of Parental Domestic Violence on Social Adjustment and Academic Performance among Secondary School Students in Asaba Urban, Delta State

Objectives of the Study

Specifically, to determined

1. The level of parental domestic violence in Asaba Urban, Delta State
2. The level of Social Adjustment among Secondary School Students in Asaba Urban, Delta State.

3. The level of Academic Performance among Secondary School Students in Asaba Urban, Delta State.

Research Questions

The following research questions was raised to guide the conduct of this study:

1. What is the level of parental domestic violence in Asaba Urban, Delta State?

2. What is the level of Social Adjustment among Secondary School Students in Asaba Urban, Delta State?

3. What is the level of Academic Performance among Secondary School Students in Asaba Urban, Delta State?

Methodology

This study adopted descriptive survey of correlational research design. This design of study seeks to establish what relationship exists between two or more variables. Usually such studies indicate the direction and magnitude of the relationship between the variables. The population of this study involved all the entire 3, 213 SS II students both male and female in the nine (9) public senior secondary schools within the Asaba Urban, Delta State. Simple random sampling technique was used to select 30 SS II students both male and female across the 6 selected public senior secondary schools within the Asaba Urban Delta State, making one hundred and eighty (180) sample size for this study. Self-Developed questionnaires were used to collect the data these included Parental Domestic Violence Scale (PDVS) and Social Adjustment Scale (SAS) on Academic Performance Proforma was used to collect the SS II Mock result of English Language. The instruments contained demographic data of the respondents. The SS II in public senior secondary schools answered the questionnaires. The questionnaires were Four Points Linkert Scale ranging from Strongly Agree (4), Agree (3), Disagree (2) and Strongly Agree (1), with 10 items on each scale.

To ensure the validity of the instrument the questionnaires were validated for both face and content by the two experts in the Department of Educational psychology and Counselling, Federal college of Education Technical Asaba. The items were in terms of clarity, relevance and appropriateness in addressing answers to the Research Questions raised in the study; also make

concrete suggestions for improving the instrument towards meeting the objectives of the study. To establish the reliability of the instrument Cronbach alpha level coefficient were used to test the instrument. The result of Cronbach alpha reliability co-efficient of Parental Domestic Violence Scale was 0.80 and Social Adjustment Scales (SAS) was 0.77 respectively. This was a confirmation of test of reliability, which according to Jayachandran, P. (2017). An instrument considered reliable if its reliability coefficient is not below 0.60 index Therefore; it confirmed that the instruments used for this study were highly reliable. To analyze the data collected, Frequency Count and Percentage were used to analyze the demographic information of the respondents and the research question 3. While Mean was used to answer the 1 and 2.

Results

The data collected analyzed using both descriptive and inferential statistics. For the demographic data; percentages and frequency count were employed, the research questions were answered using mean, rank order.

Demographic Data Analyses of the Respondents Based on Gender

Table 1: Percentage Distribution of Respondents Based on Gender

Gender	Frequency	Percentage
Male	87	48
Female	93	52
Total	180	100

Table 1 presents the percentage distribution of respondents based on gender. The table shows that 87 (48%) of the respondents were SS II male students and 93 (52%) of the respondents were SS II female students.

Answering of Research Question

Research Question 1: What is the level of parental domestic violence in Asaba Urban, Delta State?

Table 2: Mean Score on the Respondents' on the level of parental domestic violence in Asaba Urban, Delta State

S/N	parental domestic violence	Mean	
1	My parents usually thrown object during an argument	2.70	High
2	my parents do threaten to kill each other during misunderstanding	2.64	High
3	my parents get really mad at each other when arguing	2.52	High
4	My parents do consider separation as a solution to their marriage	2.50	High
5	my parents usually say hurtful things to each other	2.60	High
6	my parents often harass and complain about each other to the third party	2.58	High
7	my parents do arguing in so many issues	2.56	High
8	My parents doesn't considered their children during argument	2,51	High
9	my parents do shout at each other	2.54	High
10	my parents used to pushed each other during an argument	2.68	High
	Grand Mean	2.60	

N.B: Mean =0.00-1.49 (Low), 1.50.2 -49 (Moderate) and 2.50 and above (High)

Table 2 revealed that all the 10 items responses of the respondents were 2.50 and above mean score, that is (high level) Thus, the grand mean score was 2.60. This implies that the level of parental domestic violence in Asaba Urban, Delta State was high.

Research Question 2: What is the level Social Adjustment among Secondary School Students in Asaba Urban, Delta State?

Table 3: Mean Score on the Respondents' on the level of Social Adjustment among Secondary School Students in Asaba Metropolis, Delta State

S/N	extent of social adjustment	Mean	Decision
1	I seek friendship among my peers in the school	1.54	Low
2	I do make relation with opposite gender	1.42	Low
3	I feel emotional stable with others students	1.52	Low
4	I depend on myself to solve my problems in the school	1.47	Low
5	I am convinced with my ability	1.48	Low
6	I try to achieve my goals through high performance in the school	1.49	Low
7	I do avoid fighting with other students	1.40	Low
8	I enjoy academic discussion with other students	1.44	Low
9	I am convinced with practicing sport, culture and entertainment with other students in the school	1.50	Low
10	I do not feel different from my colleagues in some good ideas and thoughts	1.45	Low
	Grand Mean	1.47	

N.B: Mean =0.00-1.49 (Low), 1.50.2 -49 (Moderate) and 2.50 and above (High)

Table 3 revealed that all the 10 items responses of the respondents were below 2.50 mean scores that is (low level) Thus, the grand mean score was 1.47. This implies that the level of Social Adjustment among Secondary School Students in Asaba Urban, Delta State was low.

Research Question 3: What is the level of Academic Performance among Secondary School Students in Asaba Urban, Delta State?

Table 4: Frequency and Percentage of the Respondents on the Academic Performance among Secondary School Students in Asaba Urban, Delta State.

Level of Academic Performance	Frequency	Percentage	Score
High	19	11	65-above
Moderate	34	19	50-64
Low	124	70	1-49
Total	180	100	

N.B: Level Academic Performance =1-49 (Low), 50 -64 (Moderate) and 65 and above (High)

Table 4 revealed that out 0f 180 students that participated mock examination 0f third term SS II 19 (11%) students scored 65 and above marks, 34 (19%) students scored 50 -59 marks and 124 (70%) students scored 1-49 marks. Thus, this implies that the level of Academic Performance among Secondary School Students in Asaba Urban, Delta State was low.

Discussion of Findings

The study investigated Influence of Parental Domestic Violence on Social Adjustment and Academic Performance among Secondary School Students in Asaba Urban, Delta State. In view of this, the Discussion of the Findings, Conclusion and Recommendations were discussed.

Research question one revealed that the level of parental domestic violence in Asaba Urban, Delta State was high. The finding of study agrees with

Almajali and Aisrehan (2019), who found that there is increase in the level of parental domestic violence among married adults and many students who are victims or witness's domestic violence are always unmannerly, who talk without sense. It further recommended for urgent attention to address the ugly situation.

Research question two revealed that the level of Social Adjustment among Secondary School Students in Asaba Urban, s, Delta State was low. The

finding of this study corroborate with Aihie, O. S. (2019), who found that the influence of parental conflicts on the level of student social adjustment in secondary schools in Nigeria, it further found that the level student social adjustment in secondary schools in Nigeria was relatively poor.

Research question three revealed that the level of Academic Performance among Secondary School Students in Asaba Urban, Delta State was low. The finding of this study corroborates with Narad and Abdullah (2016), who found that the level of academic performance students in high school was relatively low and poor as a result of several factors including parental violence, poor student's attitude, school's management related problems etc.

Conclusion

Based on the finding of this study results, the following conclusions were reached; that the level of parental domestic violence in Asaba Urban, Delta State was high, the level of Social Adjustment and Academic Performance among Secondary School Students were both low. In addition, the study concluded that there was significant relationship between Parental Domestic Violence and Social Adjustment among Secondary School Students. That parental domestic violence hinders Social Adjustment among Secondary School Students. This means that Parental Domestic Violence contribute to low level of Academic Performance among Secondary School Students in Asaba Urban, Delta State.

Recommendations

Based on the finding of this study, the following recommendations among others were made;

1. School counsellors and administrators should intensity efforts at Initiating programmed that could foster or increase social adjustment among secondary school students who exposed to parental domestic violence. This could be in form of peace club, anger management and other social activities that can help in eliminating poor social adjustment among them

2. School counsellors and administrators should intensity efforts in the area of providing secondary school students who exposed to parental

domestic violence with ideas that help them improve their academic performance.

3. School counsellors should introduce skills and strategies that could limit the issue of depression among secondary school students who affected by parental domestic violence. Strategies as story telling or sharing of personal experience should intensified as they could help bring back the students' sense of hope, fulfillment, satisfaction, security and general wellbeing.

4. Parents and guardian should desist from having domestic violence and make sure that every marital challenging issue is resolved amicably. This is because their children will not become the victim of such unwanted behavior of the parents that involved in domestic violence.

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Impact of Meta Artificial Intelligence on Chemical Literacy of Undergraduate Chemistry Students in Sokoto State University Sokoto

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Abstract

This study investigated the Impact of Meta Artificial Intelligence on Chemical Literacy of Undergraduate Chemistry Students in Sokoto State University. The study was guided by three research objectives, three research questions and three null hypotheses on chemical literacy of students. The study used quasi experimental design with pretest and posttest control and experimental group structure and have a population of 169 undergraduate chemistry students out of which 118 were purposively sampled. Data was collected using validated instrument (chemical literacy test CLT) with reliability coefficient of 0.77. The collected data was analyzed using both descriptive including mean, mean difference and standard deviation, and inferential statistics including paired sample t test and independent sample t test. The findings of the research showed that Meta AI has positive impact on students' chemical literacy with comparable outcomes across gender. These findings emphasized the need for integrating Meta Artificial Intelligence technology into chemistry education to improve student chemical literacy.

Keywords: Science Literacy, Chemical Literacy, Meta Artificial Intelligence

Introduction

Scientific literacy is an important skill needed for success in science which formed the bedrock for the development of any nation, and success in science is characterized by having scientific literacy. Students who are exposed to the fundamental of science at the elementary and basic education level are said to be scientifically literates (Yustin & Wiyarsi, 2019). Scientific literacy is essential for students to become well informed on how to perceive science related issues to make decisions in a variety of subject that affect their daily lives (Dierking, 2015). Students who are familiar with scientific ideas, theories and general method associated with scientific research are called science literates (Dibner, & Snow, 2016). The curriculum that inculcates science literacy into the students at the elementary and basic level is the cluster basic

science and technology curriculum, which is prerequisite for the study of the core science subjects (chemistry, physics, and biology) and applied science (Microbiology, Biochemistry, Health Science) etc at tertiary education level (Posselt, 2016). According to Sharon and Baram-Tsabari (2020) people who are literate in science, and can apply concepts of science to their daily lives are considered scientifically literate. Rahayu, Masykuri, and Soeparmi (2018) A person with the science literacy has the ability to understand science and relationship of science with the society and the environment. Turiman (2015) affirmed that students with scientific literacy can comprehend the basic law, and principles in chemistry and can applied the skills in scientific processes.

Chemistry as a course of study is perceived generally to be very interesting, vast mathematical and experimental (Feinberg, 2019). Almost all aspect of life science, both living and non living has something to do with chemistry ranging from physical to biological sciences. It is one of the pre requisite subjects for the study of engineering, technological, medical and other applied science courses in the university. It is at the heart of almost every facet of modern life (Pross, 2016). Chemistry provides training for a vast range of careers faces the world with confidence and knows where to obtain the information they need to complete a task. In view of this (Ababio, 2013) enumerated some careers in chemistry such as teaching service, health service, food processing, manufacturing industry, extractive industry, agriculture and forestry.

Chemistry is a challenging and rewarding subject. It teaches how to think critically, pose questions, and solve problems. Literature indicates that the subject provides graduates with solutions for numerous issues related to chemical studies, (Jegstad, & Sinnes, 2015). Chemical literacy is one of the skills needed in the 21st century among the 16 skills identified by the World Economic Forum (2015). Students that are chemically literate become more creative, critical, and are able to use their knowledge to tackle a variety of challenges on a daily life. As a result, it serves as a precursor to the development of 21st century abilities. The ability to handle complicated and quick changes in day to day problems thus requires a comprehension of chemistry concepts, principles, and theories (Cooper & Stowe, (2018). Therefore, if students are capable of comprehending the framework and applying their knowledge of chemistry to solve issues, they are chemically literate. Chemical literacy is the main goal of chemistry education and requires

students to critically analyze and evaluate their prior knowledge and decision making in daily life issues (Cigdemoglu, 2015)

Chemical literacy is a basic ability to obtain the basic concepts of chemistry macroscopically, microscopically, and symbolically as well as the process for understanding and describing phenomena scientifically (Fahmina, 2019). Students with chemical literacy will learn chemistry more effectively and accurately in the process of teaching and learning chemistry (Avargil, 2019). Learning objectives are achieved if students have the ability or capacity to be chemical literate. By implication, someone is said to be a chemical literate when he/she understand clearly the basic concepts of chemistry, chemical principles that enable macroscopic understanding of the interpretation of symbols and reactions, chemical theories that explain the fundamental principles of our natural world and the applications of chemistry knowledge in our everyday life activities and to other branches of science and technology (Akrosumah, 2016). Chemical literacy is categorized into four domains, the measurement of chemical literacy uses a scale of scientific literacy which is comprised of nominal literacy, functional literacy, conceptual literacy, and multi dimensional literacy (Hofstein, 2016). Inspite, the benefits and relevance of scientific literacy in learning chemistry, literature bound that students continue to demonstrate poor performance at secondary school and attribute the problem to teaching approach, (Moran, 2016). Kalani (2023), affirmed that Students see chemistry as challenging, abstract, uninteresting, poor equipped laboratories, and teacher factors.

Transitioning dynamics from secondary schools to the university have implications for effective learning of chemistry (Nkiko, 2021). Emendu and Okoye (2015) aptly demonstrated that basic concepts were poorly learned prior to most students' admission into the university. Other issues associated with this problem, is the students' nature of learning, where they learn chemistry based on memorization as they cannot have the conceptual understanding and need literacy in chemistry (Yildizay & Leman, 2017). To address this problem a technological interventions is required that can enhance students' conceptual understanding of chemical concepts. However, technology are seen as major tool that will help to address the challenges of students towards the developments of literacy in chemistry. Literature bound that, use of emerging technology that include artificial intelligence (AI), virtual reality (VR), and argumented reality (AR), (Jesionkowska, 2020). One of the important emerging technologies that may help towards developing

chemical literacy and help to evaluate some difficulties in learning chemistry is Meta AI

Meta artificial intelligence (AI) refers to a cutting edge artificial intelligence model designed to analyze and generate human like text responses, leveraging meta learning techniques for improved performance across various natural language processing tasks (Liu, 2022). This advanced AI model represents a significant advancement in the field of machine learning, particularly in understanding difficult chemical concepts (Brown, 2020). In the context of enhancing chemical literacy among undergraduate students, Meta AI offers a new methods to developing educational tools and interventions. By utilizing its ability to produce customized educational resources and flexible feedback systems, educators can shape instructional content to individual student needs, thereby potentially improving comprehension and retention of chemical concepts (Yilmaz, 2021). In view of this the present study used Meta AI with hope to enhance stuedents chemical literacy of undergraduate chemistry students.

Significant of the Study

This study on impact of Meta AI on Chemical Literacy of Undergraduate Chemistry Students will have significant implications for various stakeholders, including students, teachers, higher institutions of learning, and policy makers. The findings of this research will be instrumental in shaping educational practices and policies in the field of chemistry education.

The findings of this study will help undergraduate chemistry students to visualize abstract chemistry concepts through interactive simulations and immediate feedback, making it easier for them to understand complex topics and eventually lead to the improvement in their chemical literacy, enabling them to apply chemistry knowledge in real world situations and solve societal problems. It will also benefit teachers in making their teaching more effective and engaging with the introduction of AI enhanced teaching tools.

Furthermore, this study contribute to the improvement of teaching and learning practices within higher institutions of learning. By integrating Meta AI into the chemistry curriculum, institutions can create a more student centered learning environment where technology is used to enhance students chemical literacy. This will not only improve student outcomes but also position these institutions at the forefront of educational innovation. And lastly

the study will have a significant impact on educational policymakers, as it provide evidence based recommendations on how to integrate AI technologies into national and institutional educational frameworks. Policymakers will gain valuable insights into the potential of Meta AI to enhance chemical literacy and improve student engagement in STEM fields. By adopting AI enhanced teaching methods and resources, policymakers can reform existing science curricula to make chemistry more accessible and relevant to modern learners.

Scope and Delimitation

The study was carried out in Sokoto State Nigeria. The study covered 100level undergraduate chemistry students in Sokoto state university, these include chemistry, industrial chemistry, and education chemistry.

However, the study is confined to Sokoto State University, excluding students from other institutions, this is because of the need to maintain a manageable scope within the available timeframe and resources. And also it served as a basic investigation, upon which future research may build on. It specifically focused on 100level chemistry students, without including students from other levels. The study specifically focused on 100level chemistry students because the level was considered to be the basic level in the university, hence the intellectual capacity of students at this level is lower than that of other levels and also building chemical literacy is most critical at this level. The study is limited to the use of Meta AI as the primary technological tool for enhancing learning, with no consideration of other AI models or technologies. Because of the easy accessibility of Meta AI as it can be found in social media platforms like Facebook, WhatsApp, and Instagram where most of the students spend their time without any academic benefit. Furthermore, the research is geographically restricted to Sokoto State, and as such, the findings may not be generalized to students in other regions or universities.

Concept of Chemical Literacy

Chemical literacy is an important skill needed in the 21st century for national development. In view of this literature indicate that, students and general public need chemical literacy toward societal development and nation at large (Avargil, 2018). However, the question is what concept of chemical literacy is? Chemical literacy refers to the understanding and application of fundamental chemical concepts, principles, and processes. It includes the ability to interpret and use chemical knowledge in various contexts, make

informed decisions based on chemical information, and appreciate the role of chemistry in everyday life and in broader societal issues (Rungrat, & Thummathong, 2018). Chemical literacy among undergraduate chemistry students encompasses their proficiency in recognizing chemical phenomena, solving chemical problems, and effectively communicating chemical ideas.

Components of Chemical Literacy

There are basically three major components of chemical literacy these includes chemical concepts, principles and processes (Mozeika & Bilbokaita, 2010)

1. **Chemical Concepts:** Knowledge of chemistry concepts forms the basic layer of chemical literacy. It encompasses an understanding of basic and advanced principles of chemistry, including the structure of atoms, chemical reactions, periodic table trends, and the properties of matter. Recent studies emphasize that a deep comprehension of these concepts is crucial for students to apply chemistry knowledge in real world contexts (Coope, 2021). Moreover, integrating interdisciplinary approaches enhances students' understanding of chemical concepts, making chemistry more applicable to everyday life (Lewis, 2023).

2. **Principles:** This component involves critical thinking, problem solving skills, and the practical use of chemical principles in laboratory settings and daily life. For instance, students must be able to predict the outcomes of chemical reactions, design experiments, and interpret data effectively. Recent advancements in educational technology, such as virtual labs and simulations, have proven effective in enhancing students' ability to apply chemical knowledge (Gagnon & Fisher, 2022). Critical thinking and problem solving are essential for navigating complex chemical phenomena and making informed decisions. This component involves analyzing data, evaluating evidence, and constructing coherent arguments based on chemical knowledge. Research highlights that promoting these skills in chemistry education leads to improved academic performance and better preparedness for scientific careers (Tsaparlis & Zoller, 2022). Teaching strategies that encourage inquiry based learning and problem based learning have shown significant positive impacts on developing students' critical thinking abilities (Overton & Potter, 2021).

3. **Processes:** The integration of technology into chemistry education has transformed the way students learn and engage with chemical processes. Technologies such as augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) have provided an interactive learning experiences that enhance understanding and retention of chemical knowledge (Cheung, 2023). These tools not only make learning more engaging but also help in visualizing complex chemical structures and reactions, thus improving students' scientific attitude and chemical literacy (Rodriguez, 2022).

Concept of Artificial Intelligence

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

Concept of Meta AI

Artificial Intelligence (AI) is a field of computer science dedicated to creating systems capable of performing tasks that typically require human intelligence. These tasks include reasoning, learning, problem solving, understanding natural language, and perception. AI aims to develop machines and software that can mimic or surpass human cognitive abilities. (Hospedales, 2021). Meta AI is a branch of artificial intelligence focused on improving the ability of AI systems to learn and adapt to new tasks quickly with minimal additional data. It emphasizes the development of models that can generalize from past experiences to efficiently handle new, unseen tasks. (Zhai, 2021; Hariri, 2023).

Integration of Meta AI in Chemistry Education

Meta AI's integration into chemistry education enhances the learning experience by providing adaptive, individualized and manage solutions that benefit both students and chemistry educators. The ongoing advancements in this field promise even more impactful innovations in the future. Personalized learning refers to shaping educational experiences to meet individual students'

needs, strengths, and preferences. Meta AI facilitates this by supporting data to adapt chemistry content and methods by providing adaptive learning platforms, customized learning paths and recommendation system which can be used to create customized learning paths by suggesting relevant learning materials, such as articles, videos, and exercises, based on students' interests and previous interactions. Meta AI help students with feedback based on their questions. It can diagnose errors, suggest improvements, and guide students through problem solving processes, enhancing the learning experience.

Social Constructivism Learning theory

Social Constructivism, grounded in the work of Lev Vygotsky (1930), emphasizes the importance of social interactions and cultural context in the learning process. According to this theory, knowledge is constructed through collaboration and dialogue with others. Vygotsky introduced the concept of the Zone of Proximal Development (ZPD), which represents the gap between what learners can achieve independently and what they can achieve with guidance. Learning is seen as a social process where peers and more knowledgeable others play a crucial role in helping learners advance their understanding. In alignment with these principles, Meta AI, with its advanced capabilities, can create collaborative and interactive learning environments. By integrating Meta AI into chemistry education, educators can shape social interactions and support learners within their ZPD, thereby enhancing their level of chemical literacy and improving their scientific attitude.

The integration of Social Constructivism and Meta AI in chemistry education offers a powerful approach to enhancing students' chemical literacy. By facilitating collaborative learning, providing guided support and connecting students with expert resources, Meta AI creates a rich, interactive learning environment. This team work between social constructivist principles and Meta AI technology not only supports students in constructing knowledge through social interaction but also cultivates a positive attitude towards scientific inquiry and learning.

Review of Empirical Studies

SiAhmed (2019), conducted research titled "enhancing chemical literacy through ai powered educational tools." This study involved 180 high school students and used a mixed methods approach. The results showed that AI

powered tools significantly enhanced students' chemical literacy by providing interactive and personalized learning experiences.

Akinola (2022), explored "the role of ai in promoting chemical literacy among university students." The study included 160 undergraduate students from two universities in Ibadan and used a quasi-experimental design. The findings revealed that AI tools improved chemical literacy by facilitating a deeper understanding of chemical concepts and processes.

Williams, (2020) examined "AI and its influence on chemical literacy in higher education." This study involved 140 undergraduate chemistry students and used a pretest/posttest control group design. The findings indicated that AI enhanced learning environments significantly improved students' chemical literacy, particularly in terms of critical thinking and problem-solving skills in chemistry.

Statement of Problem

Chemical literacy at undergraduate is essential for leaner to graps most of the course content. The literacy enable them to interact, identify and describe chemical phenomena, such as the particulate nature of matter, symbol formula and equation atomic and mass number, chemical bonding chemical equilibrium as well as chemical reactions etc. It is however regrettable that undergraduate students of lack basic chemical literacy to understand or apply in understanding other chemistry and science concepts. Thus, which may lead chemistry graduates not been able to use a basic chemical literacy to solve societal problems, provide information in science and technology that could help to bring development in Nigeria and globally.

The underlying causes of these problems, are abstract nature of chemistry, making it challenging for students to comprehend and connect to practical applications. This could have resulted from the nature of instruction utilized by chemistry teachers which is mostly traditional despite recent technologies such as Meta AI that could support better literacy in learning, students may find it difficult to examine ideas outside the classroom or develop their independent research abilities if they do not have proper access to textbooks, reference materials, technological resources, and instructional software. Integrating Meta AI into chemistry education may bridge the gap between theoretical knowledge and practical applications, making chemistry more accessible and engaging. It provides a solution to the abstract nature of

chemistry**,** and gives students the resources they need to build their chemical literacy, (Alasadi & Baiz, 2024). With the help of Meta AI, chemistry graduates will be better equipped to use their knowledge to address societal challenges, contributing to the development of science and technology both in Nigeria and globally. In view of this, the present study aimed at using Meta AI to enhance students' of chemical literacy.

Research Objectives

The aim of the study is to provide an insight into the level of chemical literacy of undergraduate chemistry students. However, the specific objectives are to:

1. Examine the difference in chemical literacy of undergraduate chemistry students' of Sokoto State University between before and after using Meta AI.

2. Investigate the difference in chemical literacy between undergraduate chemistry students of Sokoto State University learned using Meta AI and those who do not used Meta AI.

3. Examine the difference in chemical literacy between male and female undergraduate chemistry students of Sokoto State University who learned using Meta AI

Research Questions

The aim of the study is to provide an insight into the level of chemical literacy of undergraduate chemistry students. However, the following research questions will guide the study:

1. Is there any mean difference in chemical literacy of undergraduate chemistry students of Sokoto State University before and after learning using Meta AI?

2. Is there any mean difference in chemical literacy of undergraduate chemistry students of Sokoto State University who learned using Meta AI and those who learned without Meta AI?

3. Is there any mean difference in chemical literacy between male and female undergraduate chemistry students of Sokoto State University who learned using Meta AI?

Research Hypotheses

To answer the above questions the following null hypotheses were tested:

H_{01}: There is no significant difference in the chemical literacy of undergraduate chemistry students of Sokoto State University before and after learning using Meta AI.

H_{02}: There is no significant difference in the chemical literacy of undergraduate chemistry students of Sokoto State University who learned using Meta AI and those who learned without Meta AI.

H_{03}: There is no significant diffidence on the chemical literacy of male and female undergraduate chemistry students of Sokoto State University who learned using Meta AI.

Methodology

This section contained the research methodology employed to investigate the impact of Meta AI on chemical literacy. For this study quasi experimental research designed was used with pre test post test, control group and experimental group structure. The population of the study comprise of 169 100level undergraduate chemistry students in Sokoto State University in 2024/2025 academic session out of which 118 students were sampled using purposive sampling technique. The chosen sample were then divided equally in to control and experimental group where pure chemistry (59 students) served as the experimental group, industrial chemistry and education chemistry (59 students) served as the control group. The control group were taught using traditional method while the experimental group were taught with the intervention of Mata AI. Both groups were taught basic chemistry topics including particulate nature of matter, periodic table, electronic configuration of element, chemical reaction, mass volume relationship, acid base and salt, and chemical bonding in five different lessons. The instrument used was chemical literacy test (CLT) which was designed to evaluate students' understanding of fundamental chemistry concepts and their ability to apply these concepts in their day to day activities. This test include thirty (30) multiple choice questions, short answers, and problem solving tasks that reflect real world chemical scenarios. The test was validated by three experts in science education, and it was piloted before the main study. The result of

the pilot study was used to calculate the reliability of the instrument using Test retest method after which the reliability coefficient was found to be 0.77 which indicates a moderate to strong positive correlation between the test and retest scores. The data collected was analyzed using mean, standard deviation and mean difference to answer the research questions and independent sampled t test to test hypothesis.

Data Analysis

Data collected was analyzed based on the research questions.

Research Question One: What is the mean difference in chemical literacy of undergraduate chemistry students of Sokoto State University before and after learning using Meta AI?

Table 1: Difference in Chemical Literacy Before and After Intervention

Group	N	Mean	Std. Dev.	Mean Difference
Pretest	118	9.38	4.202	6.55
Post Test	118	15.93	5.038	

Table 1 present difference in chemical literacy of the respondents before and after the intervention. The results show that average mean score of the students before the intervention is 9.38 with a standard deviation of 4.202, while after the intervention the students had a higher average mean score of 15.93 with a standard deviation of 5.038. The mean difference between before and after the intervention is 6.55, indicating students performed better in chemical literacy test after the intervention of Meta AI. This suggests that Meta artificial intelligence have a positive impact on students' chemical literacy.

Moreover, to have clear picture of the responses of the respondents the result was subjected to independent sample t-test to test hypothesis one (Ho_1)

Table 2: Significant Difference in chemical literacy before and after the intervention

Group	Mean	Std. Dev.	df	t	p-values	Decision
Pretest	9.38	4.202	117	-11.238	0.000	H_1 rejected
Post Test	15.93	5.038				

The test indicated that there is a statistical significant difference before and after exposing the students to Meta AI intervention, ($t = -11.238$, $df = 117$, p-value < 0.05). An inspection of the means shows that students before the intervention have less chemical literacy (Mean = 9.38, SD = 4.202) than after

the intervention (Mean = 15.93, SD = 5.038), based on which the hypothesis was therefore, rejected.

In addition to determine how far is the significance the data was further subjected to effect size calculator, the effect was found to be (ES=1.3) which indicated there is high level of significance between students exposed to Meta Artificial Intelligence and those exposed to traditional approach.

Research Question Two: What is the difference in chemical literacy of undergraduate chemistry students of Sokoto State University who learned using Meta AI and those who learned without Meta AI?

Table 3: Difference in Chemical Literacy Between Control and Experimental Group

Group	N	Mean	Std. Dev.	Mean Difference
Experimental	59	18.09	5.19	4.31
Control	59	13.78	3.84	

Table 3 present the analysis of chemical literacy of the respondents in both control and experimental groups. The results show that the control group had an average mean score of 13.78 with a standard deviation of 3.84, while the experimental group had a higher average mean score of 18.09 with a standard deviation of 5.19. The mean difference between the two groups is 4.31, indicating that the experimental group, which was exposed to Meta artificial intelligence, demonstrated significantly chemical literacy compared to the control group that used traditional methods. This suggests that Meta artificial intelligence have a positive impact on students' chemical literacy.

Moreover to have clear picture of the responses of the respondents the result was subjected to independent sample t-test to test hypothesis three (Ho_3).

Table 4: Significant difference in chemical literacy between experimental and control group

Group	Mean	Std. Dev.	df	t	p-values	Decision
Experimental	18.09	5.19	116	-5.116	0.000	H3 rejected
Control	13.78	3.84				

The analysis of the result indicates significant difference between student's exposed to Meta Artificial Intelligence and those exposed to traditional method ($t = -5.116$, $df = 116$, $p\text{-value} < 0.05$). Therefore, null hypothesis was rejected and conclude a significant difference between experimental and control group.

Moreover, to determine how much is the significance the data was further subjected to effect size calculator, the effect was found to be (ES=0.83) which

indicated there is high level of significance between students exposed to Meta Artificial Intelligence and those exposed to traditional approach (Cohen, 1988).

Research Question Three: What is the difference in chemical literacy between male and female undergraduate chemistry students of Sokoto State University who learned using Meta AI?

Table 5: Gender Differences in Chemical Literacy

Group	N	Mean	Std. Dev.	Mean Difference
Male	95	15.66	5.056	1.38
Female	23	17.04	4.913	

Table 5 present gender differences in chemical literacy of male and female students in the study. The results show that male students (N = 95) had an average mean score of 15.66 with a standard deviation of 5.056, while female students (N = 23) had a slightly higher mean score of 17.04 with a standard deviation of 4.913. The mean difference of 1.38 suggests that female students performed slightly significant in chemical literacy than the male students. However, the difference may not be considerable and would require further statistical analysis to determine its significance.

Moreover, to examine whether there is a significant difference between male and female students' chemical literacy the responses were further subjected to independent sample t-test where hypothesis five (Ho_5) was tested

Table 6: Significant difference in chemical literacy between male and females after the intervention

Group	Mean	Std. Dev.	df	t	p-values	Decision
Male	15.66	5.056	116	-1.191	0.810	H_5
Female	17.04	4.913				Accepted

The result from Table 6 indicated that the mean score for male students was 15.66 with a standard deviation of 5.056, while the mean score for female students was slightly higher at 17.04 with a standard deviation of 4.913. The calculated t-value of -1.191 at 116 degrees of freedom (df) yielded a p-value of 0.810, which is greater than the 0.05 significance level. Since the p-value is greater than 0.05, the null hypothesis is accepted, indicating that there is no significant difference in chemical literacy between male and female 100level undergraduate chemistry students.

Discussion

Firstly, is to examine the chemical literacy of undergraduate chemistry students' of Sokoto State University before and after using Meta AI, the analysis of the pretest and post-test scores of chemical literacy of students indicates a significant improvement in the chemical literacy of the students following the Meta AI intervention. This suggests that the use of Meta AI had a positive impact on students 'chemical literacy. The difference in mean scores reveals a marked shift in learning outcomes, of the students. This finding aligns with recent studies that emphasize the role of Meta AI in improving chemical literacy. Zawacki (2019) noted that Meta AI offer personalized learning experiences, which help bridge individual gaps in understanding, particularly in science related subjects. Similarly, Holmes, (2021) found that Meta AI can enhance chemical knowledge. Moreover, the improvement observed supports the conclusions of Chen (2022), who reported that Meta AI provide immediate feedback, adapt to learners' needs, and promote a more interactive learning environment. By integrating Meta AI, students likely experienced enriched peer to peer and student content interaction, which impact their chemical literacy.

Secondly, to investigate the difference in chemical literacy between undergraduate chemistry students using Meta AI and those do not used Meta AI, the comparison of chemical literacy between the experimental and control groups reveals a significant difference, with the experimental group showing greater improvement than the control group. This indicates that students exposed to Meta AI outperformed those who experienced traditional instruction, emphasizing the added value of Meta AI. This result is consistent with the findings of Tang (2021) who reported that Meta AI enhance students' chemical literacy by guiding problem solving skills, and promoting metacognitive awareness. These features are built in Meta AI and may explain the observed improvement in the experimental group. The result also aligns with the Social Constructivist Theory, which emphasizes the importance of interaction, collaboration, and contextualized learning. META AI, by offering interactive simulations and adaptive instruction, likely promoted these essential elements, giving the experimental group a learning advantage.

Thirdly, to difference in chemical literacy between male and female undergraduate chemistry students of Sokoto State University, the analysis of gender differences in chemical literacy revealed no statistically significant difference between male and female students, as both experimental and control groups demonstrated comparable chemical literacy. This suggests that

the intervention of Meta AI, had an equal impact on both male and female students, irrespective of gender. This finding aligns with the research of Baker (2019), who observed that Meta AI is equally effective for all learners, regardless of gender. Furthermore, Miller and Katz (2021) found that the use of Meta AI in educational settings eliminates many gender based disparities. Meta AI neutrality in delivering content ensures that both male and female learners are exposed to the same learning opportunities and resources, contributing to comparable chemical literacy.

Summary of the Major Findings

1. There is significant difference in chemical literacy of undergraduate chemistry students of Sokoto state university before and after using Meta AI. Students demonstrated high chemical literacy after using Meta AI.

2. There is significant difference in chemical literacy between undergraduate chemistry students of Sokoto State University learn using Meta AI and those do not Used Meta AI. The experimental group which used Meta AI demonstrated significant improvement in chemical literacy than the control group which used traditional method.

3. There is no significant difference in chemical literacy between male and female undergraduate chemistry students of Sokoto State University who learn using Meta AI.

Conclusion

The findings highlight the potential impact of Meta Artificial Intelligence in chemical literacy among undergraduate chemistry students of Sokoto State University. Based on the findings of the research Meta AI was seen to have positive impact on students' chemical literacy. Based on gender analysis the findings also indicates that both male and female students benefited from the Meta Artificial Intelligence intervention. These results emphasized the need for integrating Meta Artificial Intelligence technology into chemistry education to improve student chemical literacy.

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Pricing Orientation as a Panacea for Effective School Fees Setting in Private Secondary Schools in North-West, Nigeria

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Abstract

In the dynamic and economically diverse landscape of North-West Nigeria, private secondary schools face considerable challenges in setting effective and sustainable school fees. This study explores pricing orientation as a strategic framework for enhancing fee-setting practices to improve enrolment, retention, profitability, and institutional sustainability. Drawing on the multidimensional construct of pricing orientation, which includes value-oriented, competition-oriented, cost-oriented, customer-oriented, and demand-oriented pricing, the research investigates how these components can be leveraged to overcome barriers such as fee resistance, dropout rates, and affordability issues among parents. The paper identifies a gap in the application of comprehensive pricing strategies within private secondary education and emphasizes the significance of aligning fee structures with perceived educational value, operational costs, competitive benchmarks, market demand, and parental purchasing power. By integrating these five pricing dimensions, the study argues that private schools can achieve a balanced approach to pricing that ensures both financial viability and equitable access. Ultimately, the research presents pricing orientation not merely as a cost-recovery mechanism, but as a panacea for effective school fee decision-making in the context of market-oriented education systems. The study recommends that Private secondary schools should integrate all five dimensions of pricing orientation, value, competition, cost, customer, and demand-oriented pricing, when setting fees.

Keywords: Pricing Orientation, School Fees, Secondary Schools, North-west

Introduction

In the increasingly competitive landscape of private education, particularly in North-West Nigeria, school proprietors face complex challenges in

determining optimal fee structures. Amid fluctuating economic conditions and diverse parental expectations, pricing decisions significantly influence enrolment, retention, profitability, and institutional sustainability (Sagir et al., 2025). Pricing orientation, which entails strategic alignment of pricing strategies with market realities, consumer perceptions, and organizational goals, is emerging as a critical capability for private schools. The study seeks to investigate the role of pricing orientation as a solution to challenges in setting effective school fees in private secondary schools in North-West Nigeria.

Private schools operate in a market-driven environment where pricing decisions can make or break institutional sustainability. In North-West Nigeria, socio-economic disparities, inflation, and regional security issues complicate fee-setting processes. While traditional pricing often relies on cost estimation or peer benchmarking, there is growing recognition that pricing orientation, which is a multifaceted, market-aligned pricing approach could be a strategic lever for optimizing fee decisions (Sagir et al., 2025; Skarmeas et al., 2016).

Many private secondary schools in North-West Nigeria grapple with pricing challenges. These include fee resistance by parents, high dropout rates due to affordability, and insufficient profitability to sustain quality services. Conventional pricing models have failed to address these issues effectively. It is thus, suggested that a strategic approach, pricing orientation, could offer a panacea. Previous studies such as Sagir et al. (2025), Amir et al., (2016) and Olaoye et al. (2018) have emphasized aspects of pricing orientation in connection with fee determination in public and private tertiary institutions of learning but often overlook its composite influence and practical application in secondary school settings. There is thus, a research gap regarding how pricing orientation affects real-world fee decisions in private secondary schools, particularly in the unique socio-economic context of North-west, Nigeria.

Concept of Pricing

Pricing is a core element in the marketing mix and a critical determinant of organizational success. It refers to the process of setting a monetary value that a customer must pay in exchange for a product or service (Agbaeze et al., 2020). In both business and educational settings, pricing functions not only as a means to cover costs and generate profits but also as a communication tool that conveys value, positioning, and competitiveness. According to Kotler and

Keller (2016), pricing is the amount of money charged for a product or service, or the sum of the values that consumers exchange for the benefits of having or using the product or service. This implies that pricing goes beyond monetary calculations and reflects consumer perception, value exchange, and strategic positioning.

From an economic standpoint, pricing serves as a mechanism for resource allocation, reflecting the forces of supply and demand. Nagle et al. (2016) emphasize that strategic pricing involves understanding how customers perceive value and are willing to trade off between price and quality, rather than simply setting prices based on cost plus margin. In education, particularly in private institutions, pricing is increasingly becoming a strategic lever. A school's fee structure communicates its value proposition, brand, and target demographic (Sagir et al., 2025). Moreover, Perearau & Ekankumo (2025) argue that firms (including service organizations like schools) must adopt pricing strategies that are dynamic and adaptable to maintain relevance.

Pricing Orientation

Pricing orientation has been defined by Sagir et al. (2025) as all pricing practices, methods, behaviors and processes leading to pricing decisions with the goal of maintaining and sustaining firm competitive advantage. Pricing orientation has also been defined as the explicit steps and procedures through which pricing decisions are established (Amir et al., 2016). It encompasses various strategies that organizations adopt to determine the prices of their products or services. Pricing orientation is fundamentally influenced by market conditions, consumer behavior, and organizational objectives (Perearau & Ekankumo, 2025). In the context of education, pricing orientation may be defined as the underlying strategies and processes guiding how private schools determine school fees. It is argued that organisations that fail to manage their prices create opportunities to be overtaken by rivals, ultimately eroding their profitability and sustainability (Hinterhuber & Liozu, 2013; Rao, 2015). Therefore, private schools must be price oriented to make a wise and justifiable school fees decision that balances affordability of parents and financial sustainability of school.

Components of Pricing Orientation

According to Kankam-Kwarteng et al. (2019), a comprehensive review of scholarly literature of pricing in both manufacturing and service sectors have

identified various pricing approaches, which, fall into five main dimensions; value-oriented, competition-oriented, cost-oriented, demand-oriented and customer-oriented pricing. Each of these dimensions reflects different underlying viewpoints regarding how fees should be set and what factors should be prioritized in the fee-setting process.

Value Oriented Pricing: involves aligning the price with the value of the products or services, as perceived by the customers (Amir et al., 2016). This approach requires a deep understanding of customer needs and preferences associated with the firms' offerings. Agbaeze et al. (2020) highlight the importance of value-informed pricing in linking pricing practices with customer needs, proposing that firms that adopt a value-oriented approach are better positioned to innovate and meet market demands effectively. This orientation not only enhances customer satisfaction but also fosters brand loyalty, as consumers are often willing to pay a premium for products they perceive as offering superior value.

Competition Oriented Pricing: This involves benchmarking against competing rivals in the market. It involves setting price within the competitive framework (Sagir et al., 2025). Competition-oriented pricing focuses on setting prices based on competitors' pricing strategies. This approach is particularly prevalent in highly competitive markets where firms must remain vigilant about their rivals' pricing to maintain market share (Agbaeze et al., 2020). However, Sagir et al. (2025) cautioned that this strategy can lead to price wars, which may erode profit margins and undermine the perceived value of the products or services offered.

Cost Oriented Pricing: This involves setting prices based on total operational costs. It is defined as the pricing approach in which price is set based on the costs of service provision, and desired profit margin (Kankam-Kwarteng et al., 2019). Cost-oriented pricing is one of the most traditional approaches, where prices are determined based on the costs of production plus a markup for profit. This method is straightforward and ensures that all costs are covered, but it may not always align with market demand or consumer willingness to pay (Sagir et al., 2025). However, Kankam-Kwarteng et al. (2019) reported Backman's observation that the graveyard of business is filled with the skeletons of companies that attempted to base their prices solely on costs.

Customer Oriented Pricing: Customer oriented pricing refers to aligning the price with financial capability and willingness of the target customers

(Agbaeze et al., 2020). This pricing approach deals with the assessment of the financial capability and willingness of diverse population of the target customers to price accordingly (Kankam-Kwarteng et al., 2019). It also relies on gaining a deep understanding of customers' purchasing behavior and ability to pay (Agbaeze et al., 2020).

Demand Oriented Pricing: Demand-oriented pricing focuses on aligning product or service prices with consumer demand levels. It is rooted in microeconomic theory, particularly the law of demand, which states that price and demand are inversely related (Mankiw, 2021). This approach emphasizes understanding how demand trends influences price decision, and adjusting prices accordingly to maximize market share.

Concept of School Fees

In the realm of private secondary education, school fees refer to the financial charges levied by private institutions on students or their guardians in exchange for access to academic services, facilities, and co-curricular support. Unlike public schools, which may be subsidized by the government, private schools are largely self-financed and rely on school fees as their primary source of revenue. The structure, rationale, and implications of school fees in private education have profound impacts on accessibility, educational quality, and institutional sustainability (Perearau & Ekankumo, 2025).

School fees in private secondary schools typically encompass a variety of charges, including tuition, registration, development levies, examination fees, uniforms, extracurricular activities, and sometimes feeding and boarding (Adebayo, 2020). These fees are often determined by the cost of running the school, the standard of facilities offered, the school's brand or prestige, and the socio-economic context of the community it serves. According to Alhassan et al. (2022), school fees in private institutions are not uniform but reflect internal strategic pricing mechanisms aimed at balancing affordability with institutional viability. This approach makes fee setting a strategic function that involves considerations of parental purchasing power, perceived value, competition, and operating costs.

School fees are essential for: covering teachers' salaries, utility bills, administrative costs, and learning materials (Perearau & Ekankumo, 2025); supporting investment in better infrastructure, digital technologies, teacher training, and learning resources, which in turn can enhance learning outcomes

(Ibrahim & Kanu, 2021); generating returns on investment while ensuring long-term sustainability due to the profit oriented nature of private schools (Adebayo, 2023); and offering advanced curricula or international affiliations to position the school in the market (Bello et al., 2015).

Problems Associated with school fees Implantation

Although charging school fees is necessary to finance operation and achieve profit objective, school fees pose several challenges:

Affordability: North-west is a region with a population of diverse socio-economic statuses, high fees limit lower-income and middle income families from accessing quality private education and increase dropout rates (Nwankwo et al., 2021).

Inconsistency in Payment: The economic instability, which increases the costs of operation and diminishes the purchasing power of many families, often results in delayed or defaulted payments, there by affecting school operations.

Perception and Justification: Private schools are struggling to justify fee increments to cope with the costs of operation, especially where quality improvements are not evident to stakeholders (Adesola & Ogundipe, 2020).

Equity: High fees can widen educational inequality by excluding marginalized populations

Pricing Orientation and School Fees Setting

Despite the necessity of school fees in private school operation and the challenges faced in school fees implementation, private schools can effectively use a well-defined pricing orientation to strategically set school fees that balance affordability, institutional sustainability and competitive advantage in the following ways:

Value Oriented Pricing

This strategy will allow setting school fees based on the perceived value of education offered to parents and students. Schools can assess what makes their offerings valuable, such as small class sizes, quality teaching, digital infrastructure, extracurricular programs, and high academic performance, and

price their fees accordingly. This approach can be implemented by conducting surveys to understand parental expectations and satisfaction, highlighting unique educational features in marketing to justify premium pricing, and using parent testimonials and alumni success stories to reinforce perceived value.

Competition Oriented Pricing

This approach will enable benchmarking school fees against those of similar private schools in the locality or region. It ensures that a school remains competitively priced in relation to rivals. This can be implemented by regularly reviewing fee structures of nearby or similar schools, especially the strong competitors, positioning fees just below premium competitors in order to attract budget-conscious families while maintaining quality, and considering bundling services to differentiate the offering at the same or slightly lower fee. However, private schools must avoid price wars, which may devalue the perceived quality of their education.

Cost Oriented Pricing

This is a traditional approach in which fees are set based on operational costs (salaries, utilities, teaching materials, maintenance) plus a margin for sustainability or profit. This can be implemented by calculating total cost per student, including fixed and variable costs, adding a fair markup to ensure financial viability, and adjusting annually based on inflation and changes in operational expenses. However, this approach must be balanced with demand and parents' ability to pay, to avoid decrease in enrollment.

Customer Oriented Pricing

This approach will help private schools to consider the financial capabilities and payment behaviors of majority of the potential customers (parents) in the target area. It aligns with the principle of inclusivity by ensuring that pricing does not alienate potential enrollees. To implement this approach, private schools need to segment the parent population by income level, create scholarship schemes for talented but financially disadvantaged students, and offer flexible payment plans (e.g., termly payments, sibling discounts, installments plans).

Demand Oriented Pricing

This strategy allows fees setting based on the demand for education in a given community. During high demand (e.g., exam years or areas with school shortages), schools may raise fees slightly; during low demand, promotional pricing may apply. Similarly, private schools can introduce premium programs (e.g., ICT, entrepreneurship clubs) and price them based on the level of parental interest. This can be implemented by analyzing local enrollment trends and waiting lists, offering discounts or promotions in new intakes to attract demand, and adjusting fees during economic downturns or post-holiday periods to maintain demand.

Conclusion and Recommendation

The study concludes that by integrating these five pricing orientation strategies, private secondary schools in regions like North-West Nigeria can set fees that are not only sustainable and competitive but also responsive to market conditions and parental needs. Pricing orientation, a multi-dimensional pricing approach, ensures financial health while supporting access, equity, and institutional growth.

The study recommends that Private secondary schools should integrate all five dimensions of pricing orientation; value, competition, cost, customer, and demand-oriented pricing, when setting fees. This comprehensive approach will ensure that fee decisions are market-sensitive, cost-justifiable, and aligned with parental expectations.

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Management of Pedagogical Approaches of Teaching Sociology of Education for a Sustainable Quality Education in Post Covid Era in Nigeria

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Abstract

Corona virus has brought about unprecedented changes in the field of education, necessitating a paradigm shift in pedagogical approaches of teaching and learning. This paper x-rays how pedagogical approaches could be effectively managed in teaching sociology of education for achieving a sustainable quality education in post covid era. It also examines the significance and potentials of adopting innovative teaching approaches to better enhance the students' understanding of the sociological aspects of education and promote sustainable educational practices. The paper also highlights the roles of pedagogical approaches in enhancing sustainable education and the role of Sociology of Education in this context. It also explores the theoretical framework for pedagogical approaches in Sociology of Education, as well as various pedagogies in teaching Sociology of Education for promoting sustainable education in the Post Covid Era. The paper wraps up with conclusion and recommended that, teachers of sociology of education should among other things, incorporate experiential learning in teaching, foster critical reflections, promote interdisciplinary approaches, engage with community partners, use technology for active learning, and assess learning outcomes through multiple measures.

Keywords: Management, Pedagogy, Sociology, Education, Sustainable, Quality, Post Covid

Introduction

Education plays a crucial role in building a sustainable future. As societies grapple with complex socioeconomic and environmental challenges, it is essential to foster an understanding of the sociological aspects of education to promote sustainable educational practices. The field of Sociology of Education offers valuable insights into the relationship between education and society, helping students comprehend the impact of education systems and institutions on social structures, inequality, and sustainability. However, the Covid19 pandemic has brought about unprecedented challenges to the field of education due to closure of schools, lockdowns, quarantines, etc. which

necessitated a paradigm shift in pedagogical approaches to ensure sustainable and effective learning. Therefore, to effectively teach Sociology of Education in the post Covid era with the aim of instilling high sense of responsibility to students towards sustainable education, it is imperative to manage and employ appropriate pedagogical strategies that engage and challenge students' thinking.

Thus, this paper aims to delineate the management strategies of the pedagogical approaches in teaching sociology of education in the post-Covid era for achieving a sustainable quality education. Based on this, the paper after conceptual clarifications, justifies the relevance of Sociology of Education in promoting understanding and sustainable quality education among students, explores the theoretical framework for pedagogies in Sociology of Education, explains the management strategies to be employed and examines various pedagogical skills that could be used in teaching Sociology of Education for promoting sustainable quality education in the Post Covid Era in Nigeria. The paper wraps up with conclusion and some recommendations.

The Conceptual Framework

Sociology of Education is a specialized field within the broader discipline of sociology that focuses on studying the role and impact of education in society (Beeby, 2019). In their own perspective, Chae and Hill, (2017) buttressed that the field of sociology of education attempts to examine the social processes, structures, and institutions that shape educational systems, practices, and outcomes, and how education influences and is influenced by social factors such as class, race, gender, and inequality. In the opinion of Bourdieu, (1997) whose book ‘Reproduction in Education, Society, and Culture’ has greatly contributed to understanding the relationship between education and social inequality, argues that education serves as a mechanism for the reproduction of social hierarchies and the perpetuation of social inequalities. Moreover, Emile Durkheim, (1922) has emphasized the role of education in enhancing social solidarity and the transmission of moral values. Based on this, his book titled ‘Education and Sociology’ explores the role of education in maintaining social order and social cohesion. Nevertheless, scholars like Jackson, (1968) and Gatto, (1992) argued that education not only transmits explicit knowledge but also instils hidden values, norms, and ideologies that can perpetuate societal norms and inequalities.

The concept of sustainable quality education has received various interpretations from different scholars. According to Hassan (2016), sustainable quality education is a term that has gained significant prominence in recent years and refers to a holistic approach to education that addresses the interconnections between environmental, social, and economic systems. It aims to equip individuals with the knowledge, skills, and values necessary to build a sustainable future by promoting a deeper understanding of sustainability issues and fostering sustainable practices in various aspects of life. The United Nations General Assembly (2015) has defined sustainable quality education as an educational system that fosters social, economic, and environmental sustainability for present and future generations. It emphasizes the integration of social equity, economic development, and environmental stewardship in education practices and policies. According to UNESCO, sustainable quality education is a transformative learning process that promotes societal transformation towards sustainability, empowering individuals and communities to reflect on their own values, attitudes, skills, and behaviours, and to make informed decisions and take actions towards a more sustainable and equitable world (UNESCO, 2014). The Sustainable Development Goals (SDGs) outlined by the United Nations provide another perspective on sustainable quality education. Goal 4, which focuses on quality education, emphasizes the importance of education that is inclusive, equitable, and promotes sustainable development. SDG 4.7 specifically calls for education that fosters sustainability and global citizenship.

Pedagogy has been described as a method of teaching in which teachers teach students both in theory and practice (Tilbury et al., 2015). Hassan (2016) has also defined pedagogy as the way of teaching students, whether it is the theory or practice of educating. According to him, pedagogy primarily aims at building on previous learning of students and work on development of skills and attitudes of learners. Johnson and Johnson (2009), opined that pedagogy is shaped by teacher's teaching beliefs, culture and learning styles. In essence, pedagogy is a relationship between the teaching culture and techniques of learning.

Post Covid era simply refers to the time after the COVID-19 pandemic has subsided and societies are transitioning back to a more normal state (Nwadiani, 2023). According to this perspective, the period is characterized by the recovery of economies, societies, and health care systems from the impact of the pandemic. The period involves adjustments to new ways of life,

working, and interactions that were shaped by the pandemic experience. During this era, the focus might shift towards lessons learned from the pandemic, including improvements in healthcare infrastructure, educational systems, disaster preparedness, remote work practices and digitalization.

Impact of Sociology of Education on Sustainable Quality Education

The field of Sociology of Education plays a crucial role in promoting understanding and sustainable education. Sociology of Education provides valuable insights and perspectives in advancing sustainable education by examining the social dynamics and structures within educational systems. Here are some key reasons why the Sociology of Education is important in the context of sustainable education as identified by Chae and Hill (2017), Hassan (2016), as well as Shumovich and Ifinedo, (2017):

1. Promotes Social Equity. Sociology of Education helps analyse educational policies, practices, and curriculum to address social inequalities and ensure equal access to quality education for all individuals. It examines the social factors that contribute to educational disparities, such as socioeconomic status, race, gender, and ethnicity, and proposes solutions to mitigate these inequalities. This has been perceived from the work of sociologist, Pierre Bourdieu, which explored the concept of cultural capital to imply the knowledge, skills, and education acquired through socialization processes. Thus, understanding cultural capital allows teachers to create inclusive educational environments that value diverse forms of knowledge and promote equal opportunities for all students.

2. Enhances Critical Thinking. Sociology of Education emphasizes critical thinking and encourages teachers to challenge existing power structures and dominant ideologies within educational systems. Critical thinking as popularized by Brazilian educator Paulo Freire, enables learners to critically analyse social and environmental issues, fostering a sense of agency and empowering them to transform society through sustainable practices.

3. Promotes Environmental Stewardship. Sociology of Education highlights the importance of integrating environmental education within the curriculum to foster awareness and responsibility towards the environment. It examines how educational institutions can promote

environmental values, sustainable practices, and ecological literacy among students and the broader community. On this ground, a study conducted by a sociologist, John Urry, explored the impact of education on climate change mitigation and sustainability practices. The author positioned that by understanding the social dimensions of environmental challenges, teachers can design curriculum and engage students in environmental stewardship activities, such as recycling initiatives and sustainable energy practices.

4. Provides valuable insights into the social, cultural, and structural factors that influence educational systems, practices, and outcomes. This is because, by examining the dynamics between education and society, sociologists can contribute to the development of sustainable education policies and practices that address societal needs and promote long-term social and environmental well-being.

5. Promotes Social Justice. By examining educational inequalities and their root causes, sociologists can inform policymakers and educators about the importance of providing equitable opportunities for all learners. This perspective is essential for sustainable education, as it ensures that educational resources and opportunities are distributed fairly, and that no group is left behind in the pursuit of sustainable development.

6. Enables understanding of the complex interactions between educational institutions and broader social systems. In this case, Sociology of Education explores the ways in which social factors such as class, race, ethnicity, and gender shape educational access, experiences, and outcomes. This knowledge is vital for developing inclusive and sustainable educational systems that embrace diversity and promote social cohesion.

7. Promotes Civic Engagements. Sociology of Education sheds light on the role of education in creating active and engaged citizens. It can provide insights into how education can foster social responsibility and civic consciousness among learners. By promoting civic engagement, sustainable education can contribute to building resilient and conscious communities.

In a nutshell, Sociology of Education contributes significantly to sustainable education by advocating for social equity, promoting critical pedagogy, and fostering environmental stewardship. It offers valuable insights and strategies for developing educational systems that prioritize sustainability and empower individuals to address social, economic, and environmental challenges.

Theories Underpinning the Pedagogies of Sociology of Education

When it comes to pedagogies of teaching Sociology of Education, there are several theories that have shaped and influenced it. These theories provide frameworks and perspectives for understanding the dynamics of educational systems, structures, and processes. The following theories are sacrosanct for consideration:

1. Social Reproduction Theory: Social reproduction theory, proposed by Pierre Bourdieu and Jean-Claude Passeron (1970), examines how educational systems can perpetuate existing social inequalities and reproduce social structures. It explores how social class, cultural capital, and economic factors influence educational opportunities and outcomes. The theory suggests that educational institutions can perpetuate social divisions by favouring certain cultural values, knowledge, and skills, leading to unequal educational outcomes.

2. Cultural Capital Theory. Cultural capital theory, also developed by Pierre Bourdieu (1986), extends the notion of social reproduction theory by focusing on the cultural resources that individuals acquire through their socialization processes. It argues that individuals from privileged backgrounds often possess cultural capital, such as knowledge, language proficiency, and social skills, which gives them an advantage in educational settings. This theory also emphasizes the importance of recognizing and valuing diverse forms of cultural capital to create inclusive learning environments.

3. Critical Social Theory. This theory aims to empower students to think critically about social issues, inequalities, and power structures. It emphasizes the development of social consciousness, praxis, and transformative action. In the context of sociology of education, critical pedagogy encourages students to critically think, reflect, examine the relationship between education and society, explore ways in which

education can reproduce or challenge existing inequalities, and promote social justice (Freire, 1970).

4. Constructivism Theory. Constructivism theory emphasizes the active role of learners in constructing their knowledge and understanding of the world around them. According to this theory, learning occurs when students actively engage in activities that allow them to form connections between their existing knowledge and new information. In the context of sociology of education, constructivist pedagogy encourages students to critically analyze social structures, institutions, and interactions to develop a deeper understanding of sociological concepts (Vygotsky, 1978).

5. Social Learning Theory. Social learning theory posits that learning occurs through observation, modelling, and imitation of others. In the context of sociology of education, this theory suggests that students should be made to acquire knowledge and skills by observing and interacting with their peers and teachers. Collaborative learning activities, group discussions, and roleplaying exercises are some of the pedagogical strategies that can be employed to enhance social learning within the field of sociology of education (Bandura, 1977).

These theories provide valuable frameworks for understanding the complexities of teaching Sociology of Education. By incorporating these theories into pedagogical practices, educators can promote more inclusive, equitable, and transformative educational experiences.

Pedagogical Approaches of Teaching Sociology of Education in Nigeria

Research has identified various pedagogical strategies that can be used in sociology of education to enhance sustainable quality education in Nigeria. Active learning approaches, such as problem-based learning, collaborative projects, and experiential learning, have been found to promote critical thinking, engagement, and retention of knowledge (Shumovich & Ifinedo, 2017). These pedagogies not only enhance students' understanding of the subject matter, but also equip them with the necessary knowledge to promote sustainable practices. These are:

1. Project-based learning (PBL). This pedagogy engages students in real-world, inquiry-based projects that have direct connections to

the community and sustainability. Students actively construct knowledge through research, problem-solving, and collaboration. In a study by Jiang et al. (2017), it was found that PBL helps students develop critical thinking skills and an understanding of sustainability issues.

2. Experiential learning. This pedagogy involves hands-on or practical experiences and reflection to facilitate understanding of sociological concepts related to sustainable education. Field trips, case studies, and simulations can be used to expose students to real-world examples. Hawkins et al. (2018) highlighted the importance of experiential learning in sociology of education, stating that it promotes critical thinking, empathy, and a deeper understanding of social issues.

3. Service-learning. This pedagogy combines academic learning with community engagement. Students apply sociological theories and concepts to address community needs related to sustainable education. A study conducted by Butin (2003) demonstrated that service-learning in sociology of education fosters civic responsibility, empathy, and a sense of social justice.

4. Collaborative learning: This pedagogy emphasizes group work and cooperation among students. Collaborative activities such as group discussions, debates, and problem-solving tasks can enhance understanding of sociological concepts and encourage critical thinking regarding sustainability issues. According to Johnson and Johnson (2009), collaborative learning promotes positive interdependence, individual accountability, and the development of teamwork skills.

5. Blended Learning. This pedagogy advocates for incorporating technology in the classroom. has shown promising results. Blended learning, which combines face-to-face instruction with online resources, allows for a more flexible and personalized learning experience (Harley et al., 2007). The integration of multimedia materials, online discussions, and virtual simulations enhances student engagement and interaction, enabling a broader exploration of sociological topics

These pedagogical approaches can be combined or adapted based on the specific learning objectives and context of the sociology of education course. By utilizing these strategies, educators can create a dynamic and engaging learning environment that enables students to understand and promote sustainable education

Management of Pedagogical Approaches for Sustainable Quality Education in Nigeria

This involves the act of planning, implementation, and assessment of various existing teaching methods and approaches to be employed to achieve specific learning objectives. This in essence, suggests that a teacher should be able to scrutinise among the available teaching approaches, select and utilise the most relevant and effective instructional techniques, assess their impact on student learning, and make adjustments as the need be (Joyce & Weil, 2009).

According to Shulman (1987), effective management of pedagogical strategies requires teachers to:

1. Identify learning objectives and outcomes
2. Select appropriate teaching methods and materials
3. Implement and adapt strategies to meet diverse student needs
4. Monitor and evaluate student progress
5. 5. Reflect on and refine their teaching practices

By managing pedagogical approaches effectively, teachers can enhance students' engagement, motivation, and achievements thereby enabling a sustainable quality education.

Conclusion

Managing pedagogical approaches in teaching Sociology of Education for sustainable education is essential in nurturing critical thinking, promoting engagement, and developing a sense of responsibility in students. By incorporating active learning methodologies, integrating technology, fostering interdisciplinary connections, and emphasizing real-world applications, educators can enhance students' understanding of the sociological aspects of

education and their role in sustainable educational development. However, continuous evaluation and improvement of pedagogical practices in response to changing contexts and student needs are crucial for effective teaching.

Recommendations

To implement pedagogical approaches in teaching sociology of education for sustainable education in Nigeria, there is the need to:

1. Incorporate experiential learning in teaching. Teachers should engage students in hands-on activities, fieldwork, simulations, and case studies to enhance their understanding of the complex dynamics between education and sustainability. This is to allow students apply theoretical concepts to real-world scenarios, fostering critical thinking and problem solving skills. In other words, this hands-on experience can bridge the gap between theory and practice, fostering a sense of social responsibility.

2. Foster critical reflection. This implies that teachers should encourage students to critically reflect on the social, economic, and environmental implications of educational practices and policies. Utilize reflective journals, group discussions, and structured reflection activities to deepen their understanding of sustainable education.

3. Promote interdisciplinary approaches. This is to say, teachers should integrate perspectives from various disciplines such as sociology, ecology, economics, and environmental studies to offer a comprehensive understanding of sustainable education. Teachers need to encourage collaboration between students from different majors to foster interdisciplinary learning and innovative solutions. In other words, teachers should be able to encourage students to make connections between Sociology of Education and other disciplines, such as environmental studies or social justice, to promote a holistic understanding of sustainability and its intersectional nature.

4. Engage with community partners. This calls for establishing partnerships with local schools, NGOs, and community organizations

to provide students with opportunities for practical research and service-learning experiences related to sustainable education. This engagement can lead to meaningful community impact and enhance students' sense of civic responsibility.

5. Use technology for active learning. Teachers should be able to use online platforms, multimedia resources, and interactive tools to facilitate active learning and enhance student engagement in the subject matter. Teachers should incorporate digital simulations, virtual field trips, and interactive online discussions to create a dynamic and inclusive learning environment. In other words, teachers should utilize blended learning approaches that incorporate multimedia materials, online discussions, and virtual simulations to enhance student engagement, interaction, and exploration of sociological topics.

6. Promote student agency and empowerment. This means teachers should encourage students to take an active role in shaping their learning experiences and developing sustainable education initiatives. Provide opportunities for student-led projects, advocacy campaigns, and research on education policies and practices. This approach nurtures students' sense of agency and fosters their commitment to sustainable education.

7. Assess learning outcomes through multiple measures. Teachers should move beyond traditional exams and essays by utilizing diverse assessment methods, such as portfolios, presentations, projects, and group work, to capture students' holistic understanding of sustainable education. This approach aligns with the principles of authentic assessment and encourages creativity and critical thinking.

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Functional Adult Education as an Instrument for Sustainable Rural Livelihood Development in Nigeria

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Abstract

Rural areas in developing countries are characterized by dependence on agriculture and natural resources; high prevalence of poverty, isolation, and marginality; neglect by policymakers; and lower human development. Functional adult education was provided as a second chance to those that have earlier missed schooling or could not complete schooling or want to further their education. Apart from being a right of everyone to be educated, adult education paves way for people to contribute to the development of themselves, their communities and the society at large for their livelihood improvement. It is on record that the present level of illiteracy is very high in Nigeria; this makes it difficult for Nigeria to achieve sustainable rural livelihood improvement. This paper therefore looks at various aspects of sustainable rural livelihood development and how functional adult education can serve as major instrument needed to achieve the desired goals. Using secondary data such as various documents and various Scholars' view which add the Nigerian illiteracy rate at 31% as at 2023, the paper established that there is high number of population of illiterates in Nigeria; this number could drastically reduce through different functional adult education programmes to enhance rural livelihood development as no society can develop above the educational level of its members. The paper concludes that, an effective collaboration among all stakeholders is mandatory so that learners' interest could be addressed and the paper suggests that, a systematic adult education policy be adopted and comprehensive education and training opportunities for adults that would expose them to various professional, vocational and other programmes of interest be embraced in order to achieve sustainable rural livelihood development.

Keywords: Functional Adult Education, Sustainable Development and Rural Livelihood

Introduction

Developing countries and their rural areas in particular are characterized by poverty, unemployment, unequal distribution of resources, acute shortage of social, physical institutional infrastructure and increasing rural-urban drift (Sanusi & Barma 2022). Imhabekhai (2009), opined that; the world, whether rural or urban settings is made up of communities and the quality of life in any community is a function of the level of development achieved by the people of that particular community themselves, and with meaningful assistance from governments and other agencies. It is therefore, evident that functional adult education programmes are the secrete to rural livelihood development. Olojede, (2012) is of the opinion that Adult Education in Nigeria is presently geared towards national development.

Education; generally, aims at transforming societies to conditions better than they were. Adult and non-formal education specifically is meant to equip man with everything he needs for his personal and collective development. It is pertinent to recognize that, development whether social, economic, political, national and so on, is of man, by man and for man. This transformation and development is better effected through the cultural elements that are desirable such as the traditions, beliefs and values, skills and competences, accumulated knowledge and institutions like the family, age groups, other social groups and the entire community have been largely responsible for the training of the youth in the African traditional education which is purely non-formal in nature (Sanusi 2023).

The objective of functional adult education and the process of national development is to get the adults, either as individuals or as a group, to learn, and through learning to change their attitude and behaviour. The FRN clearly states the objectives of adult education in NPE (2014) as: -

To provide functional literacy education for adults who have never had the opportunity of any formal education; To provide functional and remedial education for those young people who prematurely dropped out of the formal school system; To provide further education for different categories of completers of formal education system in order to improve their basic knowledge and skills; To provide in-service and on-the job vocational and professional training for different categories of workers and professionals in order to improve their skills and To give the adult citizens of the country aesthetic, cultural and civic education for public enlightenment.

Sanusi and Barma (2022) opined that all these objectives have one end in view-to equip the adult with everything he needs for life in order to be relevant to his society by helping to solve some of its problem. We have to recognize that, man is the master of his destiny and functional adult education serves to bring about a fundamental change in man's attitudes and lifestyle. Therefore, to have a sustainable community development and an improved rural livelihood, people must have awareness and to become aware they must not only be made literate, but functionally literate.

Functional Adult Education

Muntaka, Ibrahim, and Ali, (2024) opined that, the term 'Adult Education' conjures up in many minds; the picture of old people in the villages attending classes in order to learn the alphabets, so as to be able to read and write. But the point is that, adult education is for all class of people and at all stage of life. Thus, making learning a lifelong process. Adult education is one of the most difficult terms to define. Yet it is very often on the lips of many people. In many universities, colleges of education and polytechnics. Many learners including those studying adult and non-formal education remain unaware of what constitute adult education. It is therefore a business as usual for adult education practitioners to attempt to define the term adult education.

United Nations' Education Scientific and Cultural Organization (UNESCO 2009), define adult education as *"the entire body of organised educational processes, whatever the content, level and method, whether formal or otherwise, whether they prolong or replace initial education in schools, colleges and universities as well as in apprenticeship, whereby persons regarded as adult by the society to which they belong: develop their abilities, enrich their knowledge improve their technical or professional qualifications or turn them in a new direction and bring about changes in their attitudes or behaviour in twofold perspective of full personal development and participation in balanced and independent social, economic and cultural development, adult education, however, must not be considered as an entity in itself, it is a sub-division, and an integral part of, a global scheme for life-long education and learning".*

Sanusi, Alakoso, Ojedapo and Ibrahim (2021), opined that; ''By adult education; we do not mean literacy education alone. Adult Education is more than literacy or remedial education to 'fill the gap'. It is something people need and want as long as they are alive and regardless of the amount of their

previous education''. It most therefore be an integral part of any modern country's educational system''. From the above definitions, it is clear that adult education cannot be understood in a vacuum. It has to be seen in the cultural context and in the nature of the activity as well as in its functionality. Thus, adult education centred on the individual and collective development, and the encouragement of social, moral and intellectual responsibilities in relation to local, national and international citizenship to ensure rural development through livelihood improvement.

The United Nations made education a fundamental right of a man. It is therefore clear that, zones of illiteracy are always zones of poverty be it in developed, developing or under developed countries of the world. Also, a cursory look at the political climate of the world shows clearly that regions of mass illiteracy are generally regions of instability, economic and political underdevelopment. Economically; the illiterates are on the periphery, politically; they stand outside, and technologically, they are completely in the dark (UNESCO 2016).

Functional literacy is one of the fundamental requirements of modern civilization, because the functional significance of people's ability to read and write depends on it. It is in fact, a common belief among contemporary scholars that a nation needs above forty percent literacy level among its citizens for a sustainable economic growth, livelihood improvement as well as socio-political stability (Sanusi 2023).

Adult education train an individual for a better appreciation of his own cultural traditions whilst at the same time equipping him with the ability to absorb new ideas, new information and new data for resolving the constantly changing problems of his environment. Secondly adult education train individuals to develop creative ability especially in cultural and technological realms and foster in the individual those values which make him a good and productive citizen such as tolerance, honesty, hard work, selflessness, dedication and personal integrity, which will provide the rich soil from which good leadership is spawned (Sanusi 2023).

Rural Community

"Rural" refers generally to areas of open country and small settlements, but the definition of "rural areas" in both policy-oriented and scholarly literature are terms often taken for granted or left undefined in a process of definition

that is often fraught with difficulties. Sanusi (2023), claimed that, Rural areas in developing countries are characterized by a dependence on agriculture and natural resources; high prevalence of poverty, isolation, and marginality; neglect by policymakers; and lower human development. These features are also present to a lesser degree in rural areas of developed countries, where there are also closer interdependencies between rural and urban areas (such as commuting), and where there are also newer forms of land use such as tourism and recreational activities (although these also generally depend on natural resources).

Some of the key points describing rural communities as identified by International Fund for Agricultural Development IFAD (2010) are:

1. Rural areas, even after significant demographic shifts, still account for almost half of the world population.

2. The overwhelming majority of the world's rural population lives in less developed or least developed countries.

3. Rural dwellers also account for about 70% of the developing world's poor people. Around 70% of the extreme poor in developing countries lived in rural areas.

4. Rural areas are a spatial category, associated with certain patterns of human activity, but with those associations being subject to continuous change.

5. Rural areas are largely defined in contradistinction to urban areas, but that distinction is increasingly seen as problematic.

6. Rural populations have, and will have, a variety of income sources and occupations, within which agriculture and the exploitation of natural resources have privileged, but not necessarily predominant, positions.

Sustainable Rural Livelihood

Food and Agricultural Organization (FAO 2003), define Livelihood "as the means of gaining a living". "A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain its capabilities and assets both now and

in the future, while not undermining the natural resource base. There are therefore, three perspective words; "sustainable, rural and livelihoods" meaning a specific methodology as the people-oriented progress that the initial argument was the rural realities of poor people (Sanusi et al 2021). A livelihood is sustainable when it can manage with and improve from pressures and shocks, maintain or enhance its capabilities and assets, while not discouraging the natural resource base. The term Sustainable Livelihood has been well-defined in a different way by several authors in the context of Poverty Alleviation and Rural Development. There are certain resemblances and likewise contradictions in these explanations, depending on the diverse situations in which examinations are undertaken. The maximum similarities are that, a sustainable livelihood can be defined as people's capacity to sustain a living by surviving shocks and stress and enhancing their quality of life on a long-term basis without threatening the livelihood possibilities of others (Sanusi et al 2021). The concept of sustainable livelihoods is increasingly important in research about regional development, poverty alleviation, rural agricultural development and rural resource management. A Sustainable Livelihoods approach to rural development demands a more holistic understanding of poverty, and of the linkages between different livelihoods components. Rural people's ownership of and access to certain livelihood assets may have a positive impact on their strategies for coping with vulnerabilities and risks.

Functional adult education builds the capacity of rural people at both local and national levels which is central to the goals of progress and sustainable development. Organizations persuaded to handover only capital and modern technology or provide formal education to rural communities, these actions were directed by Government, Non-Governmental Organizations (NGOs), Researchers and Extension Officers, with slightly participation of local people. After finishing the project, local people could not continue to recover themselves and grow their groups. Matarrita and Brennan (2021) mentioned additional comments that "investment alone cannot lead to the desired level of improved livelihood in rural communities". Therefore, building the capacity of local people, groups and organizations especially through functional adult education is vital, because they must have the ability and responsibility to resolve their problems in order to develop their communities and improve their livelihood.

Functional Adult Education for Sustainable Rural Livelihood Development

Political and scientific debates have stressed the growing importance of functional adult education over the last few years. Muntaka et al (2024) states that, there prevails a consensus that functional adult education plays significant role in promoting personal, social and economic well-being, which has also long been recognised by Deutscher Volkshoch-Verband (DVV) international and the German Adult Education Association (GAEA). There is a deep rooted belief that adult learning has the potential to create personal, economic and social value (Matarrita and Brennan 2021). This paper argues that functional adult education promotes sustainable rural livelihood improvement, in ways that go far beyond what can be measured by the labour market earnings and economic growth. Important as they are, the wider benefits of functional adult education are neither currently well understood nor systematically measured. Following are some of the ways functional adult education can enhance rural development and livelihood improvement:

a. Economic Development

Economic development is seen as creation of jobs, wealth, and general improvement of livelihood. It is also described as a process that influences growth and for restructuring of an economy to enhance the development of a community (Stephan, 2012). UNESCO (2016) explained that "Despite the challenges and constraints, adult education empowers people by opening avenues of communication, expands personal choice and controls over one's environment, and the acquisition of many skills like tailoring, knitting, processing of agricultural products, rearing of animals and many more. Functional Adult education can improve employability and income through its number of programmes that are contemporary and synonymous to rural community development, and which is a key pathway to realizing a range of other benefit. For example, it enables people to some extent, choose and shape the context in which they live and work and even increase their social status.

i. Health Benefit

Empirical evidence has shown that functional adult education can have both transforming and sustaining effects on health. Transforming effects are when functional adult education changes health behaviour (for instance from smoking to non-smoking, child spacing for women and acceptance of family

planning among couples etc.) while sustaining effects are when health behaviour is maintained, for example, the likelihood of remaining a non-smoker. Manninen (2008) states that, people attending adult education course are more likely to have healthy lifestyles, and there is a body of literature which describe adult learning and its relation to mental health. Also, Inter-generational effects of educated parent on the health of their children are very relevant.

ii. Civic and Social Engagement

Many countries share a concern about declining levels of voter participation and about the state of civic participation. It is possible that functional adult education might inspire a change in attitude which in turn brings about a change in behaviour. Several studies conducted by Organisation for Economic Co-operation and Development; (OECD, 2007), Desjardin and Schullar (2006), Field (2009), amongst others, show that functional education has the capacity to promote social cohesion and strengthen citizenship. functional adult education also supports the development of shared norms, greater trust towards other individuals, communities, societies and the government at different levels for civic co-operation.

iii. Attitudinal Change

An individual who participate in functional adult education programme is different from the one who does not, in terms of his characters and characteristics. Matarrita and Brennan (2021) opined that, adult learning is associated with more "open-minded" perspectives on race and authority, greater understanding of people from different backgrounds, challenging previously held beliefs and with a sustaining effect on non-extremist view. Thus, youths and adult exposed to learning would have an open mind to accept others in terms of race, colour and religion. Condemning each other would be a thing of the past as appreciating other peoples' opinion and personality, shows that human can always disagree to agree in a more civilised manner.

iv. Educational Development

Progression into other learning is an important outcome of functional adult education. Given the opportunity to start from where one stops and wish to

continue in order to achieve a dream is one of the benefits of adult education. There is clear evidence that successful engagement in learning provides incentive for further learning. Manninen (2010) found that 93 percent of course participants in adult learning programmes said that, their participation has motivated them to learn more. Furthermore, learners described their progress by referring to real life activities they could now do in a wide variety of life context. Self-confidence, finding voice and giving one's time up to learning were identified by almost all learners and seemed central to their perspective on learning. These outcomes provided improvement in the quality of their livelihood and become part of their identity.

v. Alleviating Poverty

Functional adult education programmes have been cited as key to poverty reduction at different levels around the world (European Association for the Education of Adult: EAEA, 2010) as it has the capacity to positively affect many dimensions of poverty. This means that functional adult education has a role to play in nurturing the skills and knowledge necessary to both reducing the risk of poverty, and also for providing the capacity to withstand poverty inducing pressure. EAEA (2010), underlines the empowering role functional adult education can play in times of crises, providing a stable community, a chance for reorientation, a safe place and social recognition. Sabates (2008) expressed that participating in adult learning can help substantially to reduce poverty through enhancing employment prospects, improving health levels of poor people and giving better chances of acquiring the tools needed to improve their own livelihood and develop their communities by reducing the poverty levels.

Conclusion

Successful and sustainable rural development and livelihood improvement cannot be achieved when the majority of the populace are illiterates, this is why lifelong learning stresses the need for learning to be ongoing throughout life. This entails that a comprehensive adult education policy that would sustain a culture that would lead to the emergence of a learning society is necessary. Based on the importance of functional adult education especially for youths and adults and for the adequate planning for the implementation of Sustainable Development Goals; SDGs, there should be effective collaboration among all stakeholders so that learners' interest could be addressed.

This paper identified Functional Adult Education as a tool that could be used in achieving human capacity for sustainable development in Nigeria. Through its programmes like technical and vocational knowledge, acquisition of the necessary skills, values, and attitudes needed by the adult populace for sustainable community development and livelihood improvement. In addition, it enables people to become well-informed, capable of thinking critically and owning their destiny through active participation. The discipline is a useful instrument for meeting needs of people, improving their livelihood and developing their communities.

Suggestions

This paper presents the following suggestions for urgent attention and implementation

1. A systematic functional adult education policy should be adopted in Nigeria. The policy should be guided in both conception and implementation by a philosophy of continuing education or lifelong learning for sustainable community development.

2. A comprehensive education and training opportunities for adults that would expose them to various professional, vocational and other programmes of interest be embraced in order to achieve sustainable rural livelihood development

3. Adult education practice should be revived at all levels, constantly organised and systematized in order to develop a more coherent and useful agenda for functional adult education to give it the needed respect among other disciplines.

4. Functional adult education should be well funded, adequately administered and its programmes well monitored to facilitate effective and sustainable community development and livelihood improvement.

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Transforming Chemistry Education by Engaging Students Actively and Experientially to foster Deeper Understanding and Lasting Scientific Curiosity

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Abstract

The study explores innovative teaching methodologies that enhance student engagement and comprehension of complex scientific concepts in chemistry. Conventional learning approaches often fail to connect abstract ideas to real-world applications, leading to significant gaps in understanding key concepts of the subject. The study concentrated on those active learning-interactive and technology-driven techniques, such as virtual simulations, problem-based learning, and collaborative projects, which promote critical thinking, teamwork, and problem-solving skills. These active learning strategies cater to diverse learning styles and abilities, fostering an inclusive educational environment. The research highlights the significance of experiential learning through hands-on laboratory experiments, fieldwork, and internships, which deepen students' understanding by linking theoretical knowledge to practical applications. Moreover, the study emphasizes the role of digital platforms in providing customized learning experiences, ensuring equal access to quality education. Integrating contemporary methods can revitalize chemistry education, making it more engaging and impactful for students pursuing academic or professional careers in science. Finally, the study indicates the necessity of evolving teaching practices to meet the demands of modern education and to better equip students for the challenges of the 21st century.

Keywords: Active Learning, Experiential Learning, Chemistry Education, Student Engagement, Problem-Based Learning

Introduction

Nowadays, effective teachers strive to modernize their chemistry instruction to enhance student engagement and understanding in order to be productive problem-solvers after graduating. This transformation is necessary because, conventional teaching methods, as Jofrishal & Munandar (2021) highlight, struggles to make abstract concepts relatable, hindering comprehension of vital concepts. In contrast, interactive and technology-driven methods like virtual simulations and augmented reality provide immersive experiences,

fostering deeper understanding. In similar vein, active learning approaches, such as problem-based learning, flipped classrooms, and collaborative experiments (Stenseth *et al.,* 2022), encourage critical thinking, teamwork, and real-world application. These methods also promote inclusivity by catering to diverse learning styles and abilities. Moreover, digital platforms and resources offer personalized learning experiences, ensuring equitable access to quality education. These contemporary approaches empower students with the knowledge and skills for academic and scientific success by making chemistry education dynamic, engaging, and relevant (Gligorea *et al.,* 2023).

Active and experiential learning methods, as emphasized by Macaluso *et al.* (2020), enhance student engagement by encouraging active participation. These approaches, which include discussions, problem-solving, simulations, and projects, foster critical thinking, collaboration, and the application of knowledge to real-world situations. Technology-driven active learning, deepens understanding and improves information retention by stimulating multiple senses and cognitive processes (Chitti *et al.,* 2020). Whereas experiential learning is a significant component of active learning that follows a cyclical process with concrete experience, reflective observation, abstract conceptualization, and active experimentation (Nguyễn *et al.,* 2023; Sewagegn & Diale, 2019). This cyclical nature allows students to connect theory to practice, reflect on their actions, and refine their understanding. These approaches offer numerous benefits, including the development of critical thinking, teamwork, and communication skills, the ability to cater to diverse learning styles, and the fostering of intrinsic motivation and curiosity.

Active learning is an educational approach that emphasizes student engagement and participation. Unlike traditional passive learning, which relies on lectures and rote memorization, active learning encourages students to actively engage with material through critical thinking, problem-solving, and collaborative activities (Chitti *et al.,* 2020). Basic characteristics include student-centered instruction, frequent discussions, and engaging hands-on activities. This approach promotes deeper understanding, enhances information retention, and fosters critical thinking skills. Research consistently demonstrates that active learning improves academic performance, particularly in STEM fields, by connecting theoretical concepts to real-world applications (Gin *et al.,* 2020; Macaluso *et al.,* 2020; Sewagegn & Diale, 2019; Yannier *et al.,* 2020). In the context of chemistry, active learning techniques such as group discussions, laboratory experiments, problem-based learning, molecular

modeling software, and concept mapping (Macaluso *et al.,* 2020) make abstract concepts more accessible and meaningful for students.

Experiential learning, a holistic approach developed in 1984 by David Kolb, emphasizes direct experiences and reflection to foster knowledge, skills, and values (Nguyễn *et al., 2023*). By connecting theory with practice, it makes abstract chemical concepts tangible and memorable. In chemistry education, real-world applications are crucial for fostering deeper understanding and appreciation of the subject (Inguva et al., 2021). These applications enhance problem-solving and critical thinking skills while preparing students for careers in chemistry and related fields. By demonstrating the vital role of chemistry in addressing societal challenges, real-world applications can motivate students, inspiring them to contribute to the world through the practical application of their theoretical knowledge.

As experiential learning directs experiences and reflection to gain knowledge, skills, and values, it connects theory with practice, making abstract concepts tangible and memorable (Nguyễn *et al.,* 2023). In chemistry education, real-world applications are crucial for fostering deeper understanding and appreciation of the subject (Inguva *et al.,* 2021). These tasks enhance problem-solving skills and critical thinking, and prepare students for careers in chemistry and related fields. Incorporating real-world applications can motivate students by demonstrating chemistry's vital role in addressing societal challenges, inspiring them to contribute to the world through the practical application of their theoretical knowledge.

Difference between Experiential and Active Learning

While experiential and active learning share similarities, they are distinct in focus and scope. Active learning refers to any strategy that actively engages students in the learning process, such as discussions, problem-solving, or interactive tasks (Chitti *et al.,* 2020). On the other hand, experiential learning specifically emphasizes learning through experience, requiring learners to engage in authentic tasks that mirror real-world challenges (Dernova, 2015). For example, an active learning activity in a chemistry class might involve solving equations collaboratively, whereas an experiential learning task could involve designing an experiment to test a hypothesis. While both methods encourage participation, experiential learning often provides deeper engagement with practical, context-rich situations.

Benefits of Active and Experiential Learning in Chemistry

Active and experiential learning in chemistry significantly enhances student engagement and retention by involving students directly in the learning process. Conventional lecture-based methods can often leave students passive and disengaged, but active strategies such as group discussions, hands-on experiments, and interactive simulations capture their attention and foster deeper understanding. Experiential activities make abstract concepts tangible, allowing students to connect theoretical knowledge with practical experiences. This heightened engagement not only improves their interest in the subject but also strengthens their memory retention, as students are more likely to recall concepts they have actively explored (Silalahi *et al.,* 2022).

Moreover, these methods promote enhanced problem-solving and critical thinking skills. Experiments, case studies, and collaborative projects provide students with valuable opportunities to develop critical thinking, problem-solving, and data analysis skills while working towards innovative solutions (Zhang & Ma, 2023). These activities often mimic the iterative nature of real-world scientific research, requiring students to think critically about their approaches and consider alternative methods. According to Zhanqiang (2023), this kind of learning environment challenges students to apply their knowledge in dynamic and unpredictable scenarios, preparing them to tackle unfamiliar problems with confidence and adaptability.

Finally, active and experiential learning prepares students for real-world applications by bridging the gap between academic theory and practical implementation. Chemistry, being a highly applied science, requires skills that extend beyond textbook knowledge. Activities such as designing experiments, using modern laboratory equipment, and solving real-life chemical challenges help students develop competencies that are directly transferable to industry, academia, and other professional settings (Jofrishal & Munandar, 2021). This hands-on preparation ensures that students are not only knowledgeable but also equipped to contribute meaningfully to their fields upon graduation. In this way, experiential learning cultivates a sense of professional readiness and adaptability in students, essential for their future success.

Theoretical Framework

Active and experiential learning in chemistry emphasizes student engagement through hands-on, participatory methods that align with constructivist theories.

This approach, rooted in the work of Piaget and Vygotsky, recognizes that students construct knowledge through active participation and experiences that challenge their thinking. In this framework, students in chemistry not only receive information but also actively interact with materials, conduct experiments, and reflect on their findings. Techniques like problem-based learning, inquiry-based learning, and collaborative group work encourage students to take responsibility for their learning by engaging in tasks that require them to analyze, synthesize, and apply chemical principles to real-world scenarios (Nurdini *et al.,* 2021). This shift in teaching focuses on student engagement and collaboration, with the teacher acting as a facilitator guiding the learning process (Prastiwi & Laksono, 2018).

Experiential learning is a foundation for active learning in chemistry, emphasizes direct experience in knowledge acquisition, aligning with Kolb's cyclical model of learning. This approach, encompassing laboratory experiments, encourages students to engage in hands-on activities, reflect on their observations, and actively experiment, fostering deeper understanding and developing critical thinking, problem-solving, and scientific reasoning. Active and experiential learning enhances student engagement and comprehension by providing diverse learning opportunities that cater to different learning styles, allowing students to choose methods that best suit their individual needs. Furthermore, these methodologies promote the development of transferable skills crucial for future success, such as teamwork, communication, and adaptability, by mirroring the collaborative nature of scientific research.

David Kolb's (1984) Experiential Learning Theory posits that learning is a cyclical process involving four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. This cyclical nature encourages active student engagement in the learning process, moving beyond passive learning. In chemistry education, applying Kolb's theory can enhance learning by incorporating hands-on experiments, encouraging reflection on observations, developing and testing hypotheses, and applying concepts to real-world scenarios. This approach caters to diverse learning styles and promotes a more student-centered, practical, and effective learning environment that aligns with the nature of scientific inquiry.

Popular Active Learning Strategies in Chemistry

Active learning is a method that involves students directly in the learning process, enhancing comprehension and retention (Rasyid & Khoirunnisa, 2021). Popular active learning strategies in chemistry include problem-based learning (PBL), Inquiry-Based Learning (IBL), and collaborative group work. PBL involves presenting students with complex problems, encouraging critical thinking and application of chemical principles (Dibyantini *et al.,* 2021). Inquiry-based experiments involve students designing and conducting experiments to explore chemical phenomena, enhancing their understanding of scientific methodology and fundamental concepts like reaction kinetics or thermodynamics (Selco, 2018). Collaborative group work, where students work in teams to solve complex problems, analyze case studies, or discuss challenging concepts, encourages peer learning, communication skills, and diverse perspectives (Stefaniak *et al.,* 2020). These activities build a community of learners and help students articulate and refine their understanding of chemistry concepts.

Think-Pair-Share Technique in Chemistry Education

The Think-Pair-Share (TPS) technique is a collaborative learning strategy in chemistry education that enhances student engagement and understanding (Sweeder *et al.,* 2023). In the "Think" phase, students consider a question or problem individually, allowing them to process information, recall prior knowledge, and apply newly learned concepts independently. In the "Pair" phase, students collaborate with a partner to discuss their thoughts and solutions, fostering peer-to-peer learning and enhancing communication and teamwork skills. In the "Share" phase, pairs present their ideas to the larger group, facilitating a broader discussion and deeper exploration of the topic. This approach addresses common misconceptions, reinforces key concepts, and guides the class toward a comprehensive understanding (Prahl, 2016). TPS promotes active learning and ensures that students at all levels can engage meaningfully with challenging chemistry concepts.

Peer Teaching and Collaborative Learning in Chemistry Education

Peer teaching and collaborative learning are essential strategies in chemistry education, fostering an interactive and supportive learning environment (Jofrishal & Munandar, 2021; Leopold & Smith, 2019; Rahmawati *et al.,* 2020). Peer teaching involves students taking turns as instructors, enhancing

comprehension by breaking down complex concepts into simpler terms. This approach builds confidence, communication skills, and a sense of shared responsibility among learners. Moreover, collaborative learning emphasizes group work and shared exploration of chemistry concepts and problems, promoting critical thinking and exposure to diverse perspectives (Luján & Payá, 2020). Both methods address diverse learning needs, benefiting students struggling with specific topics and high-performing students. They foster a sense of community, reduce isolation, and enhance motivation by creating a supportive environment where mistakes are viewed as learning opportunities. Finally, these approaches significantly enhance academic performance and interpersonal skills, making them invaluable in modern chemistry education.

Inquiry-Based Learning in Chemistry Education

According to Juniar *et al.,* (2021), Inquiry-Based Learning (IBL) is a teaching approach that encourages students to actively explore scientific concepts through questioning, investigation, and critical thinking. It is particularly beneficial in chemistry education, where it shifts the focus from rote memorization to hands-on experimentation and problem-solving. Students develop their own hypotheses, design experiments, collect data, and analyze results to draw meaningful conclusions. IBL fosters essential skills such as creativity, teamwork, and scientific literacy, making chemistry a dynamic field of discovery (Dibyantini *et al.,* 2021). It enhances student engagement and motivation by providing opportunities to explore real-world applications of chemistry. However, implementing IBL presents challenges, such as designing experiments that align with curriculum objectives and allowing student-driven exploration. Consequestly, Shin *et al.,* (2021) emphasized that teachers must also provide additional preparation, resources, and a willingness to embrace uncertainty. Effective implementation requires professional development, a supportive learning environment, and gradual introduction of inquiry-based techniques.

Problem-Based Learning (PBL) in Chemistry Education

Problem-Based Learning (PBL) is a teaching method that focuses on student-centered learning by solving real-world problems (Dibyantini *et al.,* 2021). In chemistry education, PBL presents complex, open-ended problems that require critical thinking and application of chemical concepts. This approach shifts the focus from memorization to deep understanding and integration of knowledge across various topics. According to Dotimineli & Mawardi (2021) PBL in

chemistry develops essential 21st-century skills like collaboration, communication, and self-directed learning. Students work in teams, researching, hypothesizing, experimenting, and analyzing data to solve problems, mirroring professional chemist practices. This hands-on approach connects abstract chemical theories to practical applications, improving retention and conceptual understanding (Rodríguez *et al.,* 2020). However, implementing PBL in chemistry education can present challenges, such as designing meaningful problems that align with curriculum standards, providing scaffolding and guidance for students, and assessing student performance in PBL settings (Dibyantini *et al.,* 2021). Despite these challenges, PBL can transform chemistry education into an engaging and effective learning experience.

Concept Mapping in Chemistry Education

Concept mapping is a powerful tool in chemistry education that visually organizes and represents relationships among concepts, enhancing students' understanding of complex concepts like molecular interactions and elements' properties (Pedrajas & Varo-Martínez, 2014). It breaks down these complexities into interconnected nodes, identifying prior knowledge gaps and providing a deeper understanding of the subject matter. Concept mapping fosters critical thinking and active learning, encouraging students to analyze and synthesize information rather than passively memorizing it (Hariyanti *et al.,* 2020). It supports diverse learning styles, particularly for visual learners, and can be used to assess students' understanding of key ideas. Concept mapping also enhances long-term retention and application of knowledge, especially in problem-solving scenarios. It serves as cognitive scaffolds, helping students recall foundational principles and their interrelations (Alsuraihi, 2022). For example, a concept map of reaction kinetics might include nodes for rate law, activation energy, and catalysts, guiding students in applying these concepts to experimental data.

Experiential Learning in Chemistry Education

Experiential learning in chemistry education involves hands-on, real-world applications of chemical concepts, focusing on active participation through laboratory experiments, fieldwork, and collaborative projects (Davenport *et al.,* 2018; Edelsztein *et al.,* 2020; Inguva *et al.,* 2021; Jofrishal & Munandar, 2021; Nguyen *et al.,* 2021; Pherson-Geyser *et al.,* 2020). This approach deepens understanding by connecting abstract theories to tangible results,

cultivating critical thinking and problem-solving skills. According to Hardy *et al.* (2021) it encourages collaboration and interdisciplinary exploration, aligning chemistry with broader societal applications. Project-based learning helps students tackle challenges like water quality analysis, sustainable energy solutions, and pharmaceutical development, inspiring innovation and creativity. Field trips to industrial labs or research facilities further enhance this approach, bridging classroom learning with career readiness. Experiential learning fosters a deeper appreciation for chemistry's role in addressing global challenges, such as renewable energy (Mutambuki *et al.,* 2019). This approach accommodates diverse learning styles, making chemistry accessible and engaging for all students. By actively participating in their education, learners develop essential skills such as collaboration, creativity, and adaptability, preparing them for success in academic, professional, and societal contexts.

Laboratory Experiments and Hands-On Activities in Chemistry Education

Laboratory experiments and hands-on activities are crucial in chemistry education, allowing students to apply theoretical knowledge in practical scenarios (Faiza & Aznam, 2021). These activities, according to Reith & Nehring (2022), provide a dynamic environment for students to observe chemical phenomena firsthand, fostering a deeper understanding of fundamental principles like reaction kinetics, equilibrium, and thermodynamics. They also develop critical thinking and problem-solving skills, sparking curiosity and enthusiasm. According to Reith & Nehring (2022), laboratory experiments also help develop technical and procedural skills, such as handling equipment, following safety protocols, and conducting systematically. These experiential learning methods help students cultivate a scientific mindset, preparing them for future research endeavors and building confidence in exploring scientific questions independently (Leopold & Smith, 2019).

Relevance of Field Studies and Industrial Visits in Chemistry Education

Field studies and industrial visits are essential in chemistry education, providing students with practical exposure to real-world applications of theoretical knowledge. Field studies allow students to explore natural settings and understand chemical processes, such as water purification and pollution control (Pamenang *et al.,* 2020). For example, industrial visits offer insights into operational dynamics of chemical industries, such as chemical synthesis and pharmaceutical production. These experiences help students appreciate

practical challenges and innovations in the field, as well as interact with professionals and understand ethical and environmental considerations (Pagliaro, 2019). Incorporating these activities into the chemistry curriculum enriches the educational experience, instilling essential skills like teamwork, observation, and problem-solving, and inspiring students to pursue research and innovation. A deeper appreciation for chemistry's practical applications equips students with the confidence and competence to effectively address real-world challenges.

The Role of Simulations and Virtual Labs in Chemistry Education

Simulations and virtual labs have revolutionized chemistry education by providing interactive and immersive learning environments. These methods address challenges like safety hazards, limited access to expensive equipment, and material constraints by offering digital replicas of laboratory setups. This approach enhances accessibility and inclusivity, making quality education accessible to a broader audience. Virtual labs offer flexibility and scalability, allowing students to learn at their own pace and experiment with scenarios not feasible in physical settings (Rahman *et al.,* 2022). They often incorporate gamification elements, visualizations, and step-by-step guides, making learning engaging and intuitive. However, simulations and virtual labs may lack tactile experience and hands-on skills, hindering the development of practical skills. A blended approach combining physical labs with virtual tools is recommended by (Schnieder *et al.,* 2022) to ensure students gain both conceptual understanding and practical competence in chemistry.

Incorporation of Research Projects and Internships in Chemistry Education

Research projects and internships in chemistry education are vital for improving teaching methodologies and students' learning experiences. Projects, according to Prasetya *et al.* (2019) help educators refine their instructional strategies and promote deeper understanding among students. Internships provide opportunities for pre-service teachers and graduate students to apply theoretical knowledge in real-world educational settings, often involving collaboration with secondary schools or community organizations (Bawica, 2021). Interns gain insights into classroom management, curriculum development, and meeting diverse learners' needs. Both research projects and internships contribute to the broader field of chemistry education by fostering a community of practice among educators,

promoting the exchange of ideas and strategies, generally enhancing the quality of chemistry education and making it more engaging and effective for students at all levels.

Incorporating Technology in Active and Experiential Learning

Incorporating technology into active and experiential learning has transformed education across disciplines, especially in fields like chemistry. For example, digital tools and platforms facilitate dynamic learning experiences that engage students in hands-on experimentation, data collection, and collaborative projects. Moreover, technologies such as Learning Management Systems (LMS), Virtual Reality (VR), and mobile applications provide students with diverse opportunities to interact with content in meaningful ways. Integrating these tools allows educators to create immersive learning environments that go beyond the traditional classroom, providing students with opportunities to explore complex concepts in depth and ultimately improve their understanding and retention (Liang *et al.,* 2023).

In chemistry education specifically, various digital platforms have demonstrated significant potential for improving learning outcomes. For example, simulation software like PhET Interactive Simulations allows students to conduct virtual experiments, visualize chemical reactions, and manipulate variables, all while receiving immediate feedback. These simulations make it possible to explore phenomena that may not be feasible in a standard laboratory setting due to safety, cost, or resource constraints. Furthermore, laboratory management systems can streamline data collection and analysis, fostering a collaborative atmosphere where students can work together on projects that require critical thinking and problem-solving skills.

Moreover, digital tools can facilitate engagement beyond the classroom through platforms like YouTube and social media, where educators share instructional videos, experiments, and student projects. Online forums and collaborative software like Google Classroom enable real-time communication and teamwork, encouraging peer-to-peer learning and support. Integrating technology in these ways not only enriches the educational experience but also prepares students for the digital landscapes they will encounter in their future professional environments (Camilleri & Camilleri, 2022). Technology-enabled active and experiential learning opportunities empower students to develop essential skills like adaptability, critical thinking, and creativity, preparing

them for success in the evolving fields of chemistry and beyond (Neiles & Mertz, 2020).

How can educators implement active learning in large classrooms?

Implementing active learning in large classrooms presents unique challenges due to the size and diversity of the student group, but with the right strategies, it can be highly effective. A crucial strategy is to facilitate small group activities within the larger class setting. Techniques like "think-pair-share" and small group discussions can effectively engage students in large classes, allowing them to actively process the material in a more manageable setting (Lynch & Pappas, 2017). These group activities can include solving problems, discussing case studies, or brainstorming ideas, which not only fosters deeper learning but also helps students learn from their peers. The instructor can then circulate among the groups, providing guidance and answering questions, while students can collaborate and share their insights with one another.

Another effective method for active learning in large classrooms is the use of technology. Tools like clickers or polling software enable instructors to ask questions in real-time and gather immediate feedback from all students. This helps create an interactive environment where students can participate without needing to speak out in front of a large crowd. It also provides instructors with valuable data on student understanding, allowing them to adjust the pace or focus of the lesson based on the responses. Moreover, online platforms can support collaborative learning outside of class time, with students working on projects, assignments, or discussions in virtual spaces, enhancing both in-class and out-of-class engagement (Brođanac & Novak, 2023; Tawalbeh & Al-husban, 2023).

To further foster active learning in large classrooms, educators can incorporate Problem-Based Learning (PBL) into their teaching. In PBL, students are presented with real-world problems that require them to apply their knowledge and work collaboratively to find solutions (Liu & Liu, 2021). In large classes, this can be done by dividing the students into smaller teams and assigning each team a specific aspect of the problem. Real-world scenarios actively engage students in critical thinking and analysis, providing them with valuable hands-on experience (Gitinabard *et al.,* 2022). The instructor can then facilitate the learning by guiding the groups' discussions and providing additional resources, ensuring that all students are actively engaged and developing problem-solving skills.

Instructors can also use active learning through flipped classrooms, where students engage with course material outside of class through videos, readings, or online activities. In-class time can then be devoted to interactive discussions, hands-on activities, and group work, all aimed at reinforcing the concepts studied. This model allows educators to use large classroom time more effectively by creating a more personalized and engaging environment (Lo & Hew, 2017). Students come to class already familiar with the core material, allowing the educator to focus on higher-order learning activities such as applying, analyzing, and synthesizing the content in a collaborative setting.

Finally, to successfully implement active learning in large classrooms, it's crucial for educators to establish clear expectations and a supportive classroom environment. Large classes often mean greater anonymity, so setting ground rules for participation and encouraging a culture of respect and engagement is essential. Educators should encourage students to ask questions, challenge ideas, and contribute to discussions. Moreover, providing regular feedback on group activities or individual contributions helps maintain motivation and ensures that students are on track. A classroom environment that values participation and collaboration is essential for successful active learning implementation, even in large settings, leading to enhanced student engagement and improved learning outcomes.

What are some cost-effective strategies for implementing these methods?

Implementing active and experiential learning methods can seem resource-intensive, especially in terms of materials and technology, but there are several cost-effective strategies that educators can use to enhance student engagement without incurring significant expenses. One of the most effective and inexpensive approaches is utilizing group work and peer collaboration. Organizing students into small groups enables instructors to facilitate cooperative learning activities, such as problem-solving tasks, case studies, or discussions, with minimal additional resources. According to Xu *et al.,* (2023), group activities foster engagement, critical thinking, and teamwork, and the learning process is often enhanced through peer-to-peer interactions, making this approach both economical and impactful.

Another cost-effective strategy is the use of open educational resources (OERs), which include free or low-cost textbooks, videos, simulations, and other learning materials. Many educational institutions and organizations offer

a wealth of OERs that can be easily integrated into active learning and experiential learning activities (Eaton *et al.,* 2022). For example, instead of purchasing expensive textbooks or proprietary simulations, instructors can utilize high-quality, freely accessible materials available online. Many OER platforms also include interactive content that can support experiential learning, allowing students to conduct virtual experiments or simulations in various disciplines without the need for physical lab equipment (Eaton et al., 2022).

Technology, when used strategically, can also be a cost-effective tool for fostering active learning. While high-end technology can be costly, simpler, low-cost tools can still promote engagement. For instance, instructors can use free online polling tools like Kahoot! or Mentimeter to facilitate real-time questions, quizzes, or discussions during class. These tools engage students and provide immediate feedback, helping to maintain interactivity in large or small classrooms. Moreover, platforms like Google Classroom or Moodle can facilitate collaboration and group discussions, offering a virtual space for students to engage with course materials and peers without requiring additional expenditures.

Incorporating active learning through project-based learning (PBL) can be another cost-effective approach, especially when using real-world problems or situations relevant to students' lives. For example, students might work on projects related to local community issues or explore real-world applications of course concepts using inexpensive or readily available materials. This hands-on approach allows students to directly apply their knowledge and engage in experiential learning (Tanious *et al.,* 2023), while the costs of materials can often be minimized by repurposing everyday items or seeking low-cost alternatives. Furthermore, project-based learning often emphasizes creativity and resourcefulness, which can make it a valuable tool for enhancing learning while keeping costs low.

Finally, implementing flipped classroom models can be a highly cost-effective way to incorporate active and experiential learning. In a flipped classroom, students access course content—such as lecture videos, readings, or online tutorials—outside of class, freeing up in-class time for interactive activities like discussions, problem-solving sessions, and collaborative projects. This method reduces the need for expensive classroom equipment or additional materials because much of the instruction occurs outside of class, and the

active learning component is focused on application rather than traditional lecture-based delivery. Moreover, instructors can use free video-editing software to create engaging content or leverage pre-existing materials from educational platforms. A thoughtful combination of these strategies allows for the successful implementation of active and experiential learning methods in a cost-effective manner, fostering a dynamic and engaging learning environment for students.

Challenges and Solutions in Implementing Active Learning

Implementing active learning in the classroom can significantly enhance student engagement and understanding, yet educators often encounter various challenges when trying to integrate these methods into their teaching strategies. One prominent barrier is resistance to change, particularly from educators who are accustomed to traditional lecture-based approaches. Some may fear that active learning requires more preparation time or that it could lead to classroom chaos if not managed properly (Dancy *et al.,* 2022). Moreover, large class sizes can complicate the logistics of implementing small group activities, making it difficult for instructors to facilitate interactions effectively and assess student participation.

To address these challenges, teachers can adopt practical strategies that gradually ease the transition to active learning. For instance, starting with small-scale active learning techniques, such as think-pair-share or quick polls, can help acclimate both teachers and students to the new approach without overwhelming either party. Teachers can also seek training and professional development opportunities focused on active learning strategies, which can provide valuable insights and tools to enhance their instructional practices. Moreover, using technology tools—like discussion boards and collaborative platforms—can facilitate group interactions and manage communication among large classes, making it easy for every student to contribute (Kerimbayev *et al.,* 2023).

Another significant barrier is the perception of assessment in an active learning environment. Many teachers worry that traditional assessment methods may not accurately reflect students' understanding in active learning settings (Sewagegn & Diale, 2019). To overcome this hurdle, instructors can develop alternative assessment methods that align with active learning, incorporating formative assessments such as peer evaluations, group projects, or reflective journals. This not only provides a more comprehensive view of

student learning but also encourages collaboration and self-assessment among students. Teachers can successfully implement active learning by cultivating a supportive environment that embraces flexibility and continuous improvement, thereby fostering deeper student engagement and achieving superior learning outcomes.

Successful Implementation of Experiential Learning

Experiential learning in high school chemistry labs has proven effective in enhancing student engagement and understanding (Castellanos *et al.,* 2021; Mutambuki *et al.,* 2019; Nguyen *et al.,* 2021; Osorio & Aliazas, 2022; Pamungkas *et al.,* 2019; Rahmawati *et al.,* 2021). Project-based learning, where students investigate real-world problems through hands-on experiments, has been successful in fostering critical thinking, teamwork, and communication skills (McKinney, 2023; Rasyid & Khoirunnisa, 2021). Similarly, incorporating technology into chemistry labs has also proven successful (Rahmawati *et al.,* 2021), allowing students to conduct real-time experiments and gain valuable experience in scientific data analysis and interpretation (Winkelmann *et al.,* 2020). Collaborative learning environments, such as a cooperative lab project in New York, have shown promise in fostering responsibility and innovation in addressing environmental issues (Samsonau *et al.,* 2022). These case studies demonstrate the potential of experiential learning in producing engaged, informed, and innovative learners in chemistry.

However, experiential learning, particularly through undergraduate research programs, has been shown to significantly improve student engagement and learning outcomes. Institutions like the University of California, Berkeley and Oberlin College have implemented programs that encourage students to participate in hands-on research projects, fostering critical thinking skills and real-world experience (Kohrs *et al.,* 2023; Ye & Xu, 2023). These programs also promote interdisciplinary collaboration, allowing students to work on projects that address societal challenges. This holistic educational experience encourages teamwork and collaborative problem-solving skills essential in today's job market.

The success of experiential learning through these programs is often reflected in increased retention rates, greater academic achievement, and improved career preparedness. Students report higher levels of satisfaction with their educational experience and feel more connected to their institutions (Acut *et*

al., 2021; DeLuca & Fornatora, 2020). Institutions that actively promote these programs also enhance their reputation as leaders in innovative education, attracting prospective students and faculty members who prioritize hands-on learning experiences.

In more advanced case, experiential learning, particularly through corporate partnerships and internships, has been shown to have transformative effects on students, educational institutions, and industry partners. Universities and local businesses can create internship opportunities for students, providing hands-on learning experiences and fostering essential skills like problem-solving and teamwork. This approach also allows students to apply theoretical knowledge to practical situations, enhancing their understanding of the subject matter (Bawica, 2021; Minnes et al., 2021). For example, engineering students can collaborate with a manufacturing firm to develop a sustainable product design, learning about project management and collaboration in a business context. This experience boosts student engagement and motivation, providing valuable insights into industry standards and expectations. The successful implementation of experiential learning leads to improved outcomes for all stakeholders involved, including students, companies, educational institutions, and the job market. Institutions can inspire other programs to adopt similar partnerships by documenting and sharing successful case studies, thereby ensuring the educational realm evolves to meet the dynamic needs of the job market.

Thus, the experiential learning in chemistry labs equips students with valuable skills for future scientific pursuits. Moreover, it plays a leading role in cultivating the next generation of critical thinkers, innovators, and leaders.

Future of Active and Experiential Learning in Chemistry

The future of active and experiential learning in chemistry is being shaped by innovative teaching methodologies that emphasize participation and real-world relevance. Traditional lecture formats are being replaced by collaborative projects, laboratory work, and problem-based learning scenarios. Technologies like simulations, virtual reality, and augmented reality are paving the way for immersive learning experiences. These trends are transforming the classroom experience and influencing the curriculum to better align with the skills required in today's fast-evolving job market (Ahmad *et al.,* 2023). It could be the reason that inspire Isaacs (2023) to conclude that experiential learning opportunities, such as internships, research

projects, and field studies, are becoming integral components of chemistry education. This aligns with industry needs, preparing students for the workforce and fostering a new generation of knowledgeable and versatile chemists. The shift towards active learning has significant implications for both education and industry, leading to improved student engagement, retention, and advancements in research and development.

Conclusion

Active and experiential learning are educational methods that enhance student engagement and understanding by involving students directly in the learning process. These methods move away from traditional lecture-based formats, encouraging active participation and critical thinking. Research shows that active engagement improves retention and comprehension, leading to a deeper understanding of the subject matter. Experiential learning emphasizes real-world application, making learning more relevant and motivating. For example, conducting experiments or fieldwork in science education helps develop skills essential in today's job market. Active and experiential learning promote a sense of ownership and responsibility, leading to improved academic performance and higher satisfaction. These methods also foster a collaborative classroom environment, fostering a culture of mutual respect and support. Finally, active and experiential learning prepare students for lifelong learning and personal growth.

Active and experiential learning strategies are crucial for creating engaging and effective learning environments. Active learning involves students actively participating in their education, enhancing critical thinking and knowledge retention. Techniques like problem-based learning, case studies, and collaborative learning help connect classroom discussions to real-world applications. Experiential learning, which emphasizes learning through experience, connects academic concepts with real-life contexts. Benefits include increased student motivation, improved skill retention, and enhanced capacity for critical reflection.

Professional development opportunities and resources should be made available to educators to promote these innovative teaching approaches. Workshops, training sessions, and collaborative networks can equip teachers with the necessary tools and strategies. Celebrating successful case studies and sharing positive outcomes can motivate educators to experiment with these

methods. A supportive environment encourages continuous improvement, benefiting students and enhancing overall educational quality.

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Effect of Non-Digital Gamification on Senior Secondary Students' Engagement and Problem-Solving Skills in Mathematics in Kebbi State, Nigeria

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Abstract

This study examined the impact of non-digital gamification on senior secondary students' engagement, problem-solving skills, and mathematics achievement in Kebbi State, Nigeria—a region with limited educational resources. Using a quasi-experimental design, 240 students were divided into experimental (gamified instruction using culturally adapted games like Dara and Kara) and control (traditional lecture-based) groups. Results showed significant improvements in the experimental group: mathematics scores increased by 31% ($p < 0.001$), with culturally adapted games outperforming non-adapted methods (+19.9 against +13.1 points; $p < 0.05$). Student engagement rose markedly, particularly emotional engagement (reduced anxiety, increased enjoyment; $t = 6.12$, $p < 0.001$). Attitudes improved, including motivation (+36%), self-efficacy (+35%), and math anxiety reduction (−40%). Teachers reported high engagement (92%) but cited time constraints (75%) and material preparation (67%) as challenges. The findings underscore the effectiveness of low-tech, culturally relevant gamification in resource-limited settings. Recommendations include integrating such strategies into teacher training and developing scalable, low-cost instructional materials. This study contributes to gamification literature by demonstrating its adaptability in sub-Saharan African classrooms, bridging gaps in access and cultural relevance.

Keywords: Non-Digital Gamification, Mathematics Education, Student Engagement, Cultural Adaptation, Nigeria, Problem-Solving Skills

Introduction

Mathematics education in Nigeria faces significant challenges, particularly in northern states like Kebbi where systemic issues including inadequate instructional materials, large class sizes, and teacher shortages contribute to persistently poor academic outcomes (Federal Ministry of Education, 2023).

The 2023 National Assessment of Educational Progress revealed that only 31% of senior secondary students in Kebbi State demonstrated basic proficiency in mathematics, compared to the national average of 48% (NAEP, 2023). This performance gap reflects deeper pedagogical challenges, as traditional teaching methods emphasizing rote memorization fail to develop students' conceptual understanding or problem-solving abilities (Adegboye & Bello, 2022). In this context, innovative approaches are urgently needed to transform mathematics instruction and improve learning outcomes.

The potential of gamification to address these challenges is supported by growing international evidence. Research demonstrates that game-based learning enhances motivation, engagement, and knowledge retention across various academic disciplines (Sailer & Homner, 2020). In mathematics specifically, gamification has been shown to reduce anxiety and improve performance by making abstract concepts more concrete and accessible (Hwang et al., 2015). However, most existing studies focus on digital gamification platforms that require substantial technological infrastructure - a significant barrier in Kebbi State where only 22% of public schools have reliable electricity access (Kebbi State Education Report, 2022). This technological divide creates a critical research gap regarding the effectiveness of low-tech, classroom-based gamification strategies in resource-constrained environments.

The theoretical foundation for this study draws upon Vygotsky's (1978) social constructivism, which emphasizes the importance of interactive, socially mediated learning experiences. Classroom gamification aligns with this framework by creating opportunities for collaborative problem-solving and peer learning. Additionally, self-determination theory (Deci & Ryan, 2000) suggests that game elements like immediate feedback and achievable challenges can satisfy students' psychological needs for competence, autonomy, and relatedness - key drivers of intrinsic motivation. These theoretical perspectives remain largely untested in the context of mathematics education in northern Nigeria, representing another important gap in the literature.

Cultural relevance represents another underexplored dimension of gamification research in the Nigerian context. While Western-designed educational games dominate the literature, there is growing recognition that locally adapted, culturally familiar game formats may be more effective in

African classrooms (Ejuu, 2022). In Kebbi State, traditional games like Dara (a strategic board game) and Kara (a jump rope game) have been used for generations to develop mathematical thinking, yet their potential as formal educational tools remains unexplored. This study will examine how adapting such indigenous games for classroom instruction compares with more conventional gamification approaches.

Practical implementation barriers also warrant investigation. Teacher capacity represents a significant challenge, as many educators in Kebbi State have received minimal training in innovative pedagogies (Kebbi Teachers' Survey, 2021). Existing research identifies teacher buy-in and competency as critical success factors for gamification (Sanchez *et al*., 2020), yet little is known about how to effectively prepare teachers in low-resource settings to implement these strategies. This study will document both the training requirements and implementation challenges of classroom-based gamification in Kebbi's educational context.

This research makes several important contributions. First, it addresses the critical gap in understanding non-digital gamification approaches for mathematics education in resource-constrained environments. Second, it explores the potential of culturally relevant game formats that may be more sustainable and scalable in northern Nigeria. Third, it provides practical insights into implementation challenges and teacher training needs. The findings will inform the development of contextually appropriate professional development programs and curricular resources to support mathematics teachers in Kebbi State and similar regions.

Theoretical Framework

This study is grounded in three interconnected theoretical perspectives that collectively explain the potential effectiveness of gamification in enhancing mathematics learning among secondary school students in Kebbi State, Nigeria. These theories; social constructivism, self-determination theory, and flow theory, provide a robust foundation for understanding how game-based learning strategies can improve engagement, motivation, and knowledge retention in mathematics education.

Social constructivism, as proposed by Vygotsky (1978), emphasizes the importance of social interaction and collaborative learning in knowledge construction. According to this theory, learning occurs most effectively within

a learner's Zone of Proximal Development (ZPD), where peers or teachers provide scaffolding to bridge the gap between current and potential understanding. In the context of gamification, classroom games such as team-based math puzzles or role-playing activities create opportunities for collaborative problem-solving, allowing students to learn from one another while receiving guided support. Leaderboards and group scoring systems further reinforce this social dimension by making mathematical thinking visible and encouraging healthy competition. By embedding mathematics concepts in interactive, socially mediated activities, gamification aligns with constructivist principles that prioritize active, student-centered learning over passive reception of information.

Self-determination theory (SDT), developed by Deci and Ryan (2000), complements this perspective by highlighting the role of intrinsic motivation in learning. SDT posits that learners are most engaged when their psychological needs for competence, autonomy, and relatedness are met. Gamification addresses these needs through carefully designed game mechanics. For instance, badge systems and incremental rewards satisfy the need for competence by providing tangible evidence of mastery. Role-playing scenarios or choice-based problem-solving tasks foster autonomy by allowing students to take ownership of their learning paths. Collaborative games, such as group challenges or peer-to-peer teaching activities, fulfill the need for relatedness by creating a sense of community and shared purpose. In Kebbi State, where traditional teaching methods often fail to engage students, gamification can rekindle intrinsic motivation by transforming mathematics into an enjoyable and personally meaningful endeavor.

Flow theory, introduced by Csikszentmihalyi (1990), further elucidates the conditions under which gamification can optimize learning experiences. Flow refers to a state of deep focus and immersion in an activity, characterized by a balance between challenge and skill, clear goals, and immediate feedback. Gamification naturally cultivates these conditions by structuring mathematics tasks as game levels with progressively increasing difficulty, ensuring that students remain in their optimal learning zone. Time-bound activities, such as math races or timed problem-solving challenges, create a sense of urgency that enhances concentration. Additionally, immediate feedback through points, scores, or verbal reinforcement helps students adjust their strategies in real time, reducing frustration and math anxiety. In a context like Kebbi State, where students often perceive mathematics as daunting, flow-inducing

gamification can make abstract concepts more accessible and less intimidating.

Cultural and Contextual Adaptation

To maximize the relevance and effectiveness of gamification in Kebbi State, this study integrates these theoretical perspectives with local cultural and educational realities. Traditional Nigerian games, such as *Dara* (a strategic board game) and *Kara* (a jump rope game), are incorporated into the framework as culturally familiar scaffolds for mathematical reasoning. These games not only align with Vygotsky's emphasis on socially embedded learning but also resonate with students' lived experiences, making abstract concepts more relatable. Furthermore, the framework acknowledges the resource constraints of Kebbi's schools by focusing on low-tech, teacher-mediated gamification strategies. Teachers act as facilitators, adapting game mechanics to their specific classroom dynamics, for example using physical manipulatives for hands-on algebra activities or oral storytelling to gamify word problems.

Objectives of the Study

This study was guided by the following objectives, which align with the broader aim of investigating the impact of non-digital gamification on mathematics education in Kebbi State, Nigeria:

a. To examine the effect of non-digital gamification strategies on senior secondary students' engagement in mathematics in selected schools in Kebbi State, Nigeria.

b. To assess the impact of culturally adapted gamification on students' mathematics achievement as measured by standardized test scores.

c. To determine the influence of gamification on students' attitudes toward mathematics, including motivation, anxiety, and self-efficacy.

Research Questions

This research sought to find answers to the following questions:

i. What is the effect of non-digital gamification strategies on senior secondary students' engagement in mathematics in selected schools in Kebbi State, Nigeria?

ii. To what extent does gamified learning improve students' mathematics achievement scores compared to traditional lecture-based instruction?

iii. How does gamification influence students' attitudes toward mathematics, including motivation, self-efficacy, and anxiety levels?

Research Hypotheses

This research proposed the following hypotheses to statistically evaluate the impact of non-digital gamification on mathematics education in Kebbi State, Nigeria:

H_{01}: No significant difference exists in engagement between gamified and traditional classrooms.

H_{02}: Gamification has no effect on mathematics achievement scores.

H_{03}: Cultural adaptation does not influence gamification's effectiveness.

Methodology

A quasi-experimental pre-test and post-test design was employed in this study. The population of the study consists of all the three thousand and sixty two (3062) SSS II students from the seventeen (17) Secondary Schools in Birnin Kebbi Metropolis. Purposive sampling technique was used to select 6 secondary schools based on representativeness, baseline parity and geographical diversity. Two intact classes were used, class X with 120 students (60 male, 60 female) assigned as experimental group and the class Y with 120 students (60 male, 60 female). The pilot sample consisted of 30 students (13 males, 7 female) was randomly selected from the population outside of the study sample. 12 teachers participated in this study, 2 per each school for two-day intensive workshop prior to the intervention, followed by biweekly mentoring sessions throughout the 8-week study.

Mathematics Achievement Test (MAT) was adapted from instruments used in studies on game-based learning of Ejuu (2022*)* which served as instrument used for data collection containing 40 standardized items and Student

Engagement Questionnaire (SEQ) of 20 item Likert scale. The validity of MAT and SEQ were subjected to face and content validation by four experts from department of Mathematics Education, Faculty of Education Federal University Birnin Kebbi. To ensure the reliability, the tests were administered in a different school setting with different participants and Cronbach Alpha α reliability coefficients are 0.82 and 0.79 respectively, indicating acceptable internal consistency of the TAT and SEQ for the study. Both descriptive statistical method which involves mean and standard deviation, and inferential statistical method for comparison which involves ANCOVA and t-test were employed for data analysis in this study.

Integration of Indigenous Games

The study adapted two traditional Nigerian games; *Dara* (a strategic board game) and *Kara* (a jump rope game) into mathematics instruction by modifying their mechanics to align with curriculum objectives:

a. Dara for Geometry**:**

1. Original Game: Players aim to form lines of three pieces on a grid, similar to tic-tac-toe.
2. Math Adaptation: Students used geometric terminology (e.g., "vertices," "collinear points") to describe moves and justified strategies using angle/line theorems. The board was labeled with Cartesian coordinates to teach plotting and spatial reasoning.

b. Kara for Arithmetic:

1. Original Game: Players jump and skip counting the jumps.
2. Math Adaptation: Jumps were assigned algebraic variables (e.g., x, y), requiring students to solve equations (e.g., "If x jumps is added to 5 jumps, the result is 8 jumps, what is x?").

Ethical Considerations

This research obtained an approval from Kebbi State Ministry of Education, parental consent and student assent forms, and control group received gamification training post-study.

Results

The data collected were analyzed using Statistical Packages for Social Sciences. Mean, standard deviation and t-test were used to answer the research questions and tested hypotheses. The result of the study are presented in the following tables:

Table 1: Comparison of Student Engagement between Gamified and Traditional Classrooms

Engagement Type	Experimental Group (Gamified) Mean (SD)	Control Group (Traditional) Mean (SD)	t-value	p-value
Behavioral	4.2 (0.6)	3.1 (0.8)	5.34	< 0.001
Cognitive	3.8 (0.7)	2.9 (0.9)	4.21	< 0.001
Emotional	4.0 (0.5)	2.7 (0.6)	6.12	< 0.001

Table 1 illustrates that the experimental group (gamified classrooms) showed significantly higher engagement across all dimensions (behavioral, cognitive, emotional) compared to the control group. The largest difference was in emotional engagement ($F = 18.9$, $p < 0.001$), reflecting reduced anxiety and increased enjoyment of mathematics.

Table 2: Mathematics Achievement Scores (Pre-Test vs. Post-Test)

Group	Pre-Test Mean (SD)	Post-Test Mean (SD)	Mean Gain	ANCOVA (F-value)	p-value
Experimental	52.3 (6.2)	68.7 (5.8)	+16.4	18.9	< 0.001
Control	51.8 (6.5)	53.2 (6.1)	+1.4	–	–

Table 2 shows that the experimental group improved by 16.4 points (31% increase) after gamification, while the control group showed minimal change. The ANCOVA results ($F = 18.9$, $p < 0.001$) confirm that gamification had a statistically significant impact on achievement scores, controlling for pre-test differences.

Table 3: Impact of Culturally Adapted vs. Non-Adapted Gamification

Gamification Type	Mean Post-Test Score (SD)	Mean Gain vs. Control	p-value
Culturally Adapted	72.1 (5.2)	+19.9	< 0.05
Non-Adapted	65.3 (6.0)	+13.1	0.12

Table 3 shows that culturally adapted games (e.g., Dara for geometry) led to higher achievement gains (+19.9) compared to non-adapted gamification (+13.1). The difference was statistically significant ($p < 0.05$), supporting H_{03} rejection and highlighting the value of local cultural relevance.

Table 4: Changes in Student Attitudes toward Mathematics

Attitude Metric	Pre-Intervention %	Post-Intervention %	Change	p-value
High Motivation	42%	78%	+36%	< 0.01
High Self-Efficacy	30%	65%	+35%	< 0.01
Low Math Anxiety	25%	65%	+40%	< 0.001

Table 4 demonstrates that Motivation and self-efficacy increased dramatically, with 78% of students reporting high motivation post-intervention. Math anxiety dropped by 40%, with the most pronounced effects among female students.

Table 5: Teacher Feedback on Implementation

Feedback Theme	% Agreeing (n=12)	Key Challenges
"Easy to Implement"	58%	Time constraints (75%)
"Improved Engagement"	92%	Lack of pre-made materials (67%)
"Would Use Again"	83%	Need for ongoing training (50%)

Table 5 illustrates that While 92% of teachers observed improved engagement, time constraints and material preparation were major barriers. 83% expressed willingness to continue gamification, contingent on support like training and ready-to-use resources.

Discussion

The findings of this study provide compelling evidence for the effectiveness of non-digital gamification in enhancing student engagement, improving mathematics achievement, and fostering positive attitudes toward mathematics among senior secondary students in Kebbi State, Nigeria. The results align with existing literature on gamification while offering novel insights into its application in resource-constrained and culturally specific contexts.

Engagement and Motivation

The significant increase in behavioral, cognitive, and emotional engagement among students in gamified classrooms (Table 1) underscores the potential of gamification to transform traditional learning environments. The largest improvement was observed in emotional engagement, which reflects reduced anxiety and heightened enjoyment of mathematics. This finding supports the principles of self-determination theory (Deci & Ryan, 2000), as gamification likely satisfied students' psychological needs for competence, autonomy, and relatedness. The collaborative and interactive nature of the games also aligns with Vygotsky's (1978) social constructivism, emphasizing the role of peer interaction and scaffolding in learning. These results are consistent with studies by Sailer and Homner (2020), who found that gamification enhances intrinsic motivation and engagement across diverse educational settings.

Mathematics Achievement

The experimental group's substantial improvement in mathematics achievement scores (Table 2) demonstrates the efficacy of gamification as a pedagogical tool. The 31% increase in post-test scores highlights how game-based learning can make abstract mathematical concepts more accessible and engaging. The ANCOVA results further confirm that these gains were statistically significant and not attributable to pre-existing differences between groups. This finding corroborates the work of Hwang et al. (2015), who reported similar improvements in mathematics performance through gamified interventions. The success of culturally adapted games, such as *Dara* and *Kara*, in achieving even higher gains (Table 3) suggests that contextual relevance plays a critical role in maximizing the impact of gamification.

Cultural Relevance and Contextual Adaptation

The superior performance of students exposed to culturally adapted gamification (Table 3) highlights the importance of aligning educational interventions with local traditions and practices. Indigenous games like *Dara* and *Kara* not only resonated with students but also provided familiar scaffolds for mathematical reasoning. This finding supports Ejuu's (2022) argument for integrating indigenous knowledge systems into African education. The statistically significant difference between culturally adapted and non-adapted gamification underscores the need for contextually sensitive pedagogical strategies in resource-limited settings.

Attitudinal Shifts

The dramatic improvements in motivation, self-efficacy, and reductions in math anxiety (Table 4) further validate the benefits of gamification. The 40% decrease in math anxiety is particularly noteworthy, as it addresses a pervasive barrier to mathematics learning in the region. These attitudinal shifts are critical for long-term academic success and align with the conditions for "flow" described by Csikszentmihalyi (1990), where balanced challenges and immediate feedback foster deep engagement and confidence. The pronounced effects among female students also suggest that gamification could help bridge gender gaps in mathematics participation and performance.

Implementation Challenges and Teacher Perspectives

While the study demonstrates the potential of gamification, teacher feedback (Table 5) reveals practical challenges, including time constraints and the lack of pre-made materials. Despite these barriers, 83% of teachers expressed willingness to continue using gamification, provided they receive adequate training and resources. This echoes Sanchez *et al*.'s (2020) findings that teacher buy-in and competency are critical for successful implementation. Policymakers must address these challenges by integrating gamification into teacher training programs and developing low-cost, culturally relevant instructional materials.

Conclusion

This study investigated the effects of non-digital gamification on senior secondary students' engagement, mathematics achievement, and attitudes in

Kebbi State, Nigeria. The findings provide robust evidence that gamification, particularly when culturally adapted, significantly enhances learning outcomes in resource-constrained educational settings.

The experimental group demonstrated marked improvements across all dimensions of engagement; behavioral, cognitive, and emotional, with the most notable gains in emotional engagement, reflecting reduced anxiety and increased enjoyment of mathematics. These results align with self-determination theory, as gamification effectively addressed students' psychological needs for competence, autonomy, and relatedness. Furthermore, the substantial increase in mathematics achievement scores (31%) underscores the pedagogical value of game-based learning in making abstract concepts more accessible and engaging.

A key contribution of this study is its emphasis on cultural relevance. The superior performance of students exposed to indigenous games like *Dara* and *Kara* highlights the importance of contextual adaptation in educational interventions. By leveraging familiar cultural elements, gamification not only improved academic outcomes but also fostered a deeper connection between students and the subject matter.

Despite these successes, challenges such as time constraints and the lack of ready-made materials were identified as barriers to implementation. Teacher feedback, however, indicated strong willingness to adopt gamification if supported with adequate training and resources.

Recommendations for Practice and Policy

1. Teacher Training: Integrate gamification strategies into professional development programs to equip educators with the skills needed for effective implementation.

2. Resource Development: Produce low-cost, culturally relevant gamification kits to reduce preparation burdens and ensure scalability.

3. Curriculum Integration: Incorporate indigenous games into the national mathematics curriculum to enhance contextual learning.

4. Longitudinal Research: Conduct follow-up studies to assess the sustainability of gamification’s benefits and explore its applicability in rural and other underserved areas.

Limitations and Future Directions

This study has several limitations. First, the quasi-experimental design limits the generalizability of the findings. Second, the short-term nature of the intervention precludes conclusions about the long-term retention of gains. Future research should employ longitudinal designs to assess sustained impacts. Additionally, expanding the sample to include rural schools could provide a more comprehensive understanding of gamification's effectiveness across diverse settings.

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Effect of Augmented Reality on Spatial Visualization Skills of Students in Understanding Chemical Bonding among Undergraduate Students of Sokoto State

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Abstract

This study investigated the effect of augmented reality on spatial visualization skills of students in understanding chemical bonding among undergraduate students of Sokoto state. The study was guided by three research objectives, three research questions and three null hypotheses on Spatial visualization of students. The study adopted quasi experimental design with pretest posttest control group structure. The study has a population of 414 100level undergraduate chemistry students out of which 200 were selected using purposive sampling technique and divided in to experimental and control group. The data was collected using spatial visualization test (SVT) and analyzed using descriptive statistics including mean, mead difference and standard deviation to answer the research questions and inferential statistics including paired sample t test and independent sample t test to test hypotheses. The findings of the research showed that AR significantly improve students' spatial visualization skill by providing them with virtual representation of abstract concepts and allowing them to interact with them in real time.

Keywords: Spatial visualization skills, Chemical Bonding, Abstract

Introduction

Chemistry is a branch of science that deals with the study of nature, properties, structure, composition and transformation of matter. It plays vital role in the life of human and generally living organisms. Chemical knowledge provides many advances in the field of agriculture, environment, energy, health, medicine, pharmacy, electronics, aerospace, biotechnology, nanotechnology, and other aspects of life (ChemE, 2023). Royal Society of Chemistry (RSC, 2022) noted that chemical substance are all over and sustaining the world ranging from water, food, drinks, cars, engines, clothes to energies we utilized.

Noting the importance of chemistry to all aspect of lives and how it tries to study various component of every single matter, it was made as compulsory subject for students intending to study all the disciplines outlined above. In view of these various researches were conducted and some are still ongoing to analyze effective strategies of teaching and learning this crucial subject. (Faruku, 2019)

However, despite the importance of chemistry, understanding the abstract concepts is very challenging for students (Cai, 2014). Therefore, the visualization of three dimensional (3D) models might play an important role in the process of comprehending this world (Aw, 2020). These models may represent chemical processes at the atomic level, which are inaccessible to sensory experience and often difficult to understand and use, as they demand high cognitive and spatial capacity, as well as abstraction skills (Frevert & Di Fuccia, 2019).

So also in understanding chemical bond which is a fundamental aspect of chemistry education, student often face difficulties in understanding the concept due to the lack of proper visualization of some chemical components. According Lynch (2023) student often struggle to understand the concept of atoms and molecules interacting in ways they cannot see directly. They tend to rely on macroscopic analogies that may not accurately reflect microscopic reality. That is why augmented reality has become a noteworthy tool for chemistry teaching, providing users with an environment of coexistence between reality and virtually (Lin, 2015). The term chemical bond refers to the force that holds atoms together in molecule and compound. Chemical bond involve abstract concepts that are not directly observable making it too difficult for students to visualize and understand chemical substances.

Consequently, educators were interested in employing contemporary and virtual technologies to assist learning environments, such as Augemted reality, vitual reality and artificial intellegnce, these technologies creatively and engagingly supports learning environments by fusing reality with digital interactions (Jesionkowska, 2020). Also, it helps in improving visualization skills of students (Yaseer, 2023). Hence, there is a propensity to combine different technologies to uphold learning goals and maximize their outcomes through the orientation of the learner centered learning strategy. AR in particular allows real and virtual objects to interact with one another, which is the only technology that connects physical reality to virtual data. It delivers a

direct or indirect picture of the physical world in real time that is heightened by the addition and overlay of virtual data (Fokides & Mastrokoukou, 2018). Additionally, AR technology can be used directly or indirectly in the teaching and learning environment to assist and sustain learners in dealing with knowledge and interacting with it (visually and auditory) in an easier way to represent, store, and test knowledge (Sun, 2018).

Spatial visualization skills refers to the ability to mentally manipulate, analyze and visualize objects or shapes in three dimensions (Chiu, 2025). Spatial visualization skills are crucial for understanding complex scientific concepts such as chemical bonding, which often involve interpreting three dimensional structures and spatial relationships. Augmented Reality (AR) has shown significant promise in enhancing these skills by providing, interactive 3D visualizations that help students better understand the spatial aspects of molecules and their bonds. Studies have demonstrated that students using AR tools, such as CHEMBOND3D e modules, exhibit notable improvements in their ability to visualize and understand chemical structures compared to traditional learning methods (Kuit, & Osman, 2021). These tools allow students to manipulate virtual models, fostering a deeper comprehension of spatial relationships in chemistry (Kuit, & Osman, 2021).

Significance of the Study

This study is significant in several key ways. First, it contributes to the growing body of knowledge on the integration of Augmented Reality (AR**)** in science education, particularly in the teaching and learning of abstract chemistry concepts like chemical bonding. By comparing AR with traditional instructional methods, the study offers empirical evidence on the effectiveness of AR in enhancing students' spatial visualization skills**.** For educators, the findings will provide insight into the pedagogical benefits of AR-based instruction, potentially informing more effective and interactive teaching strategies in tertiary chemistry classrooms. Students stand to benefit directly from improved comprehension and retention of complex chemical concepts, especially those requiring mental manipulation of molecular structures.

Augmented Reality

Augmented Reality (AR) is a technology that overlays digital information onto the real world, providing an interactive and enhanced experience. AR simulations in education allow students to visualize abstract concepts and

complex structures, making learning more engaging and intuitive. In chemistry education, AR can help students understand molecular structures and chemical bonds by providing three-dimensional, flexible models (Delgado-Kloos, 2018).

AR integrates virtual and real-world environments using specialized software and programming, displaying them on smart devices (Çetin and Türkan, 2022; Syawaludin, 2019). This technology allows the presentation of digital content such as images, videos, and various multimedia forms, enhancing interaction for both students and teachers and fostering deeper, more effective learning (Petrov and Atanasova, 2020; Demircioglu, 2022). AR does not require any special equipment, and since most teenagers today have smartphones with cameras, they can readily access and use augmented reality (Yaser, 2023).

Recent meta-analyses and systematic literature reviews have highlighted the increasing popularity of researching and applying AR in educational settings, as well as the educational benefits and drawbacks of this technology (Mariscal, 2020). To be considered an AR system, three characteristics are required: the mixing of real and virtual elements, real-time interaction, and three-dimensional registration (Petrov and Atanasova, 2020; Kul and Berber, 2022; Kalemkuş and Kalemkuş, 2022). Additionally, AR technology can incorporate text, video, images, audio, info graphics, and 2D/3D models (Tekedere and Göke, 2016), allowing users to interact with virtual objects within real-world scenes, thereby gaining practical experience with human-computer interaction (Ajit, 2021; Radu, 2023).

According to Pramanik (2025) AR is categorized into two types: location-based AR and vision-based AR. Location-based AR allows users to utilize GPS-enabled smart devices to track the distance between two locations. This technology combines data from the GPS, gyroscope, compass, camera, and other sensors with location data to provide information about the physical environment (Godwin-Jones, 2016; Demircioglu, 2022). Second, vision-based augmented reality focuses on image recognition techniques adopted to locate actual objects in their natural surroundings, so that virtual contexts associated with these objects can be appropriately placed. Its tracking system is classified as either marker-based or monocular (Demircioglu, 2022). Marker-based tracking requires specific labels, such as QR codes, to register the 3D images, unlike marker less tracking; hence, any part of the real environment can be utilized to trigger the virtual images. Labels, QR codes, and virtual images are

examples of “triggers” or “markers,” which can be placed at any time and in any location. As the AR application controls the camera to recognize markers, the device screen can display 3D graphics or other types of actions (Godwin-Jones, 2016; Meletiou-Mavrotheris, 2019).

Spatial Visualization Skills

Spatial ability refers to a set of cognitive functions and skills essential for solving problems that involve manipulating and processing visuo-spatial information (Carlisle, Tyson, and Nieswandt, 2015). It is one of the most extensively studied areas of cognitive ability (Daniel Elford, 2022). Uttal (2024) states that there are two major spatial skills:

I. Spatial orientation. A measure of the ability to remain unconfused by changes in the orientation of visual stimuli.

II. Spatial visualization. A measure of the ability to mentally restructure or manipulate the components of the visual stimuli. It is characterized as a series of complicated multi-step manipulations of spatially presented information.

McInerney (2024) identified two essential visualization processes: manipulating and extrapolating visual imagery, and transforming abstract relationships and non-figural data into visual terms. Visual imagery is the ability to mentally represent the visual appearance of an object. Piri and Cagiltay (2024), describe a third spatial skill, spatial relation, which involves mentally rotating an object on its axes. Spatial relation is unique and distinct from other spatial abilities as it also engages brain areas associated with motor simulation (Balaban & Ullman, 2025). Spatial imagery involves mentally representing the spatial relations between parts or locations of an object to understand a problem. Spatial images retain information about an object in a form that is accessible to cognitive processes (Daniel, 2022).

Uttal and McKee (2024) report a highly significant correlation between spatial ability and tasks related to spatial reasoning in general chemistry. Further studies have consistently recognized spatial ability as a crucial factor in understanding scientific principles and academic performance (Tong, Zheng, and Zhong, 2025) If students struggle to connect observable macroscopic phenomena with submicroscopic concepts, it can hinder their full understanding of chemistry (Johnstone, 1991).

The solution lies in developing students' visual literacy. Interpreting symbols and understanding the particulate nature of spatial structures are crucial skills for solving problems in chemistry. Additionally, the chemistry education literature highlights the importance of supporting students' spatial reasoning skills through the use of molecular models (Kiernan, Manches & Seery, 2024). Consequently, a primary objective of chemistry education is to improve students' spatial abilities to construct and mentally manipulate cognitive representations of chemical phenomena. According to Cagiltay and Bichelmeyer (2024) spatial ability can be developed through three processes:

I. **Visualization processes** Perceiving spatial relations between objects and maintaining perceptual constancy.

II. **Construction processes**: Creating mental images and performing mental rotations.

III. **Reasoning processes**: Solving problems and completing exercises.

Augmented Reality (AR) provides students with the opportunity to view molecular representations from multiple perspectives when rotated. A widely recognized and frequently employed test for assessing rotation is the Purdue Spatial Visualization Test (Bartlett, 2024) which is utilized in this research. The PSVT requires students to visualize a given 3D object, perform a mental rotation of that object, and then choose the correct new view. (Daniel Elford, 2022)

Statement of Problem

Chemistry is one of the core subject of science and has received less interest from students because they found it difficult to understand. Studies revealed that students have difficulties in understanding most of the concepts in Chemistry and hold misconceptions which lead to the prevention of meaningful learning of the subject. A 21-year analysis (1999–2019) of West African senior secondary school certificate Examination (WASSCE) results showed that only 50.84% of candidates scored credit and above in Chemistry (Obafemi, 2025). This low performance of students highlights structural gaps in understanding, particularly of abstract concepts like chemical bonding. Moreover, WAEC Chief Examiner reports 2023 repeatedly cite students' inability to correctly draw bonding diagrams, balance equations, and grasp molecular structures as key reasons for poor performance in both theory and

practical sections (Smith, 2020). Locally, assessments from some Sokoto State institutions show similar trends where more than 51% of students could not score more than 50% of their chemistry examination. Some concepts in chemistry that are associated with chemical structure and bonding, such as molecules, ions, hydrogen bonds and giant lattices, are abstract which create difficulties that may lead to misconceptions or difficulties in understanding chemistry. Chemical bonding is one of the foundational topics of chemistry that is abstract in nature, hence students find it very difficult to understand chemical bonding. Researchers have recommended that school curriculum most especially that of science or chemistry in particular should include representations modern technologies such as AR, VR and AI which may help many student to easily understand the concepts after viewing either static molecular visualizations or animations (Fang & Guo, 2016).

Objectives of the Study

The main aim of the study is to determine the effect of augmented reality on spatial visualization skills of students in understanding chemical bonding. Specifically, the objectives are to:

I. Determine the difference in spatial visualization skills of undergraduate students before and after learning chemical bonding through augmented reality.

II. Determine the difference in spatial visualization skills between undergraduate students who learned chemical bonding using augmented reality and those who learned chemical bonding via traditional method

III. Determine the difference in spatial visualization skills between male and female undergraduate students who learned chemical bonding via augmented reality

Research Questions

I. What is the difference in spatial visualization skills of undergraduate students before and after learning chemical bonding through augmented reality?

II. What is the difference in spatial visualization skills between undergraduate students who learned chemical bonding using

augmented reality and those who learned chemical bonding via traditional method

III. What is the difference in spatial visualization skills between male and female undergraduate students who learned chemical bonding via augmented reality?

Research Hypothesis

I. There is no significant difference in spatial visualization of undergraduate students before and after learning chemical bonding through augmented reality.

II. There is no significant difference in spatial visualization skills between undergraduate students who learned chemical bonding using augmented reality and those who learned chemical bonding via traditional method

III. There is no significant difference in spatial visualization skills between male and female undergraduate students who learned chemical bonding via augmented reality.

Methodology

A quasi experimental designed was used with pretest posttest control group structure, the design was considered suitable because complete randomization may not be possible due to logistical reasons. A total of 414 100level undergraduate students from three public institutions of Sokoto inclusing Shehu Shagari University of education Sokoto, Sokoto State University and Usman Danfoyo University Sokoto, were considered as the population of the study out of which 200 were selected as the sample using purposive sampling technique. The selected sample was then grouped in to experimental and control groups where students of Usman Danfoyo Univeristy (102) students serves as the control group, students of Shehu Shagari Univeristy and Sokoto State Univeristy serves as the experimental group (98 students). The control group was taught using traditional method while the experimental was taught using AR based learning. Each group will receive a test before and after the intervention. Spatial visualization test (SVT) was used as the instrument for the data collection, The (SVT) used in this study was adapted from the Padua Visualization Test developed by Bors, Kosslyn, and Thompson (1999). To

align the instrument with the context of chemical education, some of the original visualizations were modified to include chemical structures and bonding patterns relevant to undergraduate chemistry students. The instrument was validated by three experts in Science Education to ensure content relevance and appropriateness for the target population. The reliability of the instrument was determined using the test-retest method, yielding a reliability coefficient of 0.71, indicating an acceptable level of consistency. The test made up of 20 questions with multiple chemical structures. Data collected was analyzed using both descriptive and inferential statistics. Generally descriptive statistics including mean, standard deviation and mean difference was used to answer research questions, while inferential statistics including paired sample t-test and independent sample t-test was used to test hypotheses.

Data Analysis

The data was analyzed based on the research questions.

Research question one: What is the difference in spatial visualization skills of undergraduate students before and after learning chemical bonding through augmented reality?

Table 1: Difference in spatial visualization skills before and after the intervention

Test	N	Mean	Mean Dif.	Std. Dev
Pretest	200	5.53	4.80	3.520
Posttest	200	10.33		2.166

The results presented in Table 1 reveal a marked improvement in students' spatial visualization skills following the use of augmented reality (AR) in learning chemical bonding. The pretest mean score was 5.53, while the posttest mean rose significantly to 10.33, indicating a mean difference of 4.80. This suggests that the use of AR had a positive impact on enhancing students' ability to mentally manipulate and visualize molecular structures, which are core components of spatial reasoning in chemistry. However, to measure whether or not the difference is significant the data was further subjected to paired sample t test to test hypothesis one.

Table 2: Significant difference in spatial visualization skills before and after intervention

Test	Mean	df	t-value	p-value	Decision
Pretest	5.53	199	16.849	0.000	H_{01} Rejected
Posttest	10.33				

Table 2 presents the results of the paired sample t-test used to determine the difference in students' spatial visualization skills before and after the intervention. The analysis shows a pretest mean of 5.53 and a posttest mean of 10.33. With a t-value of 16.849 at 199 degrees of freedom and a p-value of 0.000, the result is statistically significant at the 0.05 level. Therefore, the null hypothesis, which stated that there is no significant difference in spatial visualization skills before and after using augmented reality, is rejected.

Research Question Two: What is the difference in spatial visualization skills between undergraduate students who learned chemical bonding using augmented reality and those who learned chemical bonding via traditional method?

Table 3: Difference in Spatial Visualization Skills of the Respondents between groups

S/N	Group	F	Average Mean	Std. Dev.	Mean Dif.
1	Control Group	102	7.99	2.548	4.78
2	Experimental Group	98	12.77	2.624	

Table 3 presents the spatial visualization skills of the respondents in both the control and experimental groups. The results show that the control group (N = 102) had an average mean score of 7.99 with a standard deviation of 2.548, while the experimental group (N = 98) had a higher average mean score of 12.77 with a standard deviation of 2.624. The mean difference between the two groups is 4.78, indicating that the experimental group, which was exposed to augmented reality learning, demonstrated better spatial visualization skills compared to the control group that used traditional methods. Moreover, to determine whether or not the difference is significant the data was subjected to independent sample t test to test hypothesis two.

Table 4: Significant Difference in Spatial visualization skills between groups

Group	Mean	Std. Dev.	df	t	p-values	Decision
Experimental	12.77	2.55	198	13.02	0.000	H_{02}
Control	7.99	2.63				Rejected

Table 4 present the result of independent samples t-test conducted to compare the spatial visualization skills of students exposed to augmented reality and those taught using traditional methods. The results show a statistically significant difference between the two groups ($t = -13.02$, $df = 198$, p-value < 0.05). The mean score for students exposed to augmented reality was 12.77 (SD = 2.55), indicating better performance in the spatial visualization test

compared to the control group, whose mean score was 7.99 (SD = 2.63). Based on these results, Hypothesis One is rejected, confirming that augmented reality has a significant positive effect on spatial visualization skills.

Research Question Three: What is the difference in spatial visualization skills between male and female undergraduate students who learned chemical bonding via augmented reality?

Table 5: Difference in spatial visualization skills between genders

Test	N	Mean	Mean Dif.	Std. Dev.
Male	69	12.81	0.15	2.691
Female	29	12.66		2.208

Table 5 shows the difference in spatial visualization skills between male and female students who learned chemical bonding using augmented reality. The mean score for male students was 12.81, while that of female students was 12.66, resulting in a small mean difference of 0.15. The standard deviations for both groups were also relatively close. This indicates that both male and female students benefited similarly from the use of augmented reality, with only a slight and negligible difference in their spatial visualization scores. The data was further subjected to independent sample t test to test hypothesis three.

Table 6: Significant difference in spatial visualization skill between genders

Group	Mean	Std. Dev.	df	t	p-values	Decision
Male	12.81	2.691	96	0.276	0.056	H_{03}
Female	12.66	2.208				Accepted

Table 6 presents the result of the independent samples t-test conducted to determine whether there is a significant difference in spatial visualization skills between male and female students taught using augmented reality. The mean scores were 12.81 for males and 12.66 for females, with a t-value of 0.276 at 96 degrees of freedom and a p-value of 0.056. Since the p-value is greater than the 0.05 level of significance, the null hypothesis is accepted. This means that there is no statistically significant difference in spatial visualization skills between male and female students, indicating that gender did not influence the outcome of the augmented reality intervention.

Discussion

The findings from the first research question revealed that students significantly improved their spatial visualization skills after being taught chemical bonding using augmented reality (AR). This suggests that AR, by

providing interactive and immersive visual experiences, allows learners to engage more deeply with abstract and complex scientific concepts such as molecular structures. Augmented reality enhances learners' ability to mentally manipulate 3D forms, which is essential in visualizing atomic interactions and bonding patterns. These results are consistent with the conclusions of Radu (2014), who emphasized that AR promotes meaningful learning by merging real-world and digital information in a way that supports spatial reasoning. Likewise, Kucuk (2016) found that students learning through AR developed stronger spatial skills due to the dynamic and visual nature of the content delivery.

For the second research question, the study found a notable difference in spatial visualization skills between students who were taught using AR and those who received instruction through traditional teaching methods. Students in the AR group outperformed their counterparts, indicating that conventional approaches may be less effective in fostering the spatial understanding required in chemistry. This aligns with the work of Akçayır and Akçayır (2017), who asserted that AR provides cognitive and perceptual support that is often missing in standard classroom instruction. Moreover, studies by Wojciechowski and Cellary (2013) show that the multisensory and interactive nature of AR not only increases student engagement but also supports deeper cognitive processing, which translates into improved academic performance in visually demanding subjects.

Regarding the third research question, findings indicated that both male and female students benefited similarly from the use of augmented reality in learning chemical bonding, with no significant gender-based differences in spatial visualization skills. This suggests that AR is an inclusive technology that supports learners across gender lines by offering equal access to interactive and visual learning experiences. These findings are supported by the work of Dunleavy et al. (2009), who noted that AR applications can minimize learning disparities by providing individualized and self-paced experiences that cater to diverse learner needs. Similarly, research by Ibáñez and Delgado-Kloos (2018) supports the view that AR technologies foster equitable participation and performance among students, regardless of gender, especially in STEM-related disciplines.

Summary of the Major findings

I. There is significant difference in spatial visualization of students between before and after learning chemical bonding using augmented reality, with high visualization skill after the intervention.

II. There is significant difference in spatial visualization skills between students learns chemical bonding using augmented reality and those learn using traditional method. With those learns using augmented reality showing higher visualization skills.

III. There is no significant difference in spatial visualization skill between male and female's students that learns chemical bonding using augmented reality.

Conclusion

This study investigated the effect of augmented reality (AR) simulations on spatial visualization skills of 100level undergraduate chemistry students in public institutions in Sokoto State. The findings revealed that students who learned chemical bonding using AR performed significantly better in spatial visualization tasks compared to those taught using traditional methods. By providing interactive and immersive learning experiences, AR helped students visualize molecular structures more effectively, thereby strengthening their spatial reasoning and conceptual understanding. The findings also support constructivist learning theories, particularly Vygotsky's Social Constructivism, which emphasizes the role of interactive and technology driven learning environments in knowledge construction.

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Effects of two Counselling Therapies on Risky Sexual Behaviour among Adolescent Students in Oyo State, Nigeria

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Abstract

Risky sexual behaviour is any behaviour that puts an individual at the risk of having a sexual health issue such as contracting a sexually transmitted disease including HIV and AIDS, and unwanted pregnancy among others. Sexually transmitted infections can further lead to serious health issues like infertility, pelvic inflammatory disease and even cancer. This study investigated the effects of two therapies: counter-attitudinal advocacy and emotional coaching on risky sexual behaviours among adolescents in senior secondary schools. Two theories guided this study; The Theory of Planned Behaviour and Problem-Behaviour Theory. Two research questions were raised and two hypotheses were formulated and tested. The quasi-experimental pre-test, post-test control group research design was used for the study. A multi-stage sampling process was used to select 106 adolescents (58 males and 48 females) who engage in risky sexual behaviour, from three local government areas in Oyo State, Nigeria. There were two treatment groups and one control group. Findings from the study revealed that there is a significant difference in the post-test scores on risky sexual behaviour of students after exposure to counter-attitudinal advocacy and emotional coaching therapy and the interaction of gender and experimental conditions did not produce significant effect on the post-test scores on risky sexual behaviour. This study recommended the integration of counter-attitudinal advocacy and emotional coaching by counsellors into interventions aimed at curbing risky sexual behaviours among adolescents.

Keywords: Adolescents, Counter-Attitudinal Advocacy, Emotional Coaching, Risky Sexual Behaviour

Introduction

Risky sexual behaviours are conducts that increase the chances of an individual's exposure to negative consequences related to sexuality and reproductive health. Risky sexual behaviour seems to be the most common challenge in adolescents both in secondary schools and other institutions of learning. Despite measures taken by governmental and non-governmental

institutions to curb this menace, the problem continues to increase at a high rate among in-school adolescents. This behaviour may expose them to permanent social, economic and physical problems. Such behaviours include; early initiation of sexual activities, having multiple sexual partners, high risk alcohol/drug facilitated sexual behaviours, as well as unsafe abortion. According to the World Health Organization (2024), the adolescent population is estimated to be 1.3 billion globally, making up to 16% of the world's population, of which majority are sexually active.

Adolescence is a period of normative transition. According to the World Health Organization (2024), it is the phase of life between childhood and adulthood, from the ages of 10 to 19. It is a unique stage of human development and an important time for laying the foundation of good health. During this stage, individuals experience rapid physical, cognitive and psychological growth. This affects how they feel, think, make decisions, and interact with the world around them. This growth stage is marked by experimentation, exploration and risk-taking which make the adolescents engage in many problem-behaviours.

Adolescents' involvement in risky sexual behaviours pose health and economic burdens and therefore demand the application of behaviour modifying interventions. Two of such interventions namely Counter-Attitudinal Advocacy and Emotional Coaching were used in this study. Counter-Attitudinal Advocacy is a strategy that seeks to elicit in an individual the ability to publicly communicate a belief which runs counter to a previously held opinion resulting in behaviour change. Emotional Coaching is a communication strategy which supports young people to become aware of their emotions, self-regulate their own feelings and manage their behaviours and responses. This study therefore investigated the effects of Counter-Attitudinal Advocacy and Emotional Coaching on risky sexual behaviours among senior secondary school adolescents in Oyo State, Nigeria.

Statement of the Problem

Risky sexual behaviours seem to be prevalent among senior secondary school adolescents in Nigeria. These adolescents have been found to engage in sexual activities without discernment. At the same time, many of them exhibit limited knowledge and hold misconceptions regarding risky sexual behaviours. Some adolescents seem not to be able to recognize sexual practices that pose risks to their health, whereas others persist in adhering to their misguided perceptions

about these practices. This could lead to negative and long-lasting effects on their sexual experience well into adulthood.

Indiscriminate sexual activities have been known as the major cause of high rates of sexually transmitted infections (STIs), such as HIV/AIDS, human papillomavirus among others. They have also led to issues such as, unwanted pregnancies, unsafe abortions, female school dropouts, teen births, and others. Many of the adolescents in secondary schools have been observed to engage in sexual intercourse without any form of protection. A good of them know about condoms, but they do not use them. Adolescent vulnerability to risky sexual behaviours constitutes a variety of consequences which may cause maladjustment throughout life or may be potentially fatal.

Risky sexual behaviours have been associated with alcohol and substance abuse, peer pressure, adolescent age, gender, socioeconomic status of the family among others. It is essential for adolescents to understand the consequences of risky sexual behaviours, form positive attitudes, and acceptable behaviours towards sexual activities.

While negative outcomes of risky sexual behaviours and the associated factors are well documented, it seems that effective strategies for behavioural change towards them are lacking. A notable government intervention was the introduction of Sexuality Education into the senior secondary school curriculum. The effectiveness however, has been in contention. This study therefore sought to bridge this gap by focusing on the effects of two behaviour modification strategies namely; Counter-Attitudinal Advocacy and Emotional Coaching in the reduction of risky sexual behaviours among adolescents in senior secondary schools in Oyo State, Nigeria.

Objectives of the study

The main purpose of this study is was to examine the effectiveness of counter-attitudinal advocacy and emotional coaching on risky sexual behaviours among adolescents in secondary schools in Oyo State, Nigeria.

Specifically, this study is designed to meet the following objectives:

I. Determine the difference in the post-test mean scores on risky sexual behaviours among participants exposed to counter-attitudinal advocacy (CAA), emotional coaching (EC), and control group.

II. Ascertain the extent of the difference in the post-test mean scores on risky sexual behaviours due to interaction effects of gender and experimental groups.

Research Questions

In line with the stated objectives of this study, the following research questions were raised and answered during the study:

I. What is the difference in the post-test mean scores on risky sexual behaviour among participants exposed to counter-attitudinal advocacy, emotional coaching, and the control group?

II. What would be the extent of the difference in the post-test mean scores on risky sexual behaviour due to interaction effects of gender and experimental groups?

Research Hypotheses

Based on the research questions, the following hypotheses were formulated tested at 0.05 level of significance.

I. There is no significant difference in post-test mean scores on risky sexual behaviour among participants in counter-attitudinal advocacy, emotional coaching therapy and control group.

II. There is no significant difference in post-test mean scores on risky sexual behaviour due to interaction effects of gender and experimental groups.

METHODOLOGY

This study adopted a pre-test, post-test control group, quasi-experimental design. Two treatment groups and one control group were used for this study. One experimental group was exposed to emotional coaching strategy, while the second group was exposed to counter-attitudinal advocacy. The control group did not undergo any treatment during the study. Pre- and post-tests were administered to the three groups.

The schema of the design was as follows:

Experimental Group 1 R O_1 X_1 O_2 (T1)

Experimental Group 2	R	O_3	X_2	O_4 (T2)
Control Group	R	O_5	–	O_6 (C)

O_1 O_3 O_5 are pre-test scores of experimental groups, while,

O_2 O_4 O_6 are post-test scores of experimental groups

	X_1	=	Counter-attitudinal advocacy
	X_2	=	Emotional coaching
Where	T1	=	Experimental group 1
	T2	=	Experimental group 2
	C	=	Control group
	R	=	Randomization

Three variables examined in this study are:

I. **Independent variables**: Counter-attitudinal advocacy and Emotional Coaching Therapy.

II. **Dependent variable**: Risky sexual behaviours

III. **Moderating variables**: Gender (male and female)

A total of 106 students who met the inclusion criteria were included in the study sample. The sampling was done in three stages. In the first stage, a simple random sampling was used to select three zones out of the six Education Zones in Oyo State using the hat and draw method. In the second stage, purposive sampling technique was used to select one school from each of the three zones totalling three secondary schools. Only co-educational schools with two streams of SS2 classes were used. In the third stage, a baseline questionnaire; Sexual Risk Survey Scale (SRS) was used to identify 200 adolescent students who engage or have the tendency to engage in risky sexual behaviours. In the last stage, 106 students who score above 50% of the total scores were included in the study. They were eventually assigned into one of the three treatment groups; emotional coaching, counter-attitudinal advocacy, and the control group.

The following research instruments were used to obtain data for this study:

I. Baseline Questionnaire: Sexual Risk Survey (**SRS)** by Turchik and Garske, (2009)

II. Sexual risky sexual behaviour, Beliefs and Self Efficacy Scales (**SRBBS)** by Enquist, Coyle, Parcel, Banspach and Nodora (1996)

I. Baseline Questionnaire: Sexual Risk Survey Scale (SRS)

The Sexual Risk Survey Scale (SRSS) was developed by Turchik and Garske, (2009), to assess the frequency of risky sexual behaviours in the past six months among college students. The scoring is based on a four-point Likert-type scale with each item being scored based on participants' response as follows: strongly agree = 4 points, agree = 3 points, disagree = 2 points, strongly disagree = 1 point. Scores vary between 0 - 32 with higher values indicating higher levels of engagement in risky sexual behaviours. The scale has high reliability test-retest correlations of 0.78 to 0.89. This instrument was adapted for the study.

II. Sexual Risk Behaviour, Beliefs and Self-Efficacy Scales (SRBBSS)

The risky sexual behaviour, Beliefs and Self-efficacy (SRBBSS) scales were developed by Enquist, Coyle, Parcel, Banspach and Nodora (1996) to measure attitudes, norms, self-efficacy and barriers to condom use. The scales consist of 22 items with 3- or 4-point Likert-type response format. The range of the following scales is 1 to 4; attitudes about sexual intercourse, attitudes about condom use, norms about sexual intercourse, norms about condom use, and barriers to condom use. The range of self-efficacy in refusing sex, self-efficacy in communication about condoms, and self-efficacy in using and buying condoms is 1 to 3. Two items were scored in reverse, that is; attitudes to sexual intercourse and norms about sexual intercourse. The Cronbach alpha measuring internal consistency reliability for each of the scales ranged from .84 to .61 Concurrent validity was assessed by examining specific relationships between the scales and sexual experience in the high school sample. The researcher adapted the items in this instrument for the study.

RESULTS

Hypothesis One: There is no significant difference in post-test scores on risky sexual behaviour among participants in counter attitudinal advocacy, emotional coaching therapy and control group.

This hypothesis was tested with one-way analysis of covariance. The results of the analysis are presented in tables 1, 2 and 3.

Table 1: Descriptive Analysis of risky sexual behaviour based on Experimental Group

Experimental Group		Pre-test	Post-test	Mean Difference
Counter Attitudinal Advocacy	Mean	12.76	1.79	-10.97
	N	33	33	
	SD	4.16	0.42	
Emotional Coaching Therapy	Mean	14.74	1.50	-13.24
	N	38	38	
	SD	3.30	0.51	
Control Group	Mean	17.11	1.46	-15.65
	N	35	35	
	SD	5.09	0.51	
Total	Mean	14.91	1.58	-13.33
	N	106	106	
	SD	4.54	0.50	

The results in Table 1 show the following pre-test mean scores for participants in each group: Counter Attitudinal Advocacy: Mean = 12.76, SD = 4.16, Emotional Coaching Therapy: Mean = 14.74, SD = 3.30 and Control Group: Mean = 17.11, SD = 5.09. After treatment, participants in the intervention programs had lower mean scores for risky sexual behavior as follows; Counter Attitudinal Advocacy: Mean = 1.79, SD = 0.42, Emotional Coaching Therapy: Mean = 1.50, SD = 3.30 and Control Group: Mean = 1.46, SD = 0.51. The effectiveness of the intervention programmes is indicated by the mean differences: Counter Attitudinal Advocacy: -10.97 and Emotional Coaching Therapy: -13.24

Table 2: ANCOVA Result on Post-test Risky Sexual Behaviour based on Experimental Group

Source	Sum of Squares	Df	Mean Square	F	p value
Corrected Model	1294.490[a]	3	431.497	50.673	.000
Intercept	42.214	1	42.214	4.957	.028
Covariate	970.405	1	970.405	113.959	.000
Group	367.405	2	183.702	21.573	.000*

Error	868.567	102	8.515
Total	2163.057	105	

P (0.000) < 0.05; F (1, 102) = 3.934253; F (2, 102) = 3.085465

The data in Table 2 reveals significant differences in post-test scores on risky sexual behavior among the three groups. Specifically, after exposure to counter attitudinal advocacy and emotional coaching therapy, students' post-test scores on risky sexual behavior differed significantly. The calculated F-value of 21.573 is greater than the critical value of F(2, 102) = 3.085465 at a 0.05 level of significance. To determine which groups differed from each other in risky sexual behavior, a Post-Hoc analysis was conducted using the Bonferroni method. This analysis helped identify the trend of the differences between the groups.

Table 3: Multiple Comparisons of Experimental Groups on Risky Sexual Behaviour

(I) Experimental Group	(J) Experimental Group	Mean Difference (I-J)	Std. Error	p value
Counter Attitudinal Advocacy	Emotional Coaching Therapy	-.801	.703	.257 n.s
	Control Group	-4.334*	.708	.000*
Emotional Coaching Therapy	Counter Attitudinal Advocacy	.801	.703	.257
	Control Group	-3.533*	.692	.000*
Control Group	Counter Attitudinal Advocacy	4.334*	.708	.000
	Emotional Coaching Therapy	3.533*	.692	.000

From Table 3, the pair-wise comparison of the group showed that counter attitudinal advocacy group and emotional coaching therapy group significantly differ from control group in risky sexual behaviour among students (P=0.000 and 0.000<0.05). However, counter attitudinal advocacy group does not significantly differ from emotional coaching therapy group in risky sexual behaviour among students (P=0.257>0.05).

Hypothesis Two: There is no significant difference in post-test scores on risky sexual behaviour due to interaction effects of gender and experimental groups.

The hypothesis is tested using the 2-Way Analysis of Covariance (ANCOVA). The results of the analysis are presented in tables 10 and 11.

Table 4: Pre-test and Post-test Scores on Risk Sexual Behaviour Based on Gender

Gender		Pre-test	Post-test	Mean Difference
Male	Mean	16.91	14.62	-2.29
	N	58	58	
	SD	4.07	3.81	
Female	Mean	19.44	15.25	-4.19

	N	48	48	
	SD	4.76	5.31	
Total	Mean	18.06	14.91	-3.15
	N	106	106	
	SD	4.55	4.54	

Table 4 shows the pre-test and post-test scores on risky sexual behaviour based on gender. For male participants, the results show that pre-test mean scores of the participants were (Mean=16.91, SD = 4.07). For female participants, the results show that pre-test mean scores of the participants were (Mean=19.44, SD = 4.76). After the treatment, male and female participants exposed to intervention programmes had a lower mean score of (Mean=14.62, SD =3.81) and (Mean=15.25, SD =5.31) respectively on risky sexual behaviour. The observed mean difference of -2.29 and -4.19 on risky sexual behaviour among participants, indicated the influence of gender.

Table 5: 2-Way ANCOVA Result on Post-test Risky Sexual Behaviour based on Gender and Experimental Group

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**p value**
Corrected Model	1306.396[a]	6	217.733	25.162	.000
Intercept	27.197	1	27.197	3.143	.079
Covariate	835.238	1	835.238	96.524	.000
Gender	8.409	1	8.409	.972	.327
Group	323.765	2	161.882	18.708	.000
Gender vs. Group	3.580	2	1.790	.207	.813 [n.s]
Error	856.661	99	8.653		
Total	**2163.057**	**105**			

P (0.813 and 0.327> 0.05; 0.000<0.05); F(1, 99) = 3.937117; F(2, 99) = 3.08824

The data in Table 5 shows post-test mean scores on risky sexual behaviour due to gender and experimental group. From the results, there is no significant difference in post-test scores on risky sexual behaviour due to interaction effects of gender and experimental groups, because the calculated F-value of 0.207 is less than the critical value F (2, 99) = 3.08824 at 0.05 level of significance. Similarly, there is no significant difference in post-test scores on risky sexual behaviour due to gender, because the calculated F-value of 0.972 is less than the critical value F(1, 99) = 3.937117 at 0.05 level of significance. However, there is a significant difference in post-test scores on risky sexual behaviour due to experimental groups, because the calculated F-value of 18.708 is more than the critical value F(2, 99) = 3.08824 at 0.05 level of significance. Hence, it can be concluded that there is no significant difference

in post-test scores on risky sexual behaviour due to interaction effects of gender and experimental groups, therefore, the null hypothesis is accepted.

Summary of Findings

The summary of findings of this study are:

I. There is a significant difference in the post-test scores on risky sexual behaviour of students after exposure to counter attitudinal advocacy and emotional coaching therapy. The counter attitudinal advocacy group and emotional coaching therapy group significantly differed from control group in the tendency to engage in risky sexual behaviour among students

II. There is no significant difference in post-test scores on risky sexual behaviour due to interaction effects of gender and experimental groups.

Discussion of Findings

The findings from hypothesis one revealed that there is a significant difference in risky sexual behaviour among participants exposed to counter-attitudinal advocacy, emotional coaching and the control group. Thus, hypothesis one was rejected. Both CAA and EC proved to be effective in the reduction of risky sexual behaviours as a result of students' participation in the treatment sessions. In this study, the group exposed to Emotional Coaching (EC) had a higher reduction in risky sexual behaviour than the counter-attitudinal advocacy (CAA) group, while the CAA group had a higher reduction in risky sexual behaviour than the control group. This could be attributed to EC's self-awareness, self-regulation, self-motivation, empathy, problem-solving, and assertiveness skills which were employed during the treatment sessions.

Findings from hypothesis two revealed that there is no significant difference in risky sexual behaviour among participants due to interaction effects of gender and experimental groups. Consequently, hypothesis two was retained. This in accordance with the study conducted by Rogers, Ranganathan, Kajula, Collins, Livingston and Palermo (2023) which concluded that there is a complex and concurrent influence of individual, relational, community and societal factors on one another. It further states that simply educating an individual or groups of individuals, such as adolescents, in isolation from the community will not drive lasting change. The study conducted by Odimegwu

and Somefun (2017) provides further evidence that in order to promote protective sexual behaviours among the youth in Nigeria; social, cultural and gender-specific tactics should be put in place.

Recommendations based on Findings

In view of the findings of this study, the following recommendations are put forward for consideration:

I. Counsellors should integrate both counter-attitudinal advocacy and emotional coaching into interventions aimed at curbing risky sexual behaviours among adolescents in senior secondary schools.

II. The two interventions should be employed by counsellors to prevent teenagers from early involvement in risky sexual activities.

Conclusion

Risky sexual behaviours among adolescents impact their lives severely, leading to tremendous health and economic burdens, such as sexually transmitted diseases, unwanted pregnancy, HIV and AIDS. These leave very negative long-lasting effects on adolescents' sexual experience well into adulthood. The findings of this study provide significant evidence of the effectiveness of counter-attitudinal advocacy and emotional coaching in curbing risky sexual behaviour among adolescents in secondary schools.

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Relationship Between Quality of Teachers Lesson Delivery and Role Performance of Management in State Universities in North Western Zone, Nigeria

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Abstract

The paper examines the relationship between quality of teacher's lesson delivery and role performance of management. The research design for this paper was correlational type. The population for this study comprised all the academic staff and their heads which amounted to 2,674. The sample size selection of 333 out of 2,674 was based on Research Advisors (2006). The paper applied proportionate and random sampling. Tow instruments were used to collect data for the study. The instruments were validated by expert in education and reliability of the instruments were obtained through test-retest method and reliability indexes of 0.78 and 0.75 were obtained respectively. The paper employed descriptive and inferential statistics for data analysis. The study discovered that, there was significant relationship between quality of teacher's lesson delivery and role performance of management in State Universities in North Western zone, Nigeria. The paper concluded that quality of any education system depends on the quality of teacher's lesson delivery. Therefore, the study recommended that, Universities management should make teaching and learning environments conducive. This will help to promote the quality of teachers and lesson delivery in Nigerian Universities. There should be regular training among the staff on the teaching and learning process. Therefore, staff should be encouraged to attend seminars and workshops, and incentives should be given to them as contained in their condition of service.

Keywords: Quality of Teacher, Lesson Delivery, Role Performance, Management

Introduction

Quality of teacher's lesson delivery involves the degree to which teachers prepare comprehensive lesson plans with the objectives stated clearly, lesson notes with good and relevant examples, relevant introductions, logical presentation, using a variety of methods and demonstrations, questioning techniques, effective classroom management, and mastery of subject matters in the process of imparting new knowledge and skills to the learners. Quality of the teacher's lesson delivery is highly related to the teachers' activities in

the classroom and how that affects the student's learning and also his participation in the overall running of the school to achieve the expected objectives and goals of the school (Nkedishu, 2020). The progress of a student will have a direct link with the successful teaching-learning process in the classroom. The quality of the university system is determined by the way and capacities of the staff in the system are being encouraged to introduce new innovations and changes in handling and preventing societal problems through their research (Anyanwun, 2020).

Quality of teacher lesson delivery refers to the teacher's preparedness and readiness to comply with teaching technicalities for an effective teaching and learning process. However, managerial effectiveness refers to the level of competency of school management in terms of efficiency, teamwork, collective decision, effective communication, and coordination for the attainment of school goals. Teaching takes place when an individual intentionally decides to assist another person or a group of people in acquiring a specific activity or concept (Philomena & Temitayo, 2019). However, Obele (2016) pronounced that teacher readiness for lesson delivery is the process of achieving the objectives of teaching which aim of improving the standard of education. Qualified and well trained teachers are encouraged to master the technicality of teaching and learning process for better education Osatimehin, Omodara, and Afe (2022). Lesson delivery is one of the most important aspect of teaching which needs to improve for qualitative education. Njoku (2016) stated that teaching demands for an active groundwork by the teacher and readiness of the learner, therefore for teaching and learning process to be effective, it has to guarantee a cooperative teacher-learner class activity based on variety of methods which creates room for effective and efficient mastery of the subject matter on the part of the teacher and learner.

The theoretical basis for this study was based on motivational theory of Abraham Maslow theory of human needs. In human existence, there is teamwork and cooperation to achieve organizational goals, human relations, and interactions between and among the several needs. Motivation to some psychologists means the process of manipulating or stimulating a person to take action that will improve the achievement of target goals, (Okon, (2020). However, Maslow in Manga (2014) believes that human beings always have some needs that they want to satisfy. He categorized human needs into five different levels and those needs are arranged in a hierarchy, as one lower need is satisfied, another higher need will emerge and become operative in one's

life. The educational manager must ensure that the needs of the workers are satisfied from the basic level to the higher levels of needs in order to use the satisfaction of those needs as a form of motivation to work harder.

This theory is related to the present study as it deals with basic needs. The satisfaction of these needs as mentioned above are prerequisites for human productivity. A protected, free, motivated, and well-fed individual is expected to be productive. This is because they are being provided with basic necessities for their living and they are expected to be more productive in return.

However, Nakpodia (2010) discovered that many factors are likely to influence staff personnel management for effective job performance in universities namely training and manpower development, implementation of policy and staff conditions of service, managerial technical hitches, environmental management, external environmental causes, and recruitment approaches. The connection between managerial effectiveness and teacher research is fast becoming a subject of interest among scholars and researchers. The field of education has not been an exception in this regard. Teachers' professional development refers to the statutory duties that are performed for the development of their field such as the writing of papers for an annual conference, review of the content program, and curriculum delivery (Ayeni, & Fakunle, 2020). However, Tess (2003), pointed out that educational managers must motivate academic staff to use their creativity and initiative as needed in making their contribution, toward the achievement of university target goals.

Osatimehin, Omodara, and Afe (2022) conducted study on teacher's preparation and presentation of lesson indices as determinant of teachers' effectiveness for sustainable development. The study adopted a descriptive survey research design. The research instrument used for data collection was 'Teacher Self Report Inventory '(TSRI) with reliability value a = 0.85. The population of the study was that which represented all the teachers in senior secondary schools in Ekiti State. Random sampling techniques was employed to select a total of 315 teachers from different local government in Ekiti State and the distribution of the questionnaires (315 questionnaires) were retrieved (100 %) of the sample. Breakdown is listed as follow, in the first stage, Purposive sampling technique was used to select the required local governments. Second stage, selection of targeted schools in the selected local governments was done by using stratified sampling technique and at the third

stage, the required teachers were selected using Simple Random Sampling techniques. Two research questions were formulated. Data collected for the study were analyzed using descriptive statistics for the research questions. The study concluded that teachers in Ekiti State Secondary School exhibited good preparation and presentation of their lessons, allowed students to participate in the teaching and learning. It is recommended that government should invest more on education sector to ensure adequate provision of educational facilities in all the schools for the teachers and regular training for more teacher effectiveness.

Moreover, Okon (2020) conducted a study on School Variables and Teachers' Productivity in Secondary Schools in Akpabuyo Local Government Area, Cross River State, Nigeria. The research study examined the school climate and its influence on teachers' productivity in Secondary Schools in Akpabuyo Local Government Area of Cross River State, Nigeria. The researcher adopted a survey design for the study. A sample of 150 out of a population of 206 teachers was randomly selected for the study. A 24-item questionnaire based on a 4- point Likert scale was constructed to elicit information for the study. The hypotheses formulated were tested at 0.05 alpha level and 147 degrees of freedom using one-way Analysis of Variance (ANOVA) statistics. The result showed that there is a significant influence of the motivation of teachers and a significant influence of the Principal's administrative style on teacher's productivity. It was recommended that the motivation of teachers should be given top priority by the authorities concerned if teacher's productivity must improve. An effective principal's administrative style should also be encouraged for enhanced teacher productivity.

This study is highly related to the current study because the focus area of the study is on School Variables and Teachers' Productivity in Secondary Schools in Akpabuyo Local Government Area, Cross River State, Nigeria while the current study intends to investigate the relationship among quality of teacher lesson delivery, research publication and managerial effectiveness in State Universities in North Western Zone, Nigeria and the populations of the two studies are difference the previous study focuses on secondary education level while the current study is focus on tertiary education level also the geographical location of the two studies is also different.

However, Abiodun (2020) conducted a study on the relationship between managerial skills, personality characteristics, and administrative staff

effectiveness in the University of Ibadan, Nigeria. The study employed descriptive survey research design and the population of the study comprised all the administrative staff of the University of Ibadan. The sample size consisted of 225 administrative staff selected from nine departments of the university. Three research questions were raised and one hypothesis was formulated using simple percentages, frequency counts, mean, and multiple regression an instrument titled "Managerial Skills, Personality Characteristics and Administrative Staff Effectiveness Questionnaire" (MSPCASEQ) was used to elicit relevant data for the study. The reliability coefficient of the instrument was ensured through the test re-test method of testing reliability and the co-efficient value of 0.84 was obtained. Prominent among the findings from the study revealed that, there was a joint contribution among managerial skills, personality characteristics, and administrative staff effectiveness at $F(6,218) = 15.444$, $p<0.05$) and based on the findings, it was recommended that administrative staff should be exposed further by management to pieces of training and seminars, all aimed at improving their level of effectiveness and to also maintain or sustain the prevalent managerial skills, and learn new skills to improve administrative staff service delivery and positive attitude to work; the use of Information and Communication Technology (ICT) should be fully deployed or engaged to channel effective communication between the top management and administrative staff.

This study is highly related to the current study because they both focus on managerial effectiveness and the geographical location of the two studies are different the previous study focuses on only one state in South-West, Nigeria.

Statement of the Problem

The performance of university graduates is deteriorating as reported by some scholars. This deteriorating condition is associated with the quality of teachers' lesson delivery.

Objective of the Study

The main objectives of this study were to examine the relationship between the quality of teacher lesson delivery and role performance of management in state universities in North Western Zone, Nigeria.

Specific objectives include:

I. To find out the quality of teachers' lesson delivery in State Universities in North Western Zone, Nigeria.

II. To find out the level of performance of management in state universities in North Western Zone, Nigeria.

Research Questions

This research hopes to provide an answer to the following research question:

I. What is the quality of teacher's lesson delivery in State Universities in North Western Zone, Nigeria?

II. What is the level of performance of management in State Universities in North Western Zone, Nigeria?

Research Hypotheses

The following Hypothesis was tested:

H_{01} There is no significant relationship between the quality of teachers' lesson delivery and role performance of management in State Universities in North Western Zone, Nigeria.

Methodology

The research design for this study was correlational type. This design consists of a simple association or relation between or among the variables (Creswell, 2014). The population of this study involves all academic staff and their heads which amounts to 2,674 as the total population of the participants. The sample size selection of 333 was based on the Research Advisor (2006) table for determining sample size. Proportionate and random sampling technique was used in picking the participants. To collect the data for this study two sets of questionnaires were used which were self-designed questionnaires, titled: Teacher Productivity Questionnaire (TPQ) and Role Performance Management Questionnaire (RPMQ). The instruments were validated by a team of experts. The reliability of the instruments was obtained through the test and re-test method and reliability indexes 0.78 and 0.75 were obtained respectively. The researcher employed descriptive and inferential statistics to analyze the data. A mean score was used to answer the responses of the participants to the research questions with the decision mean of 3.0 indicating

a moderate extent of agreement. While any mean score below 3.0 was considered as low extent of agreement. Pearson Product Moment Correlation Co-efficient was used to test hypothesis. The data were processed with the use of Statistical Package for Social Science (SPSS).

Data Presentation and Analysis

The results are presented in tabular forms and interpreted using descriptive and inferential statistics. Mean scores were used in answering all research questions While inferential statistics was used in testing all null hypotheses of the study.

Research Question One

What is the extent of the quality of teachers' lesson delivery in State Universities in the North Western Zone? The respondents' responses on the extent of quality of teacher's lesson delivery in state universities in North Western zone Nigeria is presented in Table 1

Table 1: Quality of Teacher's Lesson Delivery in State Universities in North Western Zone of Nigeria

S/N	Item Statement	Mean	Std. Dev	Decision
1	Teachers in my university have comprehensive lesson plans with objectives clearly stated to guide their lectures	3.00	1.44	ME
2	Teachers prepare accurate, precise and comprehensive lectures notes and regularly update their lectures notes	2.97	1.53	ME
3	Teachers make a good and relevant introduction to captured students interest in the topic	2.78	1.29	LE
4	Teachers ensure that students participate actively and make a contribution during the lesson	2.72	0.75	LE
5	Teacher make use of a combination of a variety of methods to impart new knowledge and skills	2.86	0.89	LE
6	Teacher takes time to explain difficult concepts and make practical demonstration for students understanding, especially the objectives	3.20	0.74	ME
7	Teacher give students freedom to ask questions	3.63	1.12	ME
8	Teachers have mastery of subject matters and good questioning techniques	3.49	1.34	ME
9	Teachers help students to modify incorrect or inadequate responses	2.78	1.29	LE
10	Teachers have class control and time management	2.73	1.22	LE
11	The teacher appears to be confident, friendly, and cheerful	2.72	0.75	LE
12	Teacher have good audience voice projection for the students to hear them clearly during the lesson	2.86	0.68	LE
13	Teachers dress decently and neatly to class	2.89	0.55	LE
	Grand Mean $(\bar{x})$	**3.02**	**1.05**	**ME**

Source: Field Work (2023)

Table 1 reveals that the respondents indicated average affirmation that there is a moderate extent of quality of teacher's lesson delivery. This is evident by an affirmed response of item one, of the table indicated that moderate extent with 3.00. While items two, three, four, and five of the table indicated low extent with 2.97, 2.78, 2.72, and 2.78 respectively. While items six, seven, and eight indicate moderate extent with 3.20, 3.63, and 3.49 respectively. However, nine, ten, eleven, twelve, and thirteenth of the table indicated low extent with 2.78, 2.73, 2.72, 2.89, and 2.86 respectively. This indicates that, to a moderate extent, teachers' lesson delivery in state Universities in the North West zone is of moderate quality.

Research Question Two

What is the level of managerial effectiveness in state universities in North Western Zone Nigeria? The respondents' responses on the level of effectiveness of school administrators in state universities in North Western zone Nigeria is presented in Table 3

Table 3: Level of Performance of School Administrators in State Universities in North Western Zone of Nigeria

S/N	Item Statement	Mean	Std. Dev	Decision
1	Management in my university has set goals for the protection of teachers' rights and the enhancement of their productivity	2.90	0.85	LE
2	Management has documented rules and regulations for the protection of teachers rights and ensuring managerial effectiveness	3.33	1.40	ME
3	Management set up a disciplinary committee for maintaining law and order and good conduct	3.74	1.52	ME
4	Management has Examination Monitoring Committee to ensure that teachers give quality supervision of students during examinations	3.89	0.57	ME
5	Management clearly state the terms of reference to guide the action of individuals and various authority for protection of teachers rights	2.78	1.21	LE
6	Management appoints a chairman for each committee to lead and direct the activity of each committee	3.98	1.33	ME
7	All faculties, departments, and units are pursuing uniform goals of protecting teachers rights and ensure their managerial effectiveness	2.98	0.67	LE
8	Management ensures that all faculties, and departments operate with synergy toward identifying and addressing challenges in the protection of teachers' rights and ensuring teacher productivity	2.17	1.45	LE
9	Management ensure that Deans, Directors, Head of	3.40	1.76	ME

	Departments supervised the activities of committees and individuals towards protecting the rights of teachers and maintaining teacher productivity			
10	Management ensure that Directors, Deans, Head of Departments motivate, guide, mentor and evaluate the activities of staff, committees, and teachers towards enforcement of teachers rights and higher productivity	4.11	1.38	HE
	Grand Mean $(\bar{x})$	**3.06**	**1.14**	**ME**

Source: Field Work (2023)

Table 3 reveals that the respondents indicated strong confirmation that there is a moderate extent in the level of effectiveness of school administrators. This is evident by an affirmed response of item one of the table indicating that low extent with 2.90. The items two, three, and four of the table indicated the moderate extent with 3.33, 3.74, and 3.89, respectively. Item five of the table shows a 2.78 mean score which is a low extent. Item six indicated 3.98 which is a moderate extent. Item seven and eight indicated low extents with 2.98 and 2.17 respectively. Item nine of the table shows the mean score of 3.41 which is moderate extent. Item ten of the table indicated 4.11 which is a high extent.

Hypotheses Testing

The following null hypotheses were tested below:

H_{01}: There is no significant relationship between the quality of teachers' lesson delivery and role performance of management in State Universities in North Western Zone, Nigeria.

This hypothesis was tested by subjecting the quality of teachers' lesson delivery and role performance of management scores to a Pearson r-test analysis as shown in Table 4.

Table 4: Relationship between Quality of Teachers' Lesson Delivery and Role Performance of Management

Variables	N	Mean	Std. Deviation	r-Cal	*p*-Value	Decision
Teachers Lesson Delivery	333	66.14	12.510	0.255	0.000	Hypothesis Rejected
Role Performance of Management	333	73.68	11.724			

Source: Field Work (2023)

From the result of Table 4, the quality of teachers' lesson delivery and role performance of management were positively related and significant, $r(331) =$

.255, $p = 0.000$. This indicates a significant relationship between the quality of teachers' lesson delivery and role performance of management because the *p*-value is less than the 0.05 level of significance. Therefore, H_{01} which states that there is no significant relationship between quality of teacher's lesson delivery and role performance of management was rejected. The study revealed that the quality of teachers' lesson delivery is an indication of role performance of management in state universities North Western zone, Nigeria.

Summary of the Findings

Based on the research findings, the following findings are summarized:

I. The study revealed that quality of teachers' lesson delivery is an indication of role performance of management in state universities North Western zone, Nigeria.

II. The study revealed that the level of performance of state universities management was found at moderate level.

III. The study revealed there is significant relationship between quality of teacher lesson delivery and role performance of management in state universities North Western zone, Nigeria.

Discussion

This section intends to discuss the findings of this study concerning the findings of previous studies one after the other as follows:

The first findings revealed that the quality of teachers' lesson delivery is an indication of managerial effectiveness in state universities in North Western zone, Nigeria. The finding agreed with Nkedishu (2020), who revealed that, teacher's productivity is highly related to what the teachers normally do in the classroom and how that affects the student's attitudes towards learning. However, the finding is supported by Adeyemi (2014), who added that principal can therefore encourage the effective productivity of their teachers by identifying their needs and attempting to solve them accordingly. Consequently, the finding also agreed with Werang (2014), who reported that teachers play some very significant roles in making sure that, students' academic achievements in the university system and the productivity of teachers to a great extent depends on the climate of each particular university administration. Moreover, the finding supported by Nadeem (2011) who also

discovered that social and economic conditions of teachers affect their productivity, these include low salary, lack of facilities, the position of teachers in society, teachers' psychological health and self-confidence, the anxiety of work, the extent of association with other staff and management and working environment all have a strong impact on teachers' productivity. Nevertheless, the finding supported by Adelabu (2005) who reported that adequate support in terms of regular stall salaries, responsibilities allowance, passage allowance, and regular seminars, conferences, and workshop positively influence teachers' productivity to a higher level.

However, the finding agreed with Tess (2003) who pointed out that educational managers must motivate academic staff to use their creativity and initiatives as needed in making their contribution, towards the achievement of university target goals. The findings emphasize the pivotal role of high-quality lesson delivery as a direct indicator of effective management within educational institutions, resonating with existing literature.

The third finding revealed that quality of teacher lesson delivery is more related to managerial effectiveness than quality of teacher research publications in state universities North Western zone, Nigeria. The finding is in line with Chepkonga (2015), who discovered that managerial effectiveness plays a significant role in ensuring continued existence, development, and adaptableness of organizations and that it is the major issue in the administration because every organization desires to achieve the target goals effectively and efficiently. However, the finding is supported by Nwokocha and Hafsat (2020), who reported that an effective university system depends on the teacher's lesson delivery for the realization of its mission, vision, and target goals. Consequently, the finding agreed with Sonnentag, Volmer, and Spychala (2010), who revealed that the level of performance of teaching staff and non-teaching staff could determine the performance of the university and it could also determine the level which the university target goals are achieved or accomplished.

Conclusion

In conclusion, this study illuminates the intricate relationship between teacher performance, research productivity, and role performance of management in state universities within the North Western zone of Nigeria. However, the study interestingly demonstrates that, among these factors, teacher lesson delivery holds greater relevance in assessing managerial effectiveness,

underscoring the critical influence of pedagogy and classroom dynamics on the overall educational landscape.

Recommendations

The study made the following recommendations which include:

I. There should be regular training among the staff on the teaching and learning process, therefore, staff should be encouraged to attend seminars and workshops and incentives should be given to them as is contained in their condition of service.

II. University management should understand is only when teachers' rights are protected for they be productive which may result achievement of the university's educational goals both nationally and internationally.

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Evaluating Feedback, Resources, and Course Delivery in Postgraduate Programs: Perspectives of Lecturers and Students at Faculty of Education and Extension Services, Usmanu Dan Fodiyo University Sokoto

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Abstract

This study evaluates the feedback, resources, and course delivery in postgraduate programs at the Faculty of Education and Extension Services (FEES), Usmanu Danfodiyo University Sokoto (UDUS), from the perspectives of both lecturers and students. Using a descriptive survey design, data were collected from 332 postgraduate students and 60 lecturers through questionnaires, interviews, and focus group discussions. The study addresses six key objectives: assessing the quality of supervision, examining the availability and adequacy of resources, exploring the nature of course delivery, and evaluating the relevance of academic content to students' learning experiences. Results indicate that while the quality of supervision is generally satisfactory, with supervisors providing constructive feedback and support, challenges such as limited access to funding, inadequate teaching materials, and insufficient technological infrastructure hinder the effectiveness of postgraduate programs. Course delivery methods, particularly online and hybrid formats, face significant obstacles, including poor internet connectivity and a lack of interaction between students and instructors. Despite these challenges, the academic content of postgraduate courses is deemed relevant and beneficial for professional development. The study concludes by recommending targeted interventions to improve resource availability, enhance course delivery methods, and strengthen supervisory support. These findings have important implications for policymakers, university administrators, and educators seeking to elevate the quality of postgraduate education in Nigeria.

Keywords: Course delivery, Feedback, Resources, Postgraduate programme, Students

Introduction

Postgraduate education is a critical phase in the academic journey, fostering independent research, advanced critical thinking, and professional development. However, the effectiveness of postgraduate programs hinges on several factors, including the availability and adequacy of learning materials,

the quality of supervision, the nature of course delivery, and the relevance of academic content. Despite the pivotal role of postgraduate education in national and global development, there remains a paucity of comprehensive research evaluating these components, particularly in Nigerian universities such as Usmanu Danfodiyo University Sokoto (UDUS).

This study aims to bridge this gap by examining the perceptions and experiences of both lecturers and postgraduate students at the Faculty of Education and Extension Services (FEES), UDUS. The research focuses on key areas such as the quality of supervision, the adequacy of resources, the impact of course delivery methods, and the relevance of academic content to students' learning experiences. By incorporating feedback from both stakeholders, this study seeks to provide a holistic understanding of the strengths and weaknesses of the postgraduate programs at FEES, UDUS, and offer actionable recommendations for improvement.

The findings of this study are particularly significant in the context of evolving educational demands and the need for universities to align their programs with global standards. The insights garnered will not only enhance the quality of postgraduate education at UDUS but also contribute to the broader discourse on improving higher education in Nigeria and beyond.

Objectives of the Study

The following objectives have been stated to achieve the success of the study:

I. To investigate the perception of both lecturers and postgraduate students' experience on the availability and adequacy of learning materials at FEES, UDUS.

II. To explore the nature of delivery of courses and academic outcome on postgraduate students' feedback at FEES, UDUS.

Methodology

The research designed used in this study was the descriptive survey design. This design described the situational, characteristics or behavior of a particular population or variables in a systematic and accurate pattern. Descriptive design uses questionnaire, interview or focus group discussions (FGDs) to collect information about the people's attitudes, belief, feeling, behaviors and life styles as well as life career among others. The population of the study

comprises of all postgraduates students from the various Departments within the Faculty which form the total of one thousand seven hundred and fifty four (1754), which stood at the population in the table below.

Table 1: Population and Sampling Procedure

Year	PhD	M.Phil	M.Ed	PGD	Total
2016/17	32	13	187	16	245
2017/18	11	19	134	15	179
2018/19	29	23	93	20	168
2019/20	91	46	285	13	435
2020/21	90	43	209	16	358
2021/22	-	-	-	-	-
2022/23	87	43	206	31	369
Total	**34**	**187**	**1114**	**111**	**1754**

Source: Field work 2023

Table 1 indicated the population of the individuals with varying qualification from 2016/2017 to 2022/2023 academic sessions. It is obvious that the population comprises of 1,754 respondents with different qualifications.

Table 2: Distribution Sample Size of the Students for the Study

Year	Total Population	Sample Size
2016/17	245	46
2017/18	179	34
2018/19	168	32
2019/20	435	82
2020/21	358s	63
2021/22	-	-
2022/23	369	70
Total	**1752**	**332**

Source: Field work 2023

Table 2 represented the sample size of the respondents used in the study. A total of 332 respondents were selected from the population of 1,745 distributed across the seven academic sessions.

Table 3: Lecturers' Population and Sample Size

Departments	Total Population	Sample Size
Educational foundations	34	21
Science and vocational	20	12
Adult and primary	30	18
Curriculum & language	14	9
Information & library		
Total	98	60

Source: Field Work 2024

In conducting the quantitative data collection, interview and focus group (IDI and FGDs) for students and interview for the lecturers. The interview guide was used for both the lecturers and the students that contains questions on the following variables: the effect of students' feedback on postgraduates programs, the supervisory context, the pedagogical approaches, and the nature of course delivery, the environmental factors, the availability and adequacy of learning materials. The interview guide was used to gather the data, and the interviewer used a smartphone to record each interview, which lasted not longer than 12 to 15 minutes. Swanepoel, & Erasmus, (2000) make it clear that the choice of data gathering method and sources depends on the nature of the problem and the study goal. Despite the fact that the study was qualitative and quantitative in nature the researcher employed the following technique in gathering the data.

Step1: The introduction and familiarization of the subject method in data collection is a foundational step in qualitative research. By clearly explaining the purpose, methods, ethical considerations, and providing thorough training, researchers can ensure participants are comfortable and informed. This leads to richer, more accurate data, and ultimately, a deeper understanding of the research subject. Effective familiarization also builds trust and rapport, which is essential for gaining genuine and insightful responses from participants

Step2: Use of Smart phone: Using a smart phone to record and capture the participants' answers, the researcher asked the participant the interview question. In order to reduce researcher bias and enable first-hand knowledge, the primary purpose of employing a smart phone in qualitative research is to prevent needless disruption of row data collection. The interview and the focus group discussion were occasionally being performed in Hausa and during analysis it was transcribed into English.

Two methods were employed in analyzing the data collected from the field work. They are the descriptive methods that are the quantitative and qualitative methods of data analysis. In other words a triangulation method was employed in analyzing the data.

I. Descriptive statistic: the appropriated method as it involves in the collection of data for the purpose of describing and interpreting the existing situation under study. The data was presented in a tabular form. The responses were recorded accordingly using a sample a simple frequency table and simple percentage.

II. Qualitative Method of Data Analysis: the data collected from the respondents in Focus Group Discussion that was recorded and analyzed in details and explained in a descriptive form. All what is recorded during the discussion were described under the use of themes and sub-themes.

Results

The data collected was used for answering the research questions for the study. Descriptive statistics of frequency counts, percentages and tables were used to analyzed and interpret the data.

The analysis was done using frequency counts and percentage distribution. The presentation was done by taking each question and presenting the data that affects it as follows.

Table 4: Gender Distribution of the Respondents

Gender	Frequency	Percentage
Male	220	66.0
Female	112	34.0
Total	332	100.0

Source: Field Work (2023)

Result presented in table 4 reveals that 220 (66%) of the respondent of the study were male while 112 (34%) of the participants were female.

Table 5: Age Range of the Respondents

Age	Frequency	Percentage
25-30	27	8.0
31-35	84	25.0
36 – 40	145	43.0
41- above	76	22.0
Total	332	100.0

Source: Field Work (2023)

Table 5 highlights that the age group 36-40years has the highest number of respondents 145 (43%), those within the range of 31-35years has 84 (25%) of the respondents. 25-30 also has 27 (8%) while those between the age range of 41 and above has 76 (22%) of the respondents.

Table 6: Programme of the Respondents

Programme	Frequency	Percentage
Master	147	44.0
M.Phil	57	17.0
PhD	103	31.0
PGDE	25	8.0
Total	332	100.0

Source: Field Work (2023)

Table 6 highlights the program of the students that master has the highest number of students 147 (44%), those within the MPhil has 57 (17%) students. PhD also has 103 (31%) while PGDE has 25 (8%) of the respondents.

Research Question One: What is the quality of supervision in postgraduate students on learning experience at UDUS

The data for answering this research question are presented in Table 7:

Table 7: Quality of Supervision in Postgraduate Students on Learning Experience

S/N	Items Statement	Yes Freq.	%	No Freq.	%
1	Are you satisfied with quality of supervision provided to you during your postgraduate studies?	229	68%	103	32%
	Did your supervisors provide constructive feedback on your work that helped you improve your skills?	205	62%	127	38%
3	Did your supervisors provide enough support and resources to help you complete your program and achieve your learning goals?	233	70%	99	30%
4	Did your supervisors have expertise in your area of research which helped you in your understanding of the subject?	295	88%	37	12%
5	Have your supervisors encouraged you to attend academic conferences and present your work?	330	99%	2	1%
6	Did your supervisors involve you in collaborative research projects?	178	54%	154	46%
7	Did your supervisors provide opportunities for you to gain teaching experiences and mentorship?	118	36%	214	64%
8	Did the supervision you received during your postgraduate studies have an overall positive outcome on your learning outcomes?	233	70%	99	30%
9	Do you believe something could be done to improve the quality of supervision you received during your postgraduate studies?	215	65%	117	35%
10	Would you recommend your supervisor to another postgraduate student?	190	57%	142	43%

Source: Field Survey, 2023

Table 7 indicates quality of supervision in postgraduate students on learning experience. Item 1 shows that 68% of the respondents says that they are satisfied with quality of supervision provided to them during their postgraduate studies, 32% of the respondents totally No with the opinion. Items 2 indicated that 62% of the participants says yes that supervisors provide constructive feedback on your work that helped you improve your skills while 38% of the participants says No. Item 3 indicated that 70% of the participants says yes that their supervisors provide enough support and resources to help you complete your program and achieve your learning goals while 30% of the participants says No. Item 4 indicated that 88% of the participants indicated yes that their supervisors have expertise in your area of research which helped you in your understanding of the subject, 12% of the participants indicated No. Item 5 indicated that 99% of the participants says yes that their supervisors encouraged them to attend academic conferences and present their works, 1% of the participants say No. Item 6 indicated that 54% of the participants says yes that their supervisors involve you in collaborative research projects, 46% of the participants says No. Item 7 indicated that 36% of the participants says yes that their supervisors provide opportunities to gain teaching experiences and mentorship, while 64% of the participants says No. Item 8 indicated that 70% of the participants indicated yes that supervision received during postgraduate studies have an overall positive outcome on their learning outcomes, 30% of the participants indicated No. Item 9 indicated that 65% of the participants says yes that something could be done to improve the quality of supervision received during postgraduate studies, 35% of the participants say No. Item 10 indicated that 54% of the participants says yes that can recommend their supervisor's to another postgraduate student, 46% of the participants says No.

The findings above show that Quality of Supervisions of Postgraduate Students on Learning Experience was encouraging, because most of the supervisors provide support and resources to help postgraduate students to complete their program.

Research Question Two: What are the availability and adequacy of resources and their impact on postgraduate students' academic experience at UDUS?

The data for answering this research question are presented in Table 10:

Table 8: Availability and Adequacy of Resources and Their Impact on Postgraduate Students' Academic Experience

S/N	Items Statement	Yes Freq.	%	No Freq.	%
1	There is availability of funding opportunities for postgraduate studies at Usmanu Danfodiyo University Sokoto.	76	23%	256	77%
2	Have you ever experience any difficulties in accessing any equipment and resources to support your studies?	240	72%	92	28%
3	The quality of infrastructures such as library, information technology and research laboratory are available to postgraduate students.	292	88%	40	12%
4	Have you face any restriction or limitations in terms of access to resources due to limited availability or high demand?	103	31%	229	69%
5	There is availability and adequacy of resources to the satisfactory level of postgraduate students at UDUS.	92	28%	240	72%
6	Have you ever south additional funding such as grant or scholarship to support your academic pursuit?	132	40%	200	60%
7	Are you satisfied with the resources provided by the institution for postgraduates' students in your area of study?	73	30%	259	70%

Source: Field Survey, 2023

Table 8 presents the availability and adequacy of resources and their impact on postgraduate students' academic experience at UDUS. Item 1 on the table shows that 23% of the participants selected yes to the statement that availability of funding opportunities for postgraduate studies at Usmanu Danfodiyo University Sokoto, 77% of the participants selected No with this claim. Item 2 shows that 72% of the participants says yes that they have experience any difficulties in accessing any equipment and resources to support your studies, while 28% of them were on a No ground. Item 3 shows that 88% of the participants says yes that the quality of infrastructures such as library, information technology and research laboratory are available to postgraduate students while 12% of them were on No option to the statement. Item 4 shows that 31% of the participants says yes that they have face any restriction or limitations in terms of access to resources due to limited availability or high demand however, majority of the participants, i.e. 69% says No to the statement.

Contrary to the above claims, item 5 indicated that 28% of the participants says yes to the statement that the availability and adequacy of resources to the

satisfactory level of postgraduate students at UDUS, 72% of the participants chooses No over the statement. Item 6 indicated that 40% of the participants says yes that they have ever south additional funding such as grant or scholarship to support your academic pursuit, 60% of the participants choose No with this claim. Item 7 shows that 30% of the participants choose yes that they are you satisfied with the resources provided by the institution for postgraduates' students in your area of study, 70% of the participants says No to the statement.

It is clear from the data analyzed in table 9, that availability and adequacy of resources are not enough to facilitate teaching and learning among postgraduate students in Usmanu Danfodiyo University, Sokoto.

Research Question Three: How is the nature of delivery of courses and their impact on post graduate students learning experience at UDUS?

The data for answering this research question are presented in Table 11:

Table 9: Delivery of Courses and Their Impact on Post Graduate Students Learning Experience

S/N	Items Statement	Yes Freq.	%	No Freq.	%
1	Do you describe the kind of experience you have in receiving	240	72%	92	28%
2	Have you taken any courses in online or hybrid format?	99	30%	233	70%
3	Do you have an interacting with your instructors and classmates in online courses?	222	67%	110	33%
4	Do you think online /hybrid courses differ from traditional in-person courses in terms of the way information is presented?	285	86%	47	14%
5	Is there any challenges you have encountered in taking courses online compared to traditional in-person course?	296	89%	36	11%
6	Are you satisfied with your experience on taking online/hybrid courses?	44	13%	288	87%
7	Your academic performance is impacted relatively to traditional in-person than on line/hybrid courses?	286	86%	46	14%

Source: Field Survey, 2023

Results presented in table 9 on the nature of delivery of courses and their impact on post graduate students learning experience at UDUS. Item 1 on the table indicates that 72% of the participants selected yes on the kind of

experience they have in term of learning experience, 28% of the participants selected No with the statement. Item 2 revealed that 70% of the participants have not taken any courses in online or hybrid format, 30% of the participants responded yes. Item 3 revealed that 67% of the participants says they have ever has an interacting with their instructors and classmates in online courses, 33% of the participants says No with the opinion. Item 4 revealed that 86% of the participants says yes that online /hybrid courses differ from traditional in-person courses in terms of the way information is presented, 14% of the participants selected No.

Item 5 revealed that 89% of the participants selected yes in term of the challenges encountered in taking courses online compared to traditional in-person course, 11% of the participants selected No. Item 6 disclosed that 44% of the participants were satisfied with experience on taking online/hybrid courses, 89% of the participants were not. Item 7 disclosed that 86% of the participants were also believed that their academic performance is impacted relatively to traditional in-person than on line/hybrid courses, 14% of the participants disagreed with the opinion.

From the data analyzed above, it is evident that there is a lot of challenges in term of courses delivery and impact on post graduate students learning experience at Usmanu Danfodiyo University Sokoto.

Research Question Four: How does the academic content of postgraduate courses is relevance to students learning experience at UDUS?

The data for answering this research question are presented in Table 12:

Table 10: Academic Content of Postgraduate Courses is Relevance to Students Learning Experience

S/N	Items Statement	Yes		No	
		Freq.	%	Freq.	%
1	The rate of the academic content of the postgraduate courses in terms of relevance to your professional development is satisfactory?	240	72%	92	28%
2	The postgraduate course adequately prepares you for career path.	242	73%	90	27%
3	There are areas of postgraduate courses that could be improved to better align with professional development and career aspirations.	275	83%	57	17%
4	Have you use the skills acquired from this postgraduate course in your current industry trends?	200	60%	132	40%

5	Would you recommend this postgraduate to other students seeking to advance their professional skills and knowledge?	228	69%	104	31%
6	There are gaps in the curriculum that could benefit from additional areas of study.	223	67%	109	33%
7	The course material covered in this postgraduate course is up-to-date and reflective of current industry trends?	104	31%	228	69%

Source: Field Survey, 2023

Table 10 presents the result obtained to academic content of postgraduate courses is relevance to students learning experience at UDUS. Item 1 on the table shows that 72% of the participants says yes that the academic content of the postgraduate courses in terms of relevance to their professional development is satisfactory, 28% of the participants selected No. Item 2 shows that 73% of the participants selected yes that postgraduate course adequately prepares you for career path while 27% of the participants selected No on the statement. Item 3 reveals that 83% of the participants says yes that some areas of postgraduate courses need to be improve to better align with professional development and career aspirations, 17% of the participants disagreed with the claim whereas 3% of them were on a neutral ground.

Item 4 reveals that 60% of the participants says they have ever use the skills acquired from this postgraduate course in their current industry trends, 40% of the participants says No to the statement. Item 5 reveals that 69% of the participants agreed that they we recommend this postgraduate to other students seeking to advance their professional skills and knowledge, 31% of the participants says No. Item 6 indicated that 67% of the participants submitted their yes to the claim that there are gaps in the curriculum that could benefit from additional areas of study, while 33% of the participants were on No. Item 7 shows that 31% of the participants selected yes that course material covered in this postgraduate course is up-to-date and reflective of current industry trends, while 69% of the participants selected No on the statement.

The data above reveals that academic content of postgraduate courses is relevant with students learning experience at Usmanu Danfodiyo University, Sokoto.

Research Question Five: What are the level of availability and adequacy of resources that influence postgraduate students' feedback at FEES, UDUS?

The data for answering this research question are presented in Table 17:

Table 11: Availability and Adequacy of Resources That Influence Postgraduate

S/N	Items Statement	Agreed Freq.	%	Disagreed Freq.	%
1	I have access to sufficient academic journals and research articles for your postgraduate students?	34	57%	26	43%
2	There are adequate teaching materials (books, software, etc.) available for your postgraduate courses?	20	33%	40	67%
3	I have access to well-equipped classrooms or teaching spaces for postgraduate-level instruction?	10	16%	50	84%
4	There is sufficient availability of computers or digital devices for use in postgraduate courses?	10	16%	50	84%
5	The library facilities at the university are sufficient for your postgraduate teaching and research needs?	50	84%	10	16%
6	I have access to adequate research funding for your postgraduate students and projects?	5	8%	55	92%
7	The technological infrastructure (e.g., internet speed, online platforms) are sufficient for conducting postgraduate programs effectively.	25	42%	35	58%
8	Postgraduate students are provided with adequate resources for their thesis or dissertation work (e.g., data analysis tools, software, lab equipment).	20	33%	40	67%
9	I have sufficient administrative support to manage postgraduate programs effectively.	20	33%	40	67%
10	Professional development resources are (e.g., workshops, conferences) available to postgraduate lecturers for improving teaching quality.	60	100%	0	0%

Source: Field Survey, 2025

Table 11 presents the availability and adequacy of resources that influence postgraduate students' feedback. Item 1 on the table shows that 57% of the participants agreed that I have access to sufficient academic journals and research articles for your postgraduate students, 43% of the participants disagreed with this claim. Item 2 shows that 33% of the participants agreed that there are adequate teaching materials (books, software, etc.) available for your postgraduate courses, 67% of the participants disagreed with the opinion. Item 3 shows that 16% of the participants agreed that I have access to well-equipped classrooms or teaching spaces for postgraduate-level instruction, 84% of the participants disagreed with the opinion. Item 4 shows that 16% of

the participants agreed that there is sufficient availability of computers or digital devices for use in postgraduate courses 84% disagreed with the claim.

Item 5 indicated that 84% of the participants agreed that the library facilities at the university are sufficient for your postgraduate teaching and research needs, 16% of the participants disagreed with the opinion. Item 6 indicated that 8% of the participants agreed that I have access to adequate research funding for your postgraduate students and projects, while 92% of the participants disagreed with this claim. Item 7 shows that 42% of the participants agreed that The technological infrastructure (e.g., internet speed, online platforms) are sufficient for conducting postgraduate programs effectively and 58% of the participants disagreed with the view. Item 8 shows that 33% of the participants agreed that Postgraduate students are provided with adequate resources for their thesis or dissertation work (e.g., data analysis tools, software, lab equipment) and 67% of the participants disagreed with the view.

It is clear from the data above that availability and adequacy of resources that influence postgraduate students' feedback at FEES, UDUS were not adequate for postgraduate students.

Qualitative results

Availability and adequacy of resources on postgraduate students' sustaining the argument during the in-depth and key informant interviews a respondent submitted that

> "The quality of infrastructures such as e-library, information technology center, laboratories are not enough and not fully available ones by the postgraduate students it means therefore, that a separate laboratory, halls and strictly for postgraduate students only and other learning facilities should be made available for postgraduate students."

The statement above shows that there are some learning facilities but not assign to postgraduate students only, to those that are available lack of awareness on its availability of such facilities contributed to accessing them.

A respondent from in-depth interview narrated that

> "Lack of funding either from our working places or our employees contributed and has a negative impact on our studies including those at Usmanu Danfodiyo University Sokoto and another problem is the problem of assessing sponsorship and grant from the university source which was due to limited and high demand of the scholarship.

A respondent from key informant interview (KII) responds and says:

> "Look, I was unable to graduate during my master's program due to lack of financial assistance from the university I work, the tertiary educational trust fund (TETFUND) was not given to me because of that I have to sale all I have to pursue the program but due to the time frame given to me by my employer I just have to drop out and that was how it ends."

It can be seen from the above statement that limitations in assessing resources because of the high demand of scholarship and grants for further studies has a negative impact on postgraduate students of UDUS. in responding to question that asked whether the respondent is satisfy with the resources provided by the institution for postgraduates' students in their area of study, a respondent was in a view that

> "The resources provided by the school for PG studies in my area is highly recommended because the PG lecture hall is always available for our lectures and the lecturers used electrical device for lectures."

But to another respondent reverse is the case because he made mention of

> "We always have restriction and limitations in assessing the limited resources available and high demand.

Research question 5 Delivery of courses and the students' learning experiences. Through the Focus Group Discussion and IDI with the

respondents a respondent narrated and described the kind of experience he has in receiving the lecture that affects her studies.

The respondent revealed that

> "The number of courses taken during the course work are too much for postgraduate students especially PhD students, I was only able to passed only seven out of thirteen and I have a very good and researchable topic being discussed with my supervisor but unfortunately for me I was not able to meet the PG requirement of having meet the certain sittings of examination and passes therefore, I was asked to withdraw from the program".

Here the respondent is trying to show that the numbers of courses registered by the PG students are much especially the PhD students who mostly need only the research methodology, information technology and advanced statistics only as a course for their write up and all other courses are assumed to be taken by masters' programs only.

Similarly, another respondent is in a view that

> "The PhD students should if possible be asked to register only those courses where they scored "C" grade for more and better grade."

A question of whether an interaction online or hybrid format, a respondent says,

> "We never have an online interaction with our instructors because the resources were not available. There was a time when our lecturer of ICT wants to try online lectures but does not materialize due to number of problems, that is why we are saying that there is need to have a standard device of having twenty four hours power or stand bye."

Having an interview with a student that graduated in 2013 /2014 academic session, he revealed that

> "I never had any online interaction with my lecturer and even the regular traditional lectures or interaction there are time when we will be waiting for our lecturers for lectures but will not be there will not border to call and explain of his or her reason of not coming and or no compensation for that lectures in the next period."

Another respondent from 2015/2016 academic session explain to the researcher *that*

> "During my masters in my departmental courses it was only one lecturer that teaches us all the departmental courses and examine us, to me I feel there is element of sentiment in grading the students. By using online lectures it will be easier and simple to students and is said to improve the learning activities of the postgraduate students".

Another respondent was in the view that

> "If the lectures, seminars and defense of both proposals, internal and external could be in a power point format or even online could make things easy and work past and will improve the postgraduate program."

Substantiating further on challenges encountered in the course of delivery of the postgraduate students is a participant in an interview who delivered that

> "If the faculty can employ the habits or principles of delivering the lectures or courses online and using power point, zoom and other in all the activities of presentations of the faculty."

Similarly, during an interview another respondent says,

> "Academic content of postgraduate courses in terms of its relevance to our profession is satisfactory and depends on how serious the students is and with the current situation the

> graduation of students from faculty is moving well and the skills acquired helped in learning experiences"

.In this regard, the gap in the curriculum could benefit from additional areas of study and the courses are not up-to-date and reflect negatively to PG students' learning outcome.

Research question 3. The students learning experience from the responses of the respondents, one of the respondents narrated that

> "I most testify and satisfied with the postgraduate learning experiences in the faculty of education and extension services of Danfodiyo University Sokoto compared to where I did my master's degree. On the other hand there is need for available resources and reduction of some courses for the PhD students' it will reduce the burden and make the program very easy."

Another respondent of KII responds and stated that

> "There are knowledgeable instructors; challenging course-work; collaborative group work and access to resources is among the factors that enhance our learning experience in the faculty and the university at large."

Another respondent testified to the researcher during an interview that

> "Although the courses offered were much yet, it has helped me a lot in acquiring new skills and knowledge for further career especially during my master's program to further for PhD." The data above revealed that higher number of respondents of both the graduates and the graduating students are not satisfied with the number of courses that are much in pursuing of the Degree compared to other institutions.

Discussions

The findings from research question 4, shows that the availability and adequacy of resources are not enough among postgraduate students in Usmanu Danfodiyo University, Sokoto. The findings of the study agree with Al-Zubaidi (2012) on academic writing of Arab postgraduate students: discussing the main language issues. This discussion paper will report on an inquiry conducted with large cohorts of Arab postgraduate students undertaking study and research at Universiti Teknologi Malaysia (UTM) International Campus Kuala Lumpur. It will identify and address the main language problems faced by Arab postgraduate students in their academic writing in English. Such students need assistance with developing their understanding and application of the links between language skills and academic knowledge building. The paper will therefore discuss ways in which language teachers might more effectively assist Arab postgraduate students to adjust to and be more successful in an academic context writing and language-use. On the other hand, the study identified the level of the adequacy of the resources used in academic writing.

The findings from research question 5, reveals that there is a lot of challenges in term of courses delivery and impact on post graduate students learning experience at Usmanu Danfodiyo University Sokoto. The findings was in consistent with the work of Asogwa, Wombo, and Ugwuoke (2014) investigated challenges encountered and the coping strategies adopted by postgraduate students of agricultural education in writing theses in Nigerian Universities. They discovered that students are challenged by inability to select researchable topics for thesis writing, inability to understand as well as cope with the relationship of concepts in the approved research topics. The study is also in line with the study of Ekpoh (2016) on postgraduate students' challenges on research and thesis writing in the University of Calabar.it was found out among others that, postgraduate students experienced a variety of challenges in research and thesis writing aspects of their training. From the review so far conducted, the scholars attributed the postgraduate students' poor performance in research writing to supervisors' variables and school factors, without recourse to students' teach ability traits during the supervision process. Most of the works that have been done in this area are not on teach ability treats, specifically on self-evaluation and this has created a gap in knowledge and information. Therefore, this study was triggered by the gap in knowledge on postgraduate students' teach ability traits of self-evaluation as a predictor of

students' acquisition of research writing skills in federal universities in Nigeria.

The findings from research question 6, evidently shows that the academic content of postgraduate courses is relevant with students learning experience at Usmanu Danfodiyo University, Sokoto. The findings were consistent with the findings made by Joseph, Keong, and Ermawati (2020) for supporting postgraduate research writing: insights from students' writing experiences. At postgraduate level, success often depends on the ability to produce quality academic writing. From these insights, they now proposed a framework containing three dimensions and have argued for pedagogically driven writing support; pedagogically informed supervisory support; and targeted and systematic peripheral support. As this framework is driven by the experiences and needs of postgraduate students, we believe it could lead to a more enriching learning experience and also greater student satisfaction. The study is also in agreement with the work of Kaufhold (2019) on studied transnational postgraduate students' experience of voice and participation. The examined the transnational students' experiences of participation in European higher education by applying the notion of voice that encompasses the capacity to communicate and to be heard. Ethnography, linguistics, narrative inequality: Toward an understanding of voice. London: Taylor & Francis). Relating voice to access and participation, the article has moved forward debates around incorporating students' multilingual knowledge resources in diverse writing practices in academia. The results of his study demonstrated how trans languaging is mainly connected to writing for personal use and limited or regulated in assignment writing. He revealed multiple and contrasting ideological views on language use and knowledge, and have highlighted some possibilities and obstacles for appropriating and re-contextualizing knowledge across languages, educational contexts and disciplines. The article thus has connected translanguaging to questions of participation and access more broadly.

Conclusion

This study provides a comprehensive evaluation of postgraduate programs at the Faculty of Education and Extension Services, Usmanu Danfodiyo University Sokoto, highlighting both achievements and areas needing improvement. The findings reveal that while the quality of supervision is commendable, with supervisors playing a pivotal role in guiding students,

systemic challenges such as inadequate funding, limited access to resources, and infrastructural deficits significantly impede the overall learning experience. The transition to online and hybrid course delivery, though beneficial in theory, is hampered by practical constraints, including technological limitations and students' preferences for traditional in-person instruction.

Despite these challenges, the relevance of the academic content to students' professional and career aspirations is a notable strength of the programs. The study underscores the need for institutional reforms, including increased investment in learning materials, improved technological infrastructure, and professional development for lecturers to enhance their pedagogical approaches. Additionally, fostering a more collaborative and supportive environment between supervisors and students could further enrich the postgraduate experience.

By addressing these issues, UDUS can strengthen its postgraduate programs, ensuring they meet both local and international standards. This study not only contributes to the ongoing discourse on higher education in Nigeria but also serves as a model for similar evaluations in other institutions, ultimately promoting excellence in postgraduate education.

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Family Values and Abusive Tendencies of Secondary School Students in Akwa Ibom State: Implication for Education in the 21st Century

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Abstract

The study aimed at determining the relationship between family values and abusive tendencies of secondary school students in Akwa Ibom State: Implication for Education in the 21st Century. Two purposes of the study, two research questions and two hypotheses guided the study. The study adopted the correlational research design. The population of the study comprised all the 12,400 senior secondary two (SS2) students in the 250 public secondary schools in Akwa Ibom State. A sample size of 1,240 senior secondary two (SS2) students which represents 10 percent of the study population was selected for the study using multi-stage sampling procedure. A total number of 7 sampled Local Government Areas, 28 sampled schools as well as 20 percent of Senior Secondary 2 students per school were selected for the study using balloting method of random sampling. A self-structured questionnaire entitled "Family Values and Abusive tendencies of Students Questionnaire (FVATSQ)" was used for data collection. To establish the reliability of the FVATSQ, data were subjected to test of correlation and Cronbach Alpha statistics was applied for test of internal consistency of the instrument, which yielded the overall reliability index of 0.76 and 0.89 for the independent and dependent variables respectively. Data generated was analyzed using Pearson Product Moment Correlation (PPMC) statistics, and the findings showed a very high positive and significant relationship between respect for human dignity, self-discipline and abusive tendencies of secondary school students in Akwa Ibom State. Conclusion was drawn from the research findings while the researcher recommends among other things that, parents should maintain a sense of dignity in the family by addressing members with a polite, cheerful and amiable voice so that the young can speak to others with dignity and respect while in school.

Keywords: Family, Values, Abusive Tendencies

Introduction

The family is a fundamental social unit in the society consisting of parents and children. It is a socially recognized group usually formed by marriage, cohabitation or adoption that forms an emotional connection and serves as an economic unit in the society. The family gives the child belongingness which makes him to feel happy and comfortable. In the course of social interaction within the family, parents and adults members are expected to teach children values and right patterns of tendencies in order to shape their attitude, perception, aspirations and their value system. According to Dzintra and Marite (2016), family can be defined as basic societal unit, and the task of the society is to offer all the necessary support and protection to the family, so that the family can undertake all the responsibilities to ensure a favourable environment for the harmonious development of a child.

One of the most outstanding roles of parents in children upbringing is to educate them on certain beliefs and values which are morally accepted by the society. As observed by Epstein (2011) educating young ones on approved ethical values and patterns of tendencies is very essential in children's tendenciesal development and response to challenging conditions. The author added that parents behoove the responsibility of teaching and modelling moral values if they wish their children to become functional in character and learning. Such values include respect for human dignity, display of compassion, empathy, honesty, integrity among others.

Abusive behavour of students may be verbal, physical, psychological, sexual, emotional, financial, and spiritual hence, this study emphasizes on verbal bullying or abuse because in Akwa Ibom State, Irozuru and Ukpong (2015) revealed a high level of aggressive tendencies resulting from verbal abuse or bullying among students.

Globally, in relation to verbal bullying or abuse, the United Nations Educational Scientific and Cultural Organization (UNESCO, 2019) reported that 32 percent of school children are victims of verbal bullying. Nuning *et al.* (2020) added that students in most countries of world suffer violence, bullying and discrimination. The agency added that globally, more than 240 million children suffer gender-based violence in or around schools every year, and that every one in three students experience verbal bullying. This is quite outrageous. As observed by Teicher *et al.* (2011), abusive tendency of students is most times attributed to family values. The author further explained that

most parents have not been so committed towards educating their children on moral values and principles that are beneficial to individual and societal progress. Johnson *et al.* (2010) supported that abusive tendency among students is as a result of parents failure in teaching and modeling acceptable moral values for their children to imitate.

A student that embraces good morals would likely not be involved in actions or tendencies that are against the official rules and regulations of the school such as rendering verbal and physical abuse. Emphasizing on the role of parents in children moral development, Claudia and Dias (2012) observed that parents behoove the paramount responsibility of modelling good conduct and tendencies so that children can emulate. The author added that moral rectitude can only be strengthened if young ones are taught by their parents' values that are upright and fit for societal progress. Children whose parents teach and model good moral values and who understand the consequences of showing immoral acts would likely choose the right path of behaving fruitfully even if other students choose the wrong path of abuse.

A family shares goals and values which reinforces relationship and cohesion in the family. Gulnara and Roza (2016) explained that family values are what the family cherishes and teaches the children. These values have lasting impact on the attitude and tendencies of the children. Values as a concept is simply a complex and ethical trait that makes the character of a person. Mark and David (2008) viewed values as a stable and distinctive qualities built into an individual's life which determines his/her response to circumstances. Human values, according to Glenn (2010), are those qualities that we approve of in people; such are honesty, fairness, respect, decency, generosity, integrity, kindness, courage among others. Based on the above definitions, we can say that family values are those distinctive qualities, which are ethical and which a family shares for the common good of its members. Values unite the family and also help to enrich and guard the intimacy of the family members.

Values are what we cherish most in our lives. Our values influence our orientations, actions, reactions and interpretations. Values can also be referred to as principles or standards hold in high esteem by the society. Family values, according to Adebowale (2014) can be defined as beliefs or way of life transmitted by a family environment into the individual which guides the individual in his actions within and outside the family world. Within the family, the interactions are guided by these values only and this practice of

following the values extends outside the family as well. It is apt to observe that for constructing a good sustaining society, family is the basic unit which needs to be given attention. Family values can be guided by disposition, depending on the type of family structure.

Abusive tendencies is the use of harshly or coarsely insulting language with the intent of hurting the feelings of another person (Ngozi and Patricia, 2018). Abusive tendencies are various tendencies which may be aggressive, coercive or controlling, destructive, harassing, intimidating, isolating, or threatening, that an abuser may use to control a domestic partner, child or other peoples. Someone who is abusive behave in cruel and violent way towards other people. Alink *et al.* (2011) noted that abusive tendencies can take many forms. The authors added that abusive tendencies include being violent or aggressive making threats, controlling someone's tendencies, putting them down, verbally abusing them, taking or keeping money from them and putting pressure on someone to have sex or do things they don't feel comfortable with.

As noted by Kerr and Nelson (2009), students could develop abusive tendencies when such tendencies is initiated by parents. A student could be aggressive and tough to other students if he or she imitates the aggressive tendencies from the home. Verbal abuse which is very significant in this study, also known as verbal bullying is the act of directing offensive statements toward someone with the intent of causing emotional harm. Verbal abuse consists of tendencies that are non-physical, but which can still be rather damaging, such as being threatening, insulting, or humiliating toward someone. Abuse is the improper usage or treatment of a thing, often to unfairly or improperly gain benefit (Doyle and Timms, 2014). Abuse can come in many forms, such as: Physical or verbal maltreatment, injury, assault, violation, rape, unjust practices, crimes, or other types of aggression. Students may become abusive when they encounter frustrating situations which they believe are beyond their control. Students are especially sensitive to verbal abuse. Typically, the more verbal abuse a child suffers, the more problems the child is likely to develop as a result. It does not matter how old the child or when the abuse occurs for it to have a damaging and lasting effect. What matter most is that if a child is from abusive home, such abusive act performed by family member could have long standing effect on their social tendencies in school.

Some family values could influence abusive tendencies of secondary school students. One of such value is disrespect for human dignity. An individual who value respect, and treat another person in a fair and judicious manner could be referred to as having respect for human dignity. According to Glenn (2010), fathers who treat the mothers of their children with respect in words and deeds and deal with conflict within the relationship in an appropriate manner, without physical threat to life and abusive languages, will likely have children who will treat others the same way. They are less likely to be abusive to teachers and fellow students. Glenn added that the opposite will be the case to children whose parents disrespect the dignity of family members.

Another aspect of family values which may influence abusive tendencies tendency of students is level of social confidence. This is the quality that gives a child the confidence to control fear in the face of people and to hold firm for what is right. This value can make a student refuse to abuse fellow school mates and teachers, even though others do so. This is because as noted by Preeti and Emerson (2012), such children have been taught by their parents how to make reasonable moral judgments on conditions that may interfere with learned moral values and principles.

Self-discipline as a family value may reduce abusive tendencies of students in secondary schools. It is the ability for an individual to assume some social and moral roles without being ask to do them, taking responsibility for his or her actions. A self-disciplined family, would create a conducive and stimulating environment for members to actualize and enjoy their moral roles without being influenced by another person, taking responsibility of their actions particularly when faced with difficult circumstances. Children who are reared from such family according to Bear (2008), are most likely to act based on what they know to be morally right such as maintaining good interpersonal relationship devoid of abuse with both the teachers and fellow classmate.

Statement of the Problem

Verbal abuse or verbal bullying in schools is a pattern of negative tendencies that is common among secondary school students in Akwa Ibom State. This tendency leads directly from one student to another because of an imbalance in power that aims to hurt the feelings of a weaker student. This situation is very alarming in Akwa Ibom State, as most students often carry out different forms of verbal abuses like labelling, yelling, scolding, spreading gossip, slandering and rendering of accusations and insulting language.

As commonly observed by the researcher, the most annoying part is that most students usually use offensive expressions which contained swear and rude words against their fellow classmates, friends as well as teachers. Insulting expressions like “God punish you, son of a bitch, bastard, idiot, big head, cocoanut head, rubbish among other derogatory statement are often used by the students to express their annoyance over a conflicting issue. Abuses are always used by students to control or maltreat recessive classmates and to disrespect their integrity, feelings and emotions.

Also, it is commonly observed that some students harass fellow students including the teachers using verbal approach of sexual jokes. While some students derive pleasure in criticizing, insulting or denouncing fellow students, others display acts of anger and hostility, which happens to be a destructive form of communication, intended to harm the self-concept of other persons and produce negative emotions and physical discomfort. This situation seems to be very worrisome as schools keep producing some graduates without good morals and sound ethical values, exhibiting abusive tendencies that are inimical to the peaceful existence of the school and society.

Although several researches have been carried out on abusive tendencies of students, it was observed in the course of information gathering on the internet that previous researches dwell much on sexual abuse, physical abuse, psychological and domestic abuse. Little have been done on verbal abuse or verbal bullying tendencies of students in connection with family values used in this study, some of which are dignity, social confidence, self-discipline, obedience, humility, tolerance, empathy and integrity. Also, no empirical study has been carried out in Akwa Ibom State in relation to family values and abusive tendencies of students. Therefore, it is on this premise that this research seeks to determine the relationship between family values and abusive tendencies of secondary school students in Akwa Ibom State, Nigeria, taking into consideration the aforementioned variables.

Objectives of the Study

The major purpose of the study was to determine the relationship between family values and abusive tendencies of secondary school students in Akwa Ibom State, Nigeria. Specifically, the study sought to determine:

I. The relationship between family value of human dignity and abusive tendencies of secondary school students in Akwa Ibom State.

II. The relationship between family value of self-discipline and abusive tendencies of secondary school students in Akwa Ibom State.

Research Questions

The following research questions were raised:

I. What is the relationship between family value of human dignity and abusive tendencies of secondary school students in Akwa Ibom State?

II. What is the relationship between family value of self discipline and abusive tendencies of secondary school students in Akwa Ibom State?

Research Hypotheses

The following research hypotheses were formulated and tested at .05 level of significance

I. There is no significant relationship between family value of human dignity and abusive tendencies of secondary school students in Akwa Ibom State.

II. There is no significant relationship between family value of self discipline and abusive tendencies of secondary school students in Akwa Ibom State.

Research Methodology

The correlational research design was adopted for the study. The study was carried out in Akwa Ibom State of Nigeria. Akwa Ibom State has ten (10) educational zones. These offices are located in different parts of the state, including Uyo, Ikot Ekpene, Oron, Ikono, Etinan, Ikot Abasi, Itu, Abak, Ukanafun, and Eket. The activities of these zonal offices are coordinated by the Inspectorate Services Directorate of the Ministry of Education. The population of the study comprised all the 12,400 senior secondary two (SS2) students in the 250 public secondary schools in Akwa Ibom State. A sample size of 1,240 senior secondary two (SS2) students was selected for the study, using multi-stage sampling procedure which represents 10 percent of the study population. A self-structured questionnaire titled “Family Values and Abusive tendencies of Students Questionnaire (FVATSQ)” was used for data collection. The FVATSQ was scored using a four point rating scale of:

Strongly Agree (SA) = 4; Agree (A) = 3; Disagree = 2; Strongly Disagree (SD) = 1. Face and content validity of the instrument was determined by one expert in the Sociology of Education and two experts in Measurement and Evaluation. The reliability of the instrument was determined through Cronbach Alpha reliability technique. This yielded the reliability co-efficient of .76. The research instruments were administered on the respondents in their respective schools by the researcher together with two trained research assistants. Data generated were analysed using Pearson Product Moment Correlation (PPMC) at .05 level of significance and at 1238 degree of freedom.

Results

Research Question One: What is the relationship between respect for human dignity and abusive tendencies of secondary school students in Akwa Ibom State?

Pearson Product Moment Correlation (PPMC) was used for answering the research questions, using the r-value to determine the magnitude or weight of relationship between variables.

Table 1: Correlation analysis of responses between respect for human dignity and abusive tendencies of secondary school students

Variables	**n**	**∑x ∑y**	**∑x² ∑y²**	**∑xy**	**r-value**	**Remark**
Respect for Human Dignity (x)	1240	17334	245295	257784	.631	High Positive Relationship
Abusive tendencies of Students (y)	1240	17541	256169			

Source: Field data (2024)

Result in Table 1 shows a correlation value of .631. From the decision rule, it is noticed that a high positive relationship exists between respect for human dignity and abusive tendencies of secondary school students in Akwa Ibom State. The implication of this result is that students are most likely to use derogatory or insulting language in schools if parents frequently used negative comments on family members and vice versa.

Research Question Two: What is the relationship between self-discipline and abusive tendencies of secondary school students in Akwa Ibom State?

Table 2: Correlation analysis of responses between self-discipline and abusive tendencies of secondary school students

Variables	n	∑x ∑y	∑x² ∑y²	∑xy	r-value	Remark
Self-Discipline (x)	1240	17114	241636			
				276493	.732	Very High Positive Relationship
Abusive tendencies of Students (y)	1240	17541				
			256169			

Source: Field data (2024)

Result in Table 2 reveals a correlation value of .732. From the decision rule, it is seen that a very high positive relationship occur between self-discipline and abusive tendencies of secondary school students in Akwa Ibom State. The implication of this result is that students are most likely to use foul words when interacting with school mates if parents fail to inculcate in them the skills and abilities to control their feelings and emotions when provoked.

Hypotheses Testing

Hypothesis One: There is no significant relationship between respect for human dignity and abusive tendencies of secondary school students in Akwa Ibom State.

Pearson Product Moment Correlation (PPMC) was used for testing of hypotheses by comparing the r-value with the critical value, so as to determine the direction or significant of the relationship between variables all at .05 level of significance and at 1238 degree of freedom.

Table 3: Pearson Product Moment Correlation analysis between respect for human dignity and abusive tendencies of secondary school students

Variables	n	df	r-cal	r-crit	Decision
Respect for Human Dignity (x)	1240	1238	.631*	0.196	Rejected H_o
Abusive tendencies of Students (y)					

Significant; P<.05; Source: Field data (2024)

Table 3 shows that the calculated r-value of .631 is greater than the critical value of 0.196 at the degree of freedom of 1238 and at .05 significant levels. Hence, the null hypothesis is therefore rejected, while the alternate hypothesis

is retained. This implies that there is a significant relationship between respect for human dignity and abusive tendencies of secondary school students in Akwa Ibom State.

Hypothesis Two: There is no significant relationship between self-discipline and abusive tendencies of secondary school students in Akwa Ibom State.

Table 4: Pearson Product Moment Correlation analysis between self-discipline and abusive tendencies of secondary school students

Variables	n	df	r-cal	r-crit	Decision
Self-Discipline (x) Abusive tendencies of Students (y)	1240	123	.732*	0.196	Rejected H_o

Significant; P<.05; Source: Field data (2024)

Table 4 shows that the calculated r-value of .732 is greater than the critical value of 0.196 at the degree of freedom of 1238 and at .05 significant levels. Hence, the null hypothesis is therefore rejected, while the alternate hypothesis is retained. This implies that there is a significant relationship between self-discipline and abusive tendencies of secondary school students in Akwa Ibom State.

Discussion

Results from the research question one and hypothesis one revealed a high positive and significant relationship between respect for human dignity and abusive tendencies of secondary school students in Akwa Ibom State. This finding is in tandem with the finding of the study conducted by Nyorere and James (2019), which revealed a very high positive and significant between respect for human dignity and students tendency to involvement in violence. It is also similar to the finding of Dixon, Graber and Brooks-Gunn (2018), that parents observance of individuals rights and dignity by significantly deter students from exhibiting abusive tendencies in the school. The reason for this is that through social interaction in the home, young ones are called to promote the sanctity and dignity of human persons irrespective of their socio-economic background. Students whose parents treat family members with dignity are most likely to understand the different strengths and weakness of their school mates; hence, having high expectations for them, both in academic and personal growth. This finding also corroborates that of Apeh and Bernice (2020), that family violence and disrespectful tendencies significantly predicts abusive tendencies and other maladaptive tendencies of

secondary school students. This is because abusive tendencies can be learned in interaction with members of the family, especially intimate individuals who assault their spouses. Thus, it is therefore observed from this finding that, when children learn abusive lifestyle in the home, they are most likely to be committed to verbal victimization in the school.

Results from the research question two and hypothesis three revealed a high positive and significant relationship between self-discipline and abusive tendencies of secondary school students in Akwa Ibom State. This finding conform to that of Igbe (2016), who found that parents' inability to instill proper self-discipline in their children increases the tendency of involvement in aggressive tendencies. It is also similar to the finding of Jacob and Adegboyega (2017), who found that students from low self-discipline homes were more prone to abusive lifestyle than those who are from high self-disciplined homes. The reason for this is that children in whom their parents exercise high self-discipline in their daily action would less likely nurse the tendency to engage in abusive conducts. This finding is also in tandem with the finding of the study conducted by Chen, Yarnell and Neff (2013) that, a significant relationship exists between self-discipline as a value and verbal aggression of students. Adamu (2020) supported that a significant relationship occur between students' self-discipline and aggressive tendencies of students in the study area. This was as a result of lack of proper moral values orientation from the home. On the contrary, students whose parents over look most of their children misconduct might consider engaging in verbal abuse as a normal act.

Summary/Conclusion

Based on the findings of the study, the following conclusions were drawn: Having high respect for human dignity is strongly associated with a decrease in abusive tendencies of students. Students' are most likely to refrain from verbal bullying or abuse if parents avoid negative comments on family members at the home. High social confidence of students can be enhanced if parents teach the children the benefits of maintaining ethical standard while overcoming fear or increased pressure by school mates to be involved in verbal bullying or abuse. Self-discipline nurtured in the minds of young ones can prevent their involvement in verbal abuse particularly in conflicting situations among students.

Recommendations

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

I. Parents should maintain a sense of dignity in the family by addressing members with a polite, cheerful and amiable voice so that young can speak to others with dignity and respect while in school.

II. Parents should teach children all aspects of moral etiquette from an early stage so that while in school, students can confidently stand up before friends and say 'no' to use of derogatory or foul words in communication.

III. Parents should endeavor to teach their children how to evaluate and control their emotions and feeling or impulses particularly when provoked, so as to avoid being easily dive into harmful situation like verbal accusations.

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Creativity, Creative Mindedness and Teaching in Nigeria: Hermeneutical Extrapolation of Aleinikov's Creative Pedagogy

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Abstract

This paper examined the possibility of infusing lessons from Aleinikov's pedagogy into classroom teaching in Nigeria, for the purpose of inducing the Nigerian child towards being creative minded, which will consequentially generate innovations and creativities. This study adopted the popular philosophical methods of conceptual analysis, speculation and hermeneutics. Conceptual analysis was used to clarify the concepts of creative mindedness, creativity and creative pedagogy; hermeneutics was used to interpret the authentic connotations of creative pedagogy in the real and undiluted presentation by its originator, Aleinikov; while speculation was adopted to extrapolate and forecast the future of Nigerian education with the adoption of creative pedagogy. The paper critically examined creative pedagogy, initiated by Dr. Pavel Aleinikov, as a new approach to teaching which prioritizes creative mindedness, creativity and problem-solving skills. It enhances learning processes by nudging students to think innovatively and creatively. If applied to Nigerian education, Aleinikov's creative pedagogy could bring significant benefits by fostering creativity and creative mindsets in Nigerian students. It can also create a classroom environment which fosters imagination and originality. Consequently, teachers are ennobled to incorporate activities that stimulate divergent thinking, such as brainstorming sessions, open-ended projects, and problem-solving tasks. The paper attempted a tactical infusion of Aleinikov's approach to pedagogical practices in Nigerian classrooms. The writers argued that by infusing creative pedagogy into Nigerian education, pedagogues would possess the capacity to inspire students to think creatively, innovative-minded, as they become creative agents. The paper thus concluded that through the infusion of Aleinikov's pedagogical approach, Nigerian pedagogues can foster a generation of creative minds who are equipped with the skills necessary to thrive in a rapidly changing world. Based on the contentions and findings, it was recommended that the school system should provide comprehensive training and professional development programmes for teachers to enhance their proper understanding and implementation of creative pedagogy. Teacher education programmes should be redesigned to include training on the use of creative pedagogy, so as to ensure that future teachers are well-prepared to implement creative teaching methods from the start.

Keywords: Aleinikov, Creative pedagogy, Creative mindedness, Creativity, Teaching

Introduction

Creative thinking and creativity in the classroom have recently gained the attention of scholars due to level of innovation, creativity and sophistication of the present generation, which have precipitated robotic engineering, artificial intelligence, among others. Scholars like Aluyor (2019), Amaok (2020), Craft, Gardner, & Claxton (2008), Dineen, Samuel & Livesey (2005), Lin (2011), Aleinikov (2020), *inter alia*, have variously posited that the nurturing of creative capacities in the child should be the most important goal in the contemporary school system. Akinsanya & Osiyemi (2019) had strongly affirmed that the child needs to be critically-minded and creatively-minded so as to replace the old order, in order to showcase innovations amid innovations. Even in other climes, these goals appear to be one of the primary goals of education. Creative thinking and creativity are now seen as fundamental aims and overriding ideals of education.

Making a child think creatively and become a creative agent is however dependent on the approach to teaching activated by the teacher in the classroom. Nigeria's National Policy on Education (2013) has stipulated, as strongly attested to by many scholars, that no system of education can be greater than the quality of her teaching personnel. This is to mean that the height or depth of an education system is determined the height of the teachers; and the brilliance or intelligence of educational products is predicated on the intelligence of the teacher and his method/approach of teaching. Invariably, one could simply say: bequeath a system with a proficient and competent teacher, using the right method of teaching, and such system will produce a competent and efficient learner.

Statement of the Problem

The logical relationships existing between creativity and creative mindedness; between creative mindedness and creative pedagogy, have been extensively established (confer Akinsanya & Osiyemi, 2019, Aluyor, 2019, etc.). These researches have shown that wherein there are creative pedagogues, learners would necessarily be stimulated to becoming creative minds, and creative minds would naturally give birth to creativities and innovations. This invariably means that if any society is to keep up with the rate of creativity and innovation experienced in the present generation, such society must showcase creative agents/learners whose creative thinking capacities have been stimulated by creative pedagogues.

Quite unfortunately, creative pedagogical approach to teaching appears strange in Nigerian education system, for many of her teachers seem contended with traditional approaches to teaching. This explains the low level of creativity witnessed by products of the education system. This paper thus examined the new approach to pedagogy, as initiated by Aleinikov, and considered the possibility of a tactical infusion into pedagogical practices in Nigerian classrooms. It shall be demonstrated that by fostering creativity through creative thinking/mindedness, and fostering creative thinking/mindedness through creative pedagogy, Nigeria would produce a generation of citizens who are well-equipped to create and re-create their destinies.

Significance of the Study

This paper contributes to the advancement of already existing knowledge in the area of creative thinking and creative pedagogy. The researchers hope that this work would be beneficial to Nigerian pedagogues in a way to stir up their prowess via creative pedagogy. This is very important because the pedagogues are the major personnel in the transmitters of educational objectives in the school system. As such, the researchers hope that this paper would help Nigerian pedagogues to induce creative mind-sets in Nigerian students. This study would also be beneficial to the Nigerian students, as well as graduates who are facing financial crisis as a result of lack of creative thinking. This study would discourage white-collar job mentality among Nigerian education products.

Research Method

This research work adopted philosophical methods of inquiry such as - conceptual analysis, hermeneutics and speculation. Conceptual analysis was used to clarify the concepts of creative thinking, creativity and creative pedagogy. Hermeneutics was used to interpret the authentic connotations of creative pedagogy in the real and undiluted presentation by its originator. Philosophical speculation was adopted to adumbrate the possible solutions that creative thinking and creative pedagogy would bring in Nigerian education and society.

Who is Aleinikov?

Dr Andrei Aleinikov, known for several nicknames such as Mega-Creativity Man (Torrance, 2017); the world leading expert in Mega-Creativity by Dr. K. Neethling, (Neethling is the founder of African Creativity Foundation; Source: International Academy of Genius); and the most creative man in the world (Ramos, 2006), etc. He is a science pioneer, trail-blazing award-winning educator, bestselling author with a Guinness World Record, life-changing, high-energy speaker, consultant, trainer, *inter alia.* The following best describes him:

Having cracked the genius thinking code, as Americans like to say, but in more neutral terms, having developed the new scientific vision of creativity and genius as well as having discovered the genius thinking methodologies, Dr. Aleinikov applied these powerful genius thinking tools to all domains of human life and has proved them to bring extraordinary, or as people say, "genius" achievements. Featured in numerous newspapers and journals, radio and TV shows, online interviews, books and encyclopedias, Dr. Aleinikov continues to influence millions of people – exact fulfillment of his motto, "Saving geniuses around the world (https://www.andreialeinikov.com/:1)

In education sphere, Dr Aleinikov's contributions are stratospheric and not limited to the following: **Originator of Creative Pedagogy**, Creative Andragogy, Creagogy and Innovagogy, Originator of Creative Meta-Pedagogy (teaching educators how to instruct creatively); Designer of Genius Education Methodology (GEM, dubbed "the GEM of education" by media); Developer of numerous innovative programmes, including: first in the world – Creative Linguistics (Military University, Moscow); first in the South-East of the USA – Psychology of Creativity (PSY3390, Troy University, Montgomery, AL); first in the world – Foundations of Creative Education (EDU6625, Troy University, Montgomery, AL); first in the world – HELP 2000, Hyper-Efficient Language Programme, in which during the initial 40 hours of classes, students learn 2000 (i.e., 200 words per day) foreign language words and expressions.

Creative mindedness, Creativity and Creative Pedagogy

Aleinikov's creative pedagogy revolves around the idea that "if teachers transform their classrooms into creative learning environments, this will promote lifelong learning" (Saibon, Abdullah, & Har, 2018). According to

him, if pedagogy in general is defined as the study of the process of teaching, then creative pedagogy is defined as the science and art of creative teaching (Aleinikov, 1989). Creative pedagogy is a branch of pedagogy that emphasizes the leading role of creativity for successful learning. It is about teaching and learning creatively, and becoming creators and creators of future (Aleinikov, 1989). Aleinikov's Creative pedagogy emphasizes the importance of creativity and active student's engagement in the learning process. It aims to foster creative thinking, problem-solving skills, and innovative thinking among students.

In every attempt to define creative pedagogy, three connected components are essential – Creativity, Creative Teaching and Creative Learning. These three components are incidentally called elements of Creative Pedagogy. The relationship is diagrammatically represented below:

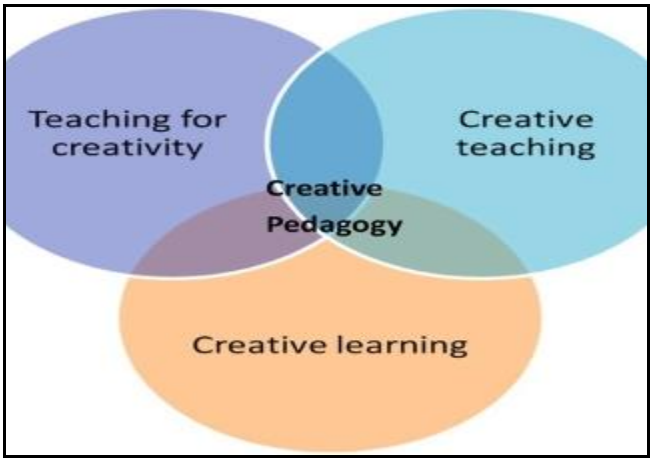

Figure 1: Three elements of Creative Pedagogy (Lin, Yu-Sein 2011)

According to Lin (2011), creative pedagogy simply means ways and tactics for fostering creativity through education. The foundation of creative pedagogy is the idea that creativity should be taught in the right systems and surroundings (Cziksentimihalyi, 1990; Craft, 2001; Starko, 2010). The objective of creative pedagogy is to turn any subject matter (class, course, programme or school) into a creative teaching process that would result in creative learners, who would be considerably more effective students than those produced by traditional approaches to education.

We can equally discern the nexus between creativity and creative pedagogy as follows:

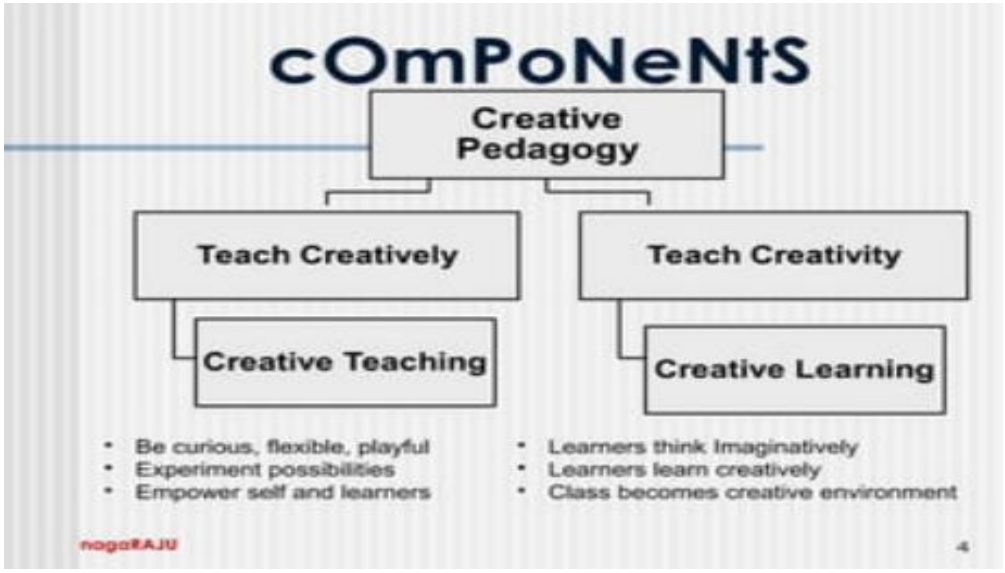

Figure 2: Components of Creativity (Source: Wikipedia)

Principles of Creative Pedagogy

One of the key principles of creative pedagogy is the belief that every student has creative potentials. It encourages teachers to create a supportive and inclusive learning environment that allows students to express their ideas freely and explore their own unique talents. The pedagogy emphasizes the importance of student-centered learning, where students actively participate in designing their own learning experiences. Aleinikov's creative pedagogy also promotes interdisciplinary learning, encouraging students to make connections between different subject areas and apply their knowledge in real-world contexts. It encourages teachers to incorporate various teaching methods, such as project-based learning, collaborative learning, and experiential learning, to engage students and make the learning process more meaningful and practical (Aleinikov, 2012). Aleinikov's creative pedagogy emphasizes cultivating students' imagination and creativity in education. According to Aleinikov (2012), education should not be about memorization or solely preparing students for examinations, but nurturing their innate curiosity and abilities to think critically and solve open-ended problems in original ways.

Student-Centered Learning: Aleinikov's framework emphasizes placing students at the center of the learning process. This principle suggests that Nigerian schools should shift from a teacher-centered approach to one that actively engages students in their own learning. By incorporating student-centered learning methods, such as project-based learning, collaborative

activities, and individualized instruction, Nigerian pedagogues can enhance students' active participation, creative thinking skills, and overall engagement in the learning process.

Experiential Learning: The framework promotes the idea of learning by doing. This principle aligns with Nigeria's need to move beyond rote memorization and passive learning methods. By integrating experiential learning opportunities into the curriculum, such as field trips, experimental studies, and real-world applications of knowledge, students can develop practical skills, problem-solving abilities, and a deeper understanding of the subjects they are studying.

Technology Integration: Aleinikov's framework recognizes the power of technology in enhancing educational experiences. Nigeria can benefit from embracing technology and incorporating it into teaching and learning processes. By providing access to digital resources, online platforms, and educational tools, Nigerian students can engage with interactive and multimedia content, collaborate with peers, and access a wealth of information that expands their learning opportunities.

Teacher's Professional Development: The framework acknowledges the critical role of teachers in implementing effective educational practices. Nigeria should prioritize professional development for teachers, equipping them with the necessary knowledge, skills, and pedagogical approaches to implement student-centered and technology-enhanced teaching methods. By investing in teacher training and support, Nigeria can ensure that educators are prepared to create engaging and effective learning environments.

By incorporating these principles from Aleinikov's framework, Nigeria would enrich its educational experience and outcomes. Students would have more active and meaningful learning experiences, develop required and essential skills for the 21st century, and be better prepared for future challenges. Teachers, equipped with modern instructional approaches and supported through professional development, would effectively facilitate learning and foster students' growth. Ultimately, embracing these principles has the potential to transform education in Nigeria, leading to improved educational outcomes and a more empowered generation of creative learners.

Aleinikov's creative pedagogy is a teaching approach that emphasizes the importance of creativity in learning. Aleinikov argues that creativity is not just

a desirable trait, but a necessary one for success in the 21st century. He believes that the traditional educational system, which focuses on memorization and regurgitation of facts, is not preparing students for the challenges of the modern world. His pedagogy is based on the following creeds:

I. Creativity is a skill that can be learned. Just like any other skill, creativity can be developed through practice and training.

II. Creativity is essential for success in the 21st century. The world is changing rapidly, and the ability to think creatively is essential for adapting to change.

III. The traditional approaches to teaching do not adequately prepare students for the challenges of the 21st century. The traditional approaches focus on memorization and regurgitation of facts, which are not the skills that are needed in the 21st century.

IV. Creative pedagogy is a more effective way to educate students. Creative pedagogy focuses on developing students' creativity, which is a more effective way to prepare them for present and future challenges.

Aleinikov's creative pedagogy has been implemented in schools around the world, and has been shown to be an effective way to improve student's learning. In a study of 1,000 students in the United States, students who were taught using creative pedagogy, showed significantly gains in creativity, creative thinking, and problem-solving skills than students who were taught using traditional methods (Aleinikov, 2020). Aleinikov's creative pedagogy is a promising new approach to teaching with its potentiality to revolutionize the way we teach and learn. By focusing on developing students' creativity, creative pedagogy would prepare students for the challenges of the 21st century and help them to succeed in life.

Direct Benefits of Creative Pedagogy

Here are some of the benefits accruable from using creative pedagogy in the classroom:

I. Increased creativity: Creative pedagogy helps students to develop their creativity by providing them with opportunities to think outside the box and initiate new ideas.

II. Improved critical thinking: Creative pedagogy helps students to develop their critical thinking skills by teaching them how to analyze information and make informed decisions.

III. Enhanced problem-solving skills: Creative pedagogy helps students to develop their problem-solving skills by teaching them how to identify and solve problems in a creative and innovative way.

IV. Increased motivation: Creative pedagogy helps students to become more motivated to learn by making learning more engaging and interesting.

V. Improved academic performance: Creative pedagogy has been shown to improve students' academic performance in a variety of subjects.

According to Craft, Gardner & Claxton (2008) and Newton & Newton (2009), the need to promote creativity has become an international conversation. By giving students the information and creative skills they need, education serves as the foundation for human capital (Lin, 2011). To meet this demand, policymaking and curricular change were carried out (Shaheen, 2010). The most important reasons for encouraging creativity in school include personality, knowledge, motivation, thinking and learning styles, teaching methods, evaluations and incentives, and surroundings.

Personality: The psychological traits of high achievers have been a popular topic in creativity study since 1990s. According to Chvez-Eakle, Lara, and Cruz-Fuentes (2006), the main focus of their research is to determine "whether highly creative people have common characteristics across fields and to examine the major differences among highly creative people. Numerous studies have confirmed that certain groups of personality traits, such as self-assurance, independence, openness to experience, willingness to take risks, attraction to complexity, tolerance of ambiguity, flexibility, and intuition, are related to creative functioning (James & Asmus, 2000; Kurtzberg & Amabile, 2001; Mumford 2000; Sternberg, 2006).

Knowledge and Expertise: Gardner (1993) found that it often takes creative geniuses ten years to become experts in their disciplines before they make ground-breaking contributions. As a result, "only after the expert knowledge is acquired and mastered does the driving force to fresh ideas to completion comes" (Edelson, 1999). According Batey and Furnham (2006), creativity is a product of both intellect and knowledge. More specifically, "creativity would be an extension of ordinary intelligence". However, they emphasized that "intelligence can be seen as necessary, but sufficient, for creative achievement" For Amabile (1998), everyone has some creative potential that is influenced by three things: expertise, creative thinking abilities, and motivation. Knowledge and originality are people's natural resources. Ford (1996) suggested that three factors affect an individual's aptitude for creativity: domain-related knowledge, behavioral skills and creative-thinking talents. A necessity for creative performance is expertise; practically speaking, expertise is crucial when it comes to tackling innovative problem-solving.

Motivation and Self-Efficacy: According to a study, learners will be more intrinsically motivated if they are given ownership, valued for their input, and encouraged to pursue their own interests (Dineen & Collins, 2005). A substantial amount of research demonstrates the importance of motivation in influencing creativity (Amabile, 1998; Hennessey, 2003). Extrinsic and intrinsic motivation both exist, with the latter being significantly more crucial for creativity. Intrinsic motivation is a major driving force behind the creative process, according to Hennessey (2003). Mumford (2000) observed, however, that "creative work calls for both intrinsic and extrinsic motivation operating in a synergistic fashion". Because of this, it is likely that teachers would use both intrinsic and extrinsic motivation in various contexts. Potential factors that may be associated to students' creative self-efficacy include motivation, perspectives, educational experience, and academic beliefs and practices. The reciprocal relationships between efficacy beliefs and creative outputs have been the subject of much empirical research (Beghetto, 2006). Students are more likely to have good evaluative judgments and feelings about creativity when they are confident in their ability to be creative and expect positive consequences from their efforts. The cognitive and emotional foundation of individual creative performance includes creativity efficacy and a positive attitude towards creativity. Therefore, creativity efficacy may have an impact on favourable perceptions of creativity. According to Beghetto (2006), there is a positive correlation between students' motivating beliefs, instructors' evaluations of their creative performances, and their sense of self-efficacy.

Assessment and Reward: According to Hennessey, 2003, predicted assessment could have disruptive effects on creativity by harming intrinsic motivation and impairing cognitive functions. One explanation for this is that people's assessment anxiety may drive them away from the work at hand and toward extraneous considerations. Most importantly, this outcome may cause children to avoid taking risks and exploring the realm of possibilities, two essential elements of creativity. However, social-psychological studies have revealed that "under certain specific conditions, the expectation of reward can sometimes increase levels of extrinsic motivation without having any negative impact on intrinsic motivation or performance" (Hennessey, 2003). The research shows that depending on the sort of review expected, expectations of evaluation may, in some corporate environments, be advantageous for people's creativity. People should work alone without any expectations of assessment if the objective is to pursue high quality creativity and productivity. Additionally, a goal that emphasizes originality is good for encouraging creative performance but bad for productivity. Teachers may demonstrate dedication to their pupils by creating engaging objectives and expectations for them, as well as by assisting them in creating an internal incentive system. Individuals seem to be motivated to focus their attention and effort on developing creative and pertinent replies when given a creativity objective. As long as objectives are specified for desirable performance dimensions, creating goals can be a useful technique for improving performance.

Environment: Hunter et al. (2007) demonstrated that climate assessments might serve as indicators of artistic performance in the actual world. Organizational environments' enforced receptivity beliefs can also inspire innovative behaviour. In contrast to prior unpleasant experiences, a history of success might increase the possibility of innovative attempts. It has some bearing on self-efficacy or capacity views. People's creativity benefits greatly from having a high perception of their own abilities and self-confidence (Ford, 1996). Additionally, the research on organizational climate offered some helpful suggestions for fostering creativity and innovation, including a trusting and supportive environment for fostering new ideas and changes, the willingness to challenge the established paradigm, a stigma-free environment, and an attitude toward tolerating uncertainty. Amabile (1998) advised executives to create a work atmosphere where employees can feel free to try out creative ideas without worrying about facing repercussions for failure. This justification might also be used in a classroom. Setting up a classroom where pupils feel free to express creative ideas is a crucial part of instructors'

roles in encouraging creativity in their charges. Additionally, as creative endeavours frequently take place in a team environment, the role of teacher-leader frequently has a significant influence on creative efforts. Supportive supervision seems to enhance creativity, which is a quality that is reflected in the ambiguous, dangerous, and subject to critical nature of creative work (Mumford, 2000).

Creative Pedagogy and Teaching in Nigerian Classrooms

When considering the injection of creative pedagogy into typical classrooms in Nigeria, several factors peculiar to the Nigerian context must be taken into account, viz:

Incorporating local culture and languages: Nigeria is a diverse country with numerous ethnic groups and languages. Creative pedagogy can be used to integrate local culture, traditions, and languages into the educational process. Teachers can employ creative techniques such as storytelling, drama, music, and art that reflect Nigerian cultural heritage. This approach can foster a sense of pride and identity among students while facilitating language learning and understanding.

Active learning and student's engagement: Creative pedagogy emphasizes active learning and student's engagement. In Nigerian educational system, where large class sizes and rote memorization are common challenges, incorporating creative pedagogy could help overcome these limitations. Teachers can encourage students to actively participate in their learning through group activities, projects, presentations. This approach promotes creative thinking, problem-solving skills, and collaboration among students.

Enhancing language acquisition: In a country as linguistically diverse as Nigeria, creative pedagogy can play a vital role in language acquisition. Teachers can employ creative techniques to make language learning engaging and interactive. For instance, they can use role plays, language games, and multimedia resources to practice speaking, listening, reading, and writing skills. By integrating creativity into language instruction, students are more likely to develop fluency and proficiency in multiple languages.

Teacher training and professional development: To effectively implement creative pedagogy, it is crucial to provide teachers with the necessary training and professional development opportunities. Nigerian educational institutions

can invest in workshops, seminars, and training programmes which equip teachers with the knowledge and skills to integrate creative pedagogy into their teaching practices. This support can help teachers adapt their instructional methods, create innovative lesson plans, and effectively engage students in learning processes.

Overcoming infrastructure challenges: Nigeria faces infrastructure challenges, particularly in rural areas, which can limit access to resources and technology. Creative pedagogy should consider these limitations and focus on low-cost, resourceful approaches. Teachers can leverage on locally available materials, such as traditional art supplies or storytelling traditions, to create meaningful learning experiences for students. Additionally, partnerships with community organizations, NGOs, and government agencies can help provide necessary resources and support for implementing creative pedagogy.

Evaluation and assessment: Traditional assessment methods in Nigeria often emphasize rote memorization and regurgitation of information. Creative pedagogy encourages alternative forms of assessment that assess creative thinking, problem-solving, and creativity. Educators need to explore and develop assessment strategies that align with the principles of creative pedagogy, such as portfolios, presentations, performances, and project-based assessments. By adapting creative pedagogy to Nigerian education, educators can foster a more learner-centered, engaging, and culturally relevant learning environment. This approach has the potential to enhance language acquisition, promote critical thinking skills, and nurture creativity among Nigerian students, ultimately preparing them for the challenges and opportunities of the 21st century.

Creative pedagogy and pre-service training: Teacher training programmes should include specific modules or courses that introduce aspiring teachers to the principles and practices of creative pedagogy. These modules can cover topics such as the theoretical foundations of creativity in education, practical strategies for integrating creativity in lesson planning, and assessment methods that align with creative pedagogy. By incorporating creative pedagogy into pre-service training, future teachers can develop a strong foundation for implementing it in their classrooms.

Collaborative learning and experiential training: Traditional lecture-based training methods may not effectively convey the practical aspects of creative pedagogy. Teacher training programmes should adopt collaborative learning

and experiential training methodologies, where trainee teachers actively engage in hands-on activities, simulations, and reflections. This approach can provide them with firsthand experience of creative teaching techniques and help them develop the skills needed to implement creative pedagogy effectively.

Model classrooms and demonstration schools: Establishing model classrooms or demonstration schools that showcase effective implementation of creative pedagogy can serve as a valuable resource for teacher training programs. Trainee teachers and practicing teachers can observe experienced educators employing creative pedagogical techniques in real classroom settings. These model classrooms can also serve as platforms for teachers to practice and receive feedback on their own creative teaching approaches.

Research and dissemination of best practices: Encouraging research on creative pedagogy and disseminating best practices is essential for improving teacher training programmes. Teacher training institutions can collaborate with researchers and practitioners to conduct studies that explore the impact of creative pedagogy on student outcomes. Findings and successful case studies can be shared through conferences, journals, and online platforms, providing teachers with evidence-based strategies and inspiring them to integrate creative pedagogy in their classrooms.

Policy support and resource allocation: Governments and educational authorities should provide policy support and allocate resources to enhance teacher training programmes in Nigeria. This includes allocating funding for the development of training materials, the establishment of training centers, and the recruitment of qualified teacher educators with expertise in creative pedagogy. Policy frameworks should also prioritize the integration of creative pedagogy in teacher certification requirements and assessments to emphasize its importance. The application of the above approaches suggests that teacher training programmes in Nigeria can effectively support the implementation of creative pedagogy, equipping teachers with the knowledge, skills, and support needed to foster creativity and innovation in the classroom. This, in turn, can lead to improved student engagement, learning outcomes, and the development of creative thinking and problem-solving skills among Nigerian students. Creative pedagogy shows promising prospects if implemented judiciously in classrooms in Nigeria. While challenges exist, as pointed out earlier, its focus on nurturing students' imagination, autonomy and divergent

thinking could help address prevailing issues. By stimulating higher-order skills overlooked under Nigeria's exam-centric teaching, creative methods may enhance learning outcomes. Piloting aspects through projects linked to nationally-relevant themes, as suggested previously, could raise benefits and build support (Ibukun, 2007). Incorporating peer-learning, play-based activities sensitive to cultural realities also inheres with opportunities to boost engagement among disenchanted youth (Olarinde, 2008).

With careful localization, integrating indigenous understanding, Aleinikov's framework has the potentials to revitalize Nigeria's educational experience. Creative pedagogy presents prospects for invigorating the role of Nigerian teachers if properly supported. Its emphasis on student-centered learning requiring facilitation over direct instruction widens the functions teachers perform. This autonomy in curriculum delivery could boost job satisfaction languishing under rigid exam systems (Omotayo & Salau, 2019). Participatory projects and open exploration develops teachers' own enthusiasm, sparking fresh ideas beneficial for professional advancement. Community outreach also deepens respect within society (Emeka, 2016). Initial training equips educators with interactive techniques, cultivating critical and social competencies hitherto given less attention. Continuous support through collaborative lesson planning and classroom observations further instills self-efficacy navigating new approaches (Adeniji, 2011).

Aleinikov's (2012) creative pedagogy has great prospects for Nigerian society if its principles are well integrated into the system. By nurturing students' divergent thinking abilities, communities could experience benefits like increased entrepreneurship and problem-solving around local issues (Ibukun, 2007). Participatory project-based learning rooted in social contexts may yield tangible improvements to everyday lives. Familiarizing youth with sophisticated learning styles modelled by teachers socializes innovative mindsets prized internationally (Emeka, 2016). This stimulates human capital, thus, strengthening Nigeria's competitiveness globally. Empowering children as change agents through autonomy promotes democratic values of self-expression and independent thought (Fafunwa, 1974). Sustained replication builds generations embracing questioning norms critically. Greater emphasis on play also has potential to remedy challenges like pressure/violence, imparting healthy socio-emotional intelligence (Grantham-McGregor et al., 1991). This creates well-adjusted citizens and strengthens social cohesion. By cultivating creativity from a young age, more Nigerian children may develop

into innovative problem-solvers willing to question the status quo (Fafunwa, 1974). Through open-ended projects rooted in local issues, communities could directly benefit from student-generated solutions to real problems (Ibukun, 2007). This grassroots approach to knowledge creation encourages homegrown progress.

Conclusion

On the basis of the extrapolations made in this study, it can be concluded that by infusing creative pedagogy into the classroom milieu, it becomes very easy for educators to inspire students to think innovatively, to develop problem-solving skills, and to cultivate creative mindset. The incorporation of activities that stimulate divergent thinking can create an engaging and dynamic learning environment. Moreover, aligning creative pedagogy with the shift towards learner-centered approaches in Nigeria would allow students to take an active role in their education. By encouraging active learning and experiential education, educators would enhance students' understanding, retention, and practical application of knowledge.

Infusing creative pedagogy in Nigerian education has the potential to produce a generation of creative minds, prepared to navigate the complexities of the contemporary world. It would equip students with the skills necessary to adapt, innovate, and contribute to the Nigerian society and beyond. However, it is important to re-emphasise that the successful integration of creative pedagogy requires support and investment in teacher professional development, curriculum design, and the availability of resources. Collaboration among educators, policymakers, and other stakeholders is crucial to ensuring effective implementation of creative pedagogical practices. This paper therefore concludes that by fostering creativity through creative thinking, and fostering creative thinking through creative pedagogy, Nigeria would be able to nurture a generation of citizens who are well-equipped to tackling future challenges and contribute to the country's growth and development.

Recommendations

Based on the foregoing, this paper recommended that the school system should provide comprehensive training and professional development programmes for teachers to enhance their understanding and implementation of creative pedagogy. These programmes should focus on equipping educators

with the knowledge, skills, and strategies necessary to foster creativity among students. Teacher education programmes should be redesigned to include training on the use of creative pedagogy, so as to ensure that future teachers are well-prepared to implement creative teaching methods from the outset of their careers.

The government should allocate sufficient resources to schools, including materials, technology, and learning resources that support creative teaching and learning practices. Ensure that schools have access to art supplies, digital tools, and other resources that facilitate creative expression and exploration. Foster collaboration and partnerships between schools, universities, businesses, community organizations, and cultural institutions to provide students with exposure to real-world experiences and mentorship opportunities. These collaborations can help students develop creative skills and connect classroom learning to practical applications.

Orientation programmes may also be organised to enlighten all concerned stakeholders on the value of creativity in education. Parents should be encouraged to support creative activities at home and establish channels for communication and collaboration between parents and teachers to foster a creative learning environment. Teachers should develop and implement assessment methods which align with creative pedagogy, allowing for the evaluation of students' creative thinking, problem-solving skills, and innovative abilities. They should explore alternative assessment strategies that go beyond traditional examinations to capture students' creative growth and development. They should conduct studies which examine the long-term impact of creative teaching practices on students' academic achievements, skills development, and overall well-being.

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