MANAGEMENT BY OBJECTIVE TECHNIQUE AS CORRELATE OF PRINCIPALS ADMINISTRATIVE EFFECTIVENESS IN SOUTH EAST NIGERIA

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Abstract
The study investigated management by objective technique and principals' administrative effectiveness in South East Nigeria. Two research questions were developed and answered and two hypotheses formulated and tested for the study. The design of the study was a correlational research design. The accessible population of the study comprised 1, 430 principals in which 732 are male principals and 698 female principals. A sample size of 303 principals which made up of 156 male principal and 147 female principals were used. The instruments employed for data collection was structured questionnaires which were validated by three experts. The reliability of the instruments was established through test re-test method. The data collected through the administration of the instruments were analyzed using Pearson Product Moment Correlation to answer research questions and Linear Regression was used to test the hypotheses at 0.05 level of significance. The findings among others revealed that there was a high extent of correlation between Management by Objective (MBO) and principals administrative effectiveness and there is significant relationship between Management by Objective and principals administrative effectiveness. It was recommended that State government should appoint capable and qualified persons as principals in order to implement management by objective technique for administrative effectiveness.

Keywords: Management Technique, Principals, Administrative Effectiveness

Introduction

Management is a process that is used to accomplish organizational goals, that is, a process that is used to achieve what an organization wants to achieve (Peretomode, 2017). An organization could be a business, a school, a church, a group of volunteers, or any governmental entity. Principals are those to whom this management task is assigned, and it is generally thought that they achieve the desired goals through the key functions of planning, organizing, directing and controlling. Some may include leading as part of these functions, but for the purpose of this study, leading is included as a part of directing. According to Anaekwe (2012), management is the process of planning, organizing, leading, directing and controlling the efforts of members and the use of resources in order to achieve stated organizational goals.

Management techniques are tools manager use to keep team morale positive, improve productivity and develop new talent. Management techniques are the techniques that are used by decision makers in order to make better decision (Gordon, 2018). Management Techniques are the skills, motives and attitudes necessary for performance of a job. It includes communication skills, problem solving ability, customer focus and the ability to work with a team. Skills and knowledge are manager's Techniques that can be measured easily while intangible assets like

effective communication and teamwork are harder to pin down and evaluated. Management techniques according to Boyatzis (2018) are activities, knowledge, skills or attitudes and perhaps personal characteristics necessary to improve a manager's performance. Boyatzis (2018) observed that management techniques lead to the demonstration of skills and abilities, which results in effective performance within an organizational environment. In this study, the management techniques of the principals and administrative effectiveness of the principals were examined. Gordon (2018) identified management techniques as Management by Objective (MBO); Programme Evaluated and Review Techniques (PERT); Planning, Programming and Budgeting System (PPBS), Delphi Technique (DT) and Strengths weaknesses Opportunities and Threat Analysis (SWOT), Management By Results (MBR), Management By Project (MBP), Management By Exception (MBE) and Management By Budget (MBB).

Management by objectives is a process whereby superior and subordinate managers of an organization jointly identify common goals, define each subordinate's major areas of responsibility in terms of the results expected, and use these intended outcomes as guidelines for implementation and periodic evaluation of the subordinate and the unit within the organization.
Management by objective is now practiced in the school system around the world. Despite its wide application, the principals' application of its principles is not always very clearly spelt out. Some school principals see it as appraisal tool, motivational techniques, planning or control device. Blanchard and Hersey (2018) defines MBO as a process whereby the superior and the subordinate workers of organization jointly identify its common goals, defines each individual's major areas of responsibilities in terms of results expected of him and use these measure as guides to the operation of the unit and the assessment of the contribution of its members. Supporting the above view, Nwosu (2018) affirms MBO as a result-oriented management technique in which all stakeholders participate actively often cooperatively in all salient activities of an organization to achieve optimal result. Wakarindi (2013) define MBO as a comprehensive managerial system that integrates many key managerial activities in a systematic manner and is consciously directed towards the effective and efficient achievement of organizational and individual objectives. However, it is pertinent to state that beside MBO being used as a performance appraisal, instrument for motivation, strategic planning, it also integrates human resource planning and development (staff, students and organizational development), career planning (personnel strength over coming weakness), budget (financial control), community relationship, and school plants (infrastructural provision) among other managerial activities for specific positions. Thus, the components of Management By Objective is made up of school instructional programme strategy, financial management strategy, personnel management strategy, infrastructural management strategy, goal driven and success oriented strategy, performance appraisal strategy, teachers motivation instrument/strategy, integration human resource planning and development, Budget career planning strategy and community relation strategy.
In Nigeria, the principalship has also evolved from the position and performance of the teacher, thus, the title 'principal' usually refers to the head of a secondary school or a post-primary institution (Edem 2014). Casmir (2011) infers that principalship has to do with headship of a secondary school and a principal is responsible for and empowered to oversee the affairs of the entire school.

Principals administrative effectiveness has been accepted as a multidimensional construct since it measures a variety of different aspects of teaching. Adeyemi (2016) defined Principals administrative effectiveness as the ability of Principals' to combine relevant inputs for the

enhancement of teaching and learning processes. According to Adeyemi, they include lesson preparation and presentation, subject mastery, classroom management, effective communication skills, etcetera. Obilade (2011) viewed Principals administrative effectiveness as the duties performed by Principals' at particular periods in the school system in achieving organizational goals. Adeyemi (2016) stated that Principals' roles are to arouse students' interest to participate fully by establishing obtainable goals by giving them both stimulus and the opportunity to ask questions and then evaluate their progress. From the aforementioned definitions and views of renowned scholars, it is deduced that a Principals's effectiveness is appraised under his or her personality trait, intelligence, methods, process and product. Adeyemo (2012) revealed that effective classroom management techniques have strong and positive influence on student achievement in Physics. Robertsokah and Nyenwe (2015) revealed a significant difference between male and female principals' management techniques being capable of influencing their administrative effectiveness.

The ability of the Principals to apply adequate lesson plan, effective classroom teaching, accurate teaching methods, adequate learning resources and effective communication skills determine effectiveness. Therefore, the problem of this study put in question form is, 'to what extent do management by objective technique determine principals administrative effectiveness in secondary schools in South East, Nigeria?

Purpose of the Study

The purpose of the study is to investigate the application of Management By Objective technique by principals and their administrative effectiveness in South East Nigeria. Specifically, the study sought to;

1. find out the extent Management By Objective (MBO) determines principals administrative effectiveness.
2. Determine the extent Management By Objective (MBO) determines principals administrative effectiveness based on gender.

Research Questions

The following research questions raised guided the study

1. To what extent does Management By Objective (MBO) determines principals administrative effectiveness?
2. To what extend does the extent Management By Objective (MBO) determines principals administrative effectiveness based on gender

Hypotheses

The following null hypothesis formulated was tested at 0.05 level of significance

$H0_1$: There is no significant relationship between MBO and principals administrative effectiveness.

$H0_1$: There is no significant relationship between MBO and principals' administrative effectiveness based on gender.

Methodology

The design of the study was a correlational research design. The accessible population of the study comprised 1, 430 principals in which 732 are male principals and 698 female principals. A

sample size of 303 principals which made up of 156 male principal and 147 female principals were used. The sample for the study employed the multi-stage sampling technique precisely stratified-simple random sampling techniques. The instruments employed for data collection was structured questionnaires titled: Management By Objective Technique Questionnaire (MBOTQ), Principals Administrative Effectiveness Questionnaire (PAEQ). The instrument was validated by three experts, two from Educational Management and one from Measurement and Evaluation in College of Education, Michael Okpara University of Agriculture, Umudike. The reliability of the instruments MBOTQ and PAEQ was established through test re-test for stability of the instrument. The researcher administered 50 copies of the instrument 50 male and female principals in ten different secondary schools. The instruments were re-administered to the same respondents within a period of two weeks and scores obtained in the two administrations were correlated using Pearson`s Product Moment Correlation (PPMC) and the value reliability indices are r = 0.85 and r=.79 respectively for the two instruments. The data collected through the administration of the instruments were analyzed using Pearson Product Moment Correlation to answer research questions and Linear Regression was used to test the hypotheses at 0.05 level of significance.

Results

Research Question 1:

To what extent does Management By Objective (MBO) determines principals administrative effectiveness?

Table 1: Pearson Correlation of Management by Objective (MBO) and Principals Administrative Effectiveness

		Management By Objective	Principals administrative effectiveness
Management By Objective	Pearson`s Correlation	1	.715
	Sig. (2-tailed)		.003
	N	303	303
Principals administrative effectiveness	Pearson`s Correlation	.715	1
	Sig. (2-tailed)	.003	
	R^2	.511	
	N	303	303

*. Correlation is significant at the 0.05 level (2-tailed), N = Number of respondents

Data in Table 1 revealed that there was a high extent of correlation between Management By Objective (MBO) and principals administrative effectiveness as indicated by the correlation coefficient r (0.715) which is positive and within the coefficient limit of ±0.61 – 0.80. The coefficient of determination (r^2) 0.511 indicated that 51.1% of the variance was observed in principals administrative effectiveness. It implies that Management By Objective to a high extent determined principals administrative effectiveness in secondary schools

Hypotheses One

There is no significant relationship between MBO and principals administrative effectiveness.

Table 2: Simple Linear Regression Analysis for the MBO and Principals Administrative Effectiveness

Variables	Term	Sum of Square	Df	Mean Square	F-cal	Sig.	Decisions
Management By Objective	Regression	6883.021	1	6883.021	43.167	.003	S
Principals administrative effectiveness	Residual	47994.743	301	159.451			
	Total	54877.764	302				

$R = 0.715^a$, $R^2 = 0.511$ (value of the consistent), S = Significant at $P \leq 0.05$
Predicted = Principals administrative effectiveness in secondary schools

The result in Table 2 shows F- calculated value of 43.167 at 0.05 level of significance. The Table also shows a p-value of .003 which is less than the alpha value of 0.05. Thus, null hypothesis which states that there is no significant relationship between MBO and principals' administrative effectiveness is thereby rejected. This means that there is significant relationship between MBO and principals administrative effectiveness.

Research Question 2:

To what extent does Management By Objective (MBO) determines principals administrative effectiveness based on gender?

Table 3: Summary of Pearson's Product moment Correlation Coefficient analysis showing the relationship between male and female principals' Management by Objective (MBO) towards Principals Administrative Effectiveness

		MBO	PAE
Male Principals	R	.745*	
	R^2	.554(55.4%)	
	Mean	43.37	66.20
	SD	8.52	14.05
	N	156	156

Female Principals	R		.745*	
	R^2		.554(55.4%)	
	Mean	46.93		65.82
	SD	8.81		12.72
	N	147		147

MBO= **Management by Objective**
PAE= **Principals Administrative Effectiveness**
N = 303
*. Correlation is significant at the 0.05 level (2-tailed), N = Number of respondents

Results in Table 3 showed that there is high positive correlation between Management By Objective (MBO) and principals administrative effectiveness based on gender. The correlation coefficient r(0.745) is a linear correlation between the observed variables which indicated a high positive relationship between Management By Objective (MBO) and principals administrative effectiveness based on male and female principals. The coefficient of determination (R^2) 0.554 indicates that 55.4% of the variance observed in management by objective towards principals administrative effectiveness was as a results of male and female principals' Management By Objective.

Hypothesis 2
There is no significant relationship between MBO and principals administrative effectiveness based on gender.

Table 4: Simple Linear Regression Analysis for the correlation between MBO and Principals Administrative Effectiveness based on Gender

$R = 0.745^a$, $R^2 = 0.554$ (value of the consistent), S = Significant at $P \geq 0.05$
Predicted = Principals Administrative Effectiveness

The result of analysis in Table 4 shows F- calculated of 65.832 at 0.05 level of significance. Table also shows a p-value of 0.002 which is less than the alpha value of .05. Thus, the null hypothesis which stated that there is no significant relationship between MBO and principals administrative effectiveness based on gender is thereby rejected. This means that there was a significant relationship between MBO and principals administrative effectiveness based on gender.

Discussion of Findings

The study revealed that there was a high extent of correlation between Management By Objective (MBO) and principals administrative effectiveness as indicated by the correlation

coefficient r (0.715) which is positive and within the coefficient limit of ±0.61 – 0.80. The coefficient of determination (r^2) 0.511 indicated that 51.1% of the variance was observed in

principals administrative effectiveness. It implies that Management By Objective to a high extent determined principals administrative effectiveness in secondary schools. The study corresponding affirmed that there is significant relationship between Management by Objective and principals administrative effectiveness. The finding is similar with the finding of Adeyemo (2012) who revealed that effective classroom management techniques have strong and positive influence on student achievement in Physics.

The study revealed that there is high positive correlation between Management By Objective (MBO) and principals administrative effectiveness based on gender. The correlation coefficient r(0.745) is a linear correlation between the observed variables which indicated a high positive relationship between Management By Objective (MBO) and principals administrative effectiveness based on male and female principals. The coefficient of determination (R^2) 0.554 indicates that 55.4% of the variance observed in management by objective towards principals administrative effectiveness was as a results of male and female principals' Management By Objective. The corresponding hypothesis affirmed that there was a significant relationship between MBO and principals administrative effectiveness based on gender. This finding is in agreement with those of Robertsokah and Nyenwe (2015) that indicated a significant difference between male and female principals' management techniques being capable of influencing their administrative effectiveness. The findings of the current study are attributed to the fact that principals' administrative roles are demanding irrespective of the gender of the principals.

Conclusion

The study investigated management by objective techniques as determinants of principals' administrative effectiveness in public secondary schools in South-East, Nigeria. Based on the findings, the researcher concluded that there was a high extent of correlation between Management By Objective (MBO) and principals administrative effectiveness, that Management By Objective to a high extent determined principals administrative effectiveness in secondary schools and there is significant relationship between Management By Objective and principals administrative effectiveness. However, based on gender, there was a significant high positive correlation between male and female principals' Management By Objective (MBO) and principals administrative effectiveness. The application of management by objective technique by principals and their administrative effectiveness in South East Nigeria is necessary for the growth of educational system. This is because the productivity of teachers which is usually observed in students' achievement is highly influenced by the principals' administrative effectiveness. It has been noted that there is a strong relationship between management techniques and students' academic achievement but the direction of the relationship with regards to principals' and their principals' administrative effectiveness in South East, Nigeria is yet to be established.

Recommendations

Based on the findings and conclusions of the study, the following recommendations were made.

1. State government should appoint capable and qualified persons as principals in order to implement management by objective technique for administrative effectiveness.

2. Government should integrate management by objectives in administrative duties to enhance productivity in secondary school.

3. Government should organized seminars and workshop for principals to improve their skills in management technique and proper supervision of class activities by school heads.

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IMPACT OF EARLY CHILDHOOD EDUCATION ON SCHOOL ADJUSTMENT LEVEL OF PRIMARY SCHOOL PUPILS IN MANGU LOCAL GOVERNMENT AREA, PLATEAU STATE

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Abstract
This study was conducted to find out the impact of early childhood education on school adjustment level of primary one pupils in public primary schools in Mangu LGA of Plateau State. The research was a comparative survey type. The population for this study was 6,920 pupils and the sample was 240 pupils comprising 120 males and 120 females which were selected using cluster sampling method. 60 primary one teachers were also selected as samples. The instrument used for data collection was the Teachers' Questionnaire. One hypothesis was formulated and tested using chi-square at 0.05 level of significance. The study revealed that primary one pupils with early childhood education experience easily relate with peers, teachers and other school personnel more than those without such educational background. Based on these findings, the researchers recommended that the government should expedite action in establishing preschool programmes in all public primary schools in the local government area.

Keywords: Early childhood Education, School adjustment pupils, Primary School, Pupils

Introduction

Early Child Care has family role for many years. Nigeria has a multi-sectorial ECD Strategy, the National Policy for Integrated Early Childhood Development (IECD), which targets children aged 0-5 and includes the sectors of education, health, nutrition, and child protection. Integrated teaching and learning means that early childhood professionals build opportunities in early childhood programs for children to interact with their environment, both physical and social, in response to their own hypotheses or curiosity about how their world works, and to interact with other children and the around them. It was to unleash all of these infinite possibilities in experimental ways, so that learning could be both innovative and fun simultaneously. It was formed to facilitate education to be holistic and complete in its approach, so that no child leaves feeling regressed or dissatisfied.

Early Childhood care and Education (ECCE) started in the country only two decades ago (NERDC, 2004). With this development, Government is now resolved to create an enabling environment for the Nigerian child to develop his/her potential to the fullest. Besides, the society

in recent times has appreciated that the care and support received by a child in terms of good health, nutrition, protection and psycho-social development are for a child's personality and social behaviour. Similarly, within the psychological parlance, early childhood is regarded as "foundation years" for moral, social, intellectual and attitudinal development (Wortham, cited in Dakum, 2009). Building on this view, Dakum (2009) stressed that the differences in motherhood bring about differences in children's personalities.

There is a growing demand for better ways of caring for children through an early child care project given the advancement in science and technology which ensures the survival of many more children, thereby, increasing population growth. It is quiet unfortunate that Nigeria's official policy and practices in Early Childhood Education leave many deserving children behind particularly in rural areas of the country. As a result of the low participation of government in proprietorship of daycare centres and nursery schools, the poor and disadvantaged children are denied access to early childhood education (Adenipekun, 2004). Gregory (2004) argues that early childhood education years are the most important for teaching a child how to love learning. In addition, children also learn how to communicate with others, express their feelings and develop their creative educational abilities. Success in preschool establishes a foundation for a child's later emotional development and adjustment. Blau and Curie (2014) argue that attending preschool increases average grades, class participation, behavioural skills, school adjustment and self-control in primary schools. Moreover, behavioural skills are as important as cognitive skills in future success in life.

A child's school adjustment often referred as "school readiness" depends on characteristics and qualities that reside within the child. That is, characteristics that are closely linked with age or maturation. Such child focused definitions of school adjustment and readiness place the locus of responsibility for readiness within the child and is based on the assumption that there is a set of capabilities children must achieve in order to start school (National Association for the Education of Young Children NAEYC, 2015. Such views tend to be limited because they do not account for the multiple competencies that support children's school adjustment and readiness including physical and mental health, social and emotional wellbeing, as well as language and cognitive skills.

Bronfenbrenner and Morris (2006) highlight the complex layers and processes around the child that influence development both directly and indirectly to include: the child's characteristics and their interactions, experiences with peers, parents, careers, school and preschool staff as well as the wider community. The ability to manage feelings and behaviours and to make meaningful friendships are important influences on school adjustment.

Statement of the Problem

Over the years, there has been public out-cry by educators, parents and the general public in Mangu LGA about the poor performance of primary school children in critical subject areas required for meaningful learning in later life. More worrisome is the maladjustment being shown by pupils in public primary schools. This could be attributed to lack of readiness from the preparation made at the early childhood education level (Dakum, 2009).

While a number of factors could account for the varied school adjustment characteristic of pupils, early childhood education seems to play a key role. However, for the past two decades,

many parents and other stakeholders have questioned the value of Early Childhood Education and the role it plays in subsequent pupils' school adjustment in primary schools. This is because researches on how early childhood education affects school adjustment are limited in Plateau State and Mangu LGA in particular. It is in this regard that the researcher intends to find out the extent to which Early Childhood Education influences the school adjustment level of primary school pupils.

Objectives of the Study

The study aims at finding out the impact of early childhood education on the school adjustment level of primary school pupils in Mangu LGA of Plateau State. Specifically, the researchers intend to achieve the following objectives:

i. To find out the difference in the school adjustment level of pupils who have Early Childhood Education experience and those who do not have such an experience.
ii. To find out Teachers' opinions about school adjustment levels of pupils with and without Early Childhood Education experience.

Research Question

1. What is the difference in the school adjustment levels of pupils with Early Childhood Education Experience and those without such an experience?

Hypothesis

1. There is no significant difference in the school adjustment levels of pupils with and those without Early Childhood Education experience.

Methodology

The nature of the research dictates the employment of a comparative survey research design for data collection. This type of survey research design allows comparison between two study groups with a view to obtaining pertinent data from the study samples and presenting the research findings without the manipulation of the subjects of the study (Cohea & Manion, cited in Cohen, 2000).

The population of this study was 6, 920 pupils which comprises all the primary one pupils in all the 103 public primary schools in Mangu LGA of Plateau State (Mangu Local Government Education Authority, 2021). The choice of public primary schools is to enable the researcher have access to those who have Early Childhood Education experience and those who do not have such experience.

The sample of this study consisted of 60 primary one teachers. For the sample selection, the cluster sampling and simple random sampling techniques were used. The instrument used for data collection is the "Teachers' questionnaire". It consists of 13 close ended items on a four point rating scale requesting information on Teachers' views about the differences in the school adjustment levels of pupils with and without Early Childhood Education experience. The instrument was constructed by the researcher due to non-availability of suitable instruments for the study.

The instrument was given to two (2) experts in Educational Research, measurement and evaluation as well as an educational psychologist to determine the face and content validity of

the items. The logical validity index for the instrument was 0.81 and the coefficient reliability index of 0.89 as given by the experts.

Procedures for Data Collection

Data for the study were collected during the first few weeks of resumption in the first term when no formal teaching had not started in any of the classes selected. Prior to data collection, permission was sought and obtained from the relevant arms and relevant school authorities of the selected schools were adequately briefed on the purpose of the study and the modalities for data collection. Teachers' responses on the impact of Early Childhood Education on the school adjustment levels of primary school pupils was obtained through the administration of the Teachers' questionnaire on the participating teachers. A total of sixty (60) primary one (1) Teachers responded to the questionnaire. These were teachers of the participating classes. The questionnaires were administered by the researcher.

Results

Research Question: What is the difference in the school adjustment levels of pupils with Early Childhood Education Experience and those without such an Experience?

Table 1:

Opinions of primary Teachers on the differences in the school adjustment level of primary one pupils with and without early childhood education experience.

	Frequency	Percentage	Valid Percent	Cumulative Percent
strongly disagree	3	4.7	5.0	5.0
Disagree	3	4.7	5.0	5.0
valid agree	18	28.1	30.0	40.0
strongly agree	36	56.3	60.0	100.0
Total	60	93.8	100.0	
Missing System	4	6.3		
Total	64	100.0		

Table 1 displays the perceptions of primary teachers on the differences in the school adjustment levels of primary one pupils with and without early childhood education experiences. From this table, we can see that majority of the respondents admitted that primary one pupils with early childhood education experience before entering primary one adjust to the school environment faster in terms of learning our relationship with peers, teachers and parents than those without such experience with 84.4% of the total respondents. This is an estimate from the 56.3% of the respondents that strongly agreed and 28.1% that agreed ordinarily. However, 4.7% of the respondents disagreed and 4.7% of the respondents strongly disagreed to the terms. Hence, the

respondents' opinions indicate that primary one pupils with early childhood education experience adjust to the school environment faster in terms of learning and relationship with peers, teachers and other school personnel than those without such experience.

Hypothesis: There is no significant difference in the school adjustment level of primary one pupils with and without any childhood education experience.

Table 2

Results of chi-square tests on the differences in the school adjustment level of primary one pupils with and without early childhood education experience.

	Value	df	Assump sig (2 sided)
Person chi-square	24.680a	4	.000
Likelihood Ratio	15.084	4	.005
Linear by Linear Association	13.359	1	.000
N of valid cases	60		

From table 2 above, since the value (0.000) <a (0.05) We reject the null hypothesis and conclude that there is significant difference in the opinions of primary one teachers regarding the school adjustment levels of primary one pupils with and without early childhood education experience.

Discussion of Findings

The null hypothesis states that there is no significant difference in the school adjustment levels of those with and those without early childhood education experience was rejected based on the results in tables one and two respectively. Result in table one showed that majority of the respondents (84.4% of primary one teachers) agreed that pupils with early childhood education experience can easily learn and relate with peers, teachers and other school personnel while minority of the respondents (15.6% of primary one teachers) disagreed with the statement the result in table two showed that the p-value (0.000) is less than the level of significance (0.05). This shows that there is significant difference in the school adjustment levels of primary one pupils with early childhood education experience and those without it.

This finding is in agreement with Blau and Currie (2004) who argued that attending preschool increases average grades, class participation, behavioral skills, socialization and self-control in primary schools. Wilyat and Arshad (2014) also agree that the first five years of life are highly significant. What children learn and feel during this time, particularly about themselves will be foundational about the rest of their lives. At this age, a child develops good relationship with people around him.

This finding is also consistent with the assertion that children who have early childhood education do not feel shy, they are confident and have a number of playmates and so, they do not hesitate to participating in games or other co-curricular activities. They are also better in their adjustment with the teacher. This is due to the fact that teachers at the primary school level are

affectionate and sympathetic and children have had pleasant experiences with them (Wilyat and Arshad, 2014).

The findings of this study corroborates with the findings of Raju and Rahamtulla (2007). According to them, children who enter school without preschool background have been identified by teachers as having difficulty working independently, difficulty in following instruction and rules, difficulties with behavioral regulation, exhibit impulsive or aggressive behavior, may also be reluctant or refuse to go to school which may also be accompanied by additional related social and academic adjustment problems at school. Similarly, the outcome of this study agrees with the findings of Edward (2014) who states that early childhood can produce significant gains in children learning and adjustment. According to him, high quality early childhood education assists many at risk children in avoiding poor outcomes such as dropping out of school. The result of these findings also agrees with Myers (1992) who opines that children who have gone through some forms of early childhood education tend to acquire certain basic skills which enabled them to make transition in the primary school environment easily. These children continue to have disadvantages at least for the first few years during the period of schooling.

Conclusion

Based on the findings of this study, the following conclusions were drawn;

1. Primary one with early childhood education experience can easily relate with peers, teachers and other school personnel than their counterparts without such experience.
2. Primary one pupils with early childhood education experience can easily follow instructions and express themselves better than their peers without such educational background.
3. Primary one pupils with early childhood education experience are more attentive and easily managed both inside and outside the classroom than their peers with such educational experience.
4. Primary one pupils with early childhood education experience participate in Group activities both inside and outside the classroom environment more than pupils without such an experience.

Recommendations

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

1. Government should enact a law to compel all parents of preschool age children ages zero to five years to enroll them into the preschool programs for free. This can be done through the legislative arms of the local government, state assemblies as well as the National Assembly.
2. Government should expedite actions in establishing preschool programs in all public primary schools as contained in the national policy of education (2013).
3. Parents, teachers, the general public and other stakeholders in education should be enlightened on the importance of early childhood. This can be done through the media, community leaders and religious organization.

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EDUCATION AND POLITICAL SOCIALIZATION: NEXUS FOR VIABLE DEMOCRACY AND NATIONAL SECURITY

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Abstract
This is a position paper on education and political socialization: nexus for viable democracy and national security. One of the major functions of the society is the transmission of cultural heritage, this refers to the continuity in social, economic and political matters of the society. The paper gave a conceptual explanations of political socialization, democracy and national security. While explaining political socialization, its agents and paradigms were also explored. The paper went ahead to pin point the contact point between political socialization on one hand and democracy and security on the other. The paper explained that education can promote security through production of patriotic citizens, manpower production, acquisition of empowerment skills and keeping the youth busy. Democratic values like liberty, equality, fraternity justice, dignity of individual, co-operation, sharing of responsibility, and so on, are also promoted in secondary schools. The paper concluded that schools contribute immensely towards the development and nourishment of democracy and security, it is irrefutable that education is the limelight of every society, when a country invest heavily in the education sector, higher percentage of the citizenry will be educated, and consequently there will be freedom from danger, fear, anxiety and uncertainty. The paper recommended that government at different levels should invest heavily into the education sector and there is need to add security items in the curriculum content of our educational institutions.

Keywords: Education, Political Socialization, Democracy and National Security

Introduction

Human society is well organized. It has so many ways of transmitting its cultural heritage, as such there used to be continuity in social, economic and political matters related to every society. Without which society cannot have the yardstick for measuring its development (Uchendu, 2004). School is shouldered with the responsibility of passing on the cultural heritage of the society by teaching the younger ones skills that are needed by the society. Ekpiken & Ifere, (2015) opined that Dewey, viewed education as the process of growth and acquisition of culture, and it appears that social environment educates its immature members. Thus, the social environment carries along with it educational character. Langton (2009) posed that education is a life-long learning process. Learning begins when a person is born and ends with his death. Among other things, education entails being literate encapsulated in the capacity to read and write. Also, education inculcates desirable human traits like honesty, sincerity, hard-work, punctuality, productivity, innovation, patriotism, selflessness, and others. Furthermore, education

empowers people by inculcating life-long skills and dexterity, thereby giving the individual the capacity to liberate self from unwanted things and issues (Das, Biswas & Roy 2015; Gift & Wibbels, 2014).

Education when well imparted and utilized, has the potency of promoting democracy and national security. In view of this, the paper explore the contact point between education and political socialisation on one hand and its consequential product of the relationship with democracy and national security.

Concept of Political Socialization

In an attempt to explain political socialization, Hickey and Hossain (2019) opined that the term political socialization connotes a specific sort of political learning whereby students build up the mentalities, values, convictions, assessments, and practices that are helpful for turning out to be productive members of the society they belong. In the same vein, Kayode, Oluwafemi and Victor (2012) went further to say people of different social entities develop attitudes toward their political system through the socialization process. Meyer (2012) explained that political legitimacy is a belief in the integrity of the political system and processes, such as elections. People who believe strongly in the legitimacy of the political system have confidence that political institutions will be responsive to the needs and aspirations of citizens.

Political socialization is the process of passing on norms, customs, beliefs, and values supportive of democracy from one generation to the next. For instance, Americans are taught to respect the democratic and capitalist values imbedded in the American creed. While Chinese and Russians are trained to imbibe communism and socialism respectively. Young people are socialized to respect authorities, such as parents, teachers, army, police officers, fire fighters, and to obey laws (Hickey & Hossain, 2019). Giddens (2013) exclaimed that through socialization, people acquire the feeling of having a place in general public and are headed to the internalization of their public political culture. The political socialization of the people, just as the mix of their standards and activities, assists them with getting absorbed in the political frameworks, hence prompting the formation of dynamic people. This interaction of political socialization is, subsequently answerable for the sending of a specific political culture, which is characterized as an arrangement of perspectives, qualities and information, embraced by the wide layers in a general public from one age to another (Hess, & Torney 2007). The regular comprehension of customs, tradition and belief of a society is interconnected inside a cultural framework, just as with the nature and the elements of the public authority.

Political socialisation encompasses the way in which people acquire values and opinions that shape their political stance and ideology. Political socialization concerns the examples and the cycles with which people catch in systems of political turn of events, building their specific relationship inside the world of politics in which they live (Hickey & Hossain, 2019). People internalize the political benefits of society and its belief system, and comprehend its images and customs. They are educated about the job of dynamic and detached individuals from the political framework and can also partake in political and urban life. During their socialization, people get upgrades and internalize esteems and feelings which are identified with political phenomena (Gift & Wibbels, 2014).

Schooling and Political Socialization

In a nutshell, an educated population is an asset to a nation. This is not just because of the economic value attached to the contributions of educated people, but also because of their

capacity to generate and offer employment to the unemployed. During the Democratic Convention on 5th September, 2012 in the USA, Bill Clinton claimed that there are over 350 million jobs in America. However, they have not been generated and taken because of lack of education. Suffice to say that there are millions of jobs in Nigeria but lack of education has stalled their generation and utilization. Hence, no amount of money spent on education for the Nigerian people can be too much as it will pay off by making the nation secure.

Paradigms of Political Socialization

Busemeyer and Trampusch (2011) elucidated the accompanying capacities of political socialization:

i. Has the ability to change the majority of the populace or a part of it so that accumulated experiences and governmental issues could be viewed in various measurements.
ii. Maintain and transmit society's political culture from one generation to the other.
iii. Gives room for rapid changes or uncommon occasions that have the capacity of producing political culture even where none existed (through social dispersion).
iv. It gives shape to country's political culture.

Agents of Political Socialization

There are about four agents of political socialization. These agents contributed in giving shape to the political ideology of the people living in a particular social entity.

Neundorf and Richard (2014) posed that the agents of political socialization are family, school, peer group and the mass media:

Family: Our first political ideas and impressions are shaped within the family. It is clear that parents hardly discuss politics with their young children, but casual remarks made around the dinner table or while helping with homework can have an impact. Family tradition is particularly a factor in party identification, respect to instituted authority and obedience to the law of the nation. But as the child grows up, family may be losing its power as an agent of socialization, other institutions take over more of the socialization and parents perform less of it.

Schools: while in school children are introduced to elections and voting when they choose class or school prefects. The political learning become more sophisticated when elections in high school and college teach the rudiments of campaigning. Political facts are learned through courses in History and Government, Civic Education and other subjects while in schools. Schools encourage students to develop a critical mind by examining government institutions.

Peer groups: it is universally accepted that peer pressure certainly affects teenagers' political lifestyles. It contributes in developing their political values. Peers discus political matters, party inclination, nationalism, national development and a lot more. These contribute immensely toward shaping their political ideology and socialization. Peers in most cases do have similar political opinions, particularly on matters that relates to their careers.

Mass media: Much of our political information, opinion and analysis come from the mass media like newspapers, magazines, radio, television, and the internet. The media helps a lot in shaping public opinion by providing information, entertainment, news and analysis. The entertainment programmes cannot be neglected, for it addresses important contemporary issues that are in the political arena, such as drug use, abortion, crime and so on.

Relationship between Democracy and Education

In an attempt to explain democracy, Busemeyer and Trampusch (2011) posed that democracy is a form of government in which rule of majority prevails. It is government of the people, by the people and for the people. It is an admitted fact that there is a strong relationship between democracy and education. In an ideal democratic society, education is given priority, for it is a pre-requisite for the survival and success of the former. Democratic values like liberty, equality, fraternity justice, dignity of individual, co-operation, sharing of responsibility, and others, are also applicable on school system to make it more effective, meaningful, relevant and useful. The relationship between school and democracy is reciprocal. For a nation to have a sound democracy, a democratic way of life has to be introduced from the very beginning of education and its values need to be practiced in educational institutions.

There is an inseparable connection between democracy and education. Democracy cannot be thought of in segregation from the spectrum of education. It has been admitted on all hands that the sinew of democracy depends upon the character and intelligence of all its citizens.
Das, Biswas and Roy (2015) narrated that John Dewey, the votary of democratic education spells out succinctly the harmonious relationship between education and democracy that: 'the devotion of democracy to education is a familiar fact. A government resting upon popular suffrage cannot be successful unless those who govern and obey their governors are educated'.

Further, Bernard Shaw mentioned the value of education in a democracy by saying "…democracy implies election of the corrupt few by the ignorant many". Therefore, education is the major means to enrich the strengths and overcome the weaknesses of the people. It is also a means for the widespread diffusion of democratic values". Ozurumba and Ebuara, (2014) went further to say that it is crystal clear that democracy can function properly only if all its citizens are properly educated. Democracy should provide aims to education and thus, principles of democracy should reflect in the aims, curriculum, methodology, administration, organization, discipline, the school, the teacher, etc.

The main aim of education in a democratic system is to produce democratic citizens who can not only understand objectively the plethora of social, political, economic and cultural problems but also form their own independent judgment on these complicated problems. It must inculcate in them the spirit of tolerance and ignite the courage of convictions. It must aim at creating in them a passion for social justice and social service. It must equip in them with the power of judgment, scientific thinking and weighing the right and the wrong. Education aims at enabling the pupils to be social minded human beings capable of managing their own affairs and living with others adequately. It enables them to realize their hidden potentialities Political Socialization and Democracy

Political socialization is very much related to democracy. It is concerned with those processes which enable the individual to develop new political orientations or reinforce old ones the reinforcement is usually in the direction of the existing political or democratic norms and authority distribution within the society. The process which induces the individual to perceive of his role latently or manifestly as political actor will be referred to as Political socialization from the view point of democracy (Hickey & Hossain, 2019).

In the more specific sense, politicization deals with:

1. Perception of political authority by the citizen
2. Formation of public opinion
3. Preparation of citizens to participate in their roles as political decision makers when faced with a choice on public issues, and
4. Leadership recruitment.

Some important components of political socialization as it relates to democracy are:

1. Political socialization makes it clear and visible to the citizen through participation in decision making and inducements, a need to identify with political system and its symbols.
2. Affects and modifies by introducing the citizens to new democratic life in view of the existing socio-political institutions.
3. Equip the individual with effective democratic components, such as love, pride and respect for the country's symbols.
4. Contributes towards the preservation and creation of stable democratic culture.

Political Socialization and National Security

National security refers to a state or condition where the most cherished values and beliefs like right to religion, cultural practices, association, economic activity, civil liberties, democratic way of life, sanctity of institutions of governance and national unity, welfare and well-being of the nation and the people are permanently protected and continuously enhanced.

There are seven fundamental elements that lie at the core of national security as it relates political socialization (McNamara, 2016 & Bellany, 2011). These are:

i. Socio-Political Stability
ii. Territorial Integrity
iii. Economic Solidarity and Strength
iv. Ecological Balance
v. Cultural Cohesiveness
vi. Moral-Spiritual Consensus
vii. External Peace

Insecurity

The term insecurity is a condition in which people have no confidence in the institutions and leadership that should protect their lives and property, as a result of which they live in trauma, fear, anger, despair, suspicion and mistrust (McNamara, 2016). Insecurity is the state of being unsafe or insecure. On the contrary, security is the state of feeling or being safe and protected, it is also a state of mind characterized by self-doubt and vulnerability. Security is a guarantee and protection for vulnerable beings to exist, and the essence of insecurity is the lack of such protection. According to Ibeanu (2009), view security as freedom from danger, fear, anxiety and

uncertainty or relative freedom from aggression and unwarranted violation. Bellany (2011) posits that security is a relative freedom from war, coupled with the idea that should war occur defeat will be a consequence. In this regard, security is exclusively focusing on military concerns.
McNamara (2016) deviated from the military aspect of security that relates to developing countries, that the major cause of insecurity is poverty not the lack of military hardware. Security is development and without development there can be no security. Insecurity also connotes a situation in which the citizens do not feel safe, in which crime rate is high and where the inhabitants feel vulnerable. Consequently Bitencourt,(2009), posed that the term 'insecurity' would imply a situation that encourages instability, crime, lack of economic development and deterioration in the well-being and quality of life of a people.

Education, when well imparted and utilized, has the potency of promoting national security. This is because national security covers the socio-economic, political, military, cultural, familial, industrial, diplomatic, artistic, etc spheres of a nation. When and where these and many more spheres of a nation are stable, vibrant and progressing, the national security of such a nation is guaranteed and converse is the case (Ozurumba & Ebuara, 2014).

How Education Promotes National Security

Education can promote national security in different ways, Paskins (2003) explained some of the ways through which education can promote national security:

- *Production of patriotic citizens*: educated people feel obligated to the nation by making efforts to project and protect the good image of the nation within and outside the country. Patriots ensure the stability, order and progress of the nation.
- *Manpower production*: education sector cater for the manpower needs of the nation. This usually assists in the provision of social and economic infrastructures, as well as managing the established institutions. Effective and efficient performance of the institutions promotes national security. These institutions include the military, paramilitary and numerous other civil institutions.
- *Empowerment:* there is a positive correlation between education and disposable income gained from employment. Skills acquired through education can be exported and remittances gained there-from. When people are employed, families are the better for it, especially with regular, reliable and right income, family members will not be a party to perpetuating unwanted behaviours that may destabilize national security.
- *Keeps the youth busy:* Educational system, assist in absorbing, training, empowering and engaging the youths in Nigeria which shields them from idleness and the dangers associated with it. Hence, they are not likely to be used for fomenting trouble with negative implication to national security.
- *Capability to think rationally:* Education enables man to reason and be engaged in rational decision. It enriches human thought and broadens man's horizon of thinking. Hence, properly imparted and received education guides human action through reasoning which normally promotes order and stability.
- *Selfless and patriotic service to the nation:* Well-educated persons shun nepotism, tribalism, ethnicity, regionalism, religious bigotry, he pays less regard to parochial and primordial sentiments. Proper education promotes tolerance, peace, unity and order which promote national security.

- *Provides good politico-security network:* while in school one comes across a network of friends, associates, life-time team mates, and senior colleagues cutting across different professions. This network assists the nation by building bridges of brotherhood, unity, understanding, trust and confidence.

Conclusion

The paper looked at the concept, paradigms, and agents of political socialization, as well as the relationships between democracy and education, Political Socialization and National Security, and the ways by which education can promotes national security. In view of the tremendous contributions of the school towards the development and nourishment of democracy and security, it is irrefutable that education is the limelight of every society. When people are educated they tend to be good citizens, they obey law and instituted authority, participate in voting the right type of people who are to steer the economic, political and social aspirations of the people. In the same vein, education is the major catalyst for realizing utmost security, when a country invest heavily in the education sector, higher percentage of the citizenry will be educated, and consequently there will be freedom from danger, fear, anxiety and uncertainty, there will also be relative freedom from aggression and unwarranted violation.

Recommendations

In view of the importance of political socialization in schools, the paper make the following recommendations:

- There is need for the government at different levels to invest heavily into the education sector. The end product of education is not only the production of an educated person, it also pave an easy way for the cultivation of good democratic habits. This will assist in the production of future leaders with able leadership skills.
- There is need to add security items in the curriculum content of our educational institutions. In the content, issues like mechanisms for self-defence, importance of it, dangers associated with it should be incorporated.

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IMPACT OF PROPHETIC MINISTRY ON ECONOMIC AND POLITICAL LIFE OF CHIRISTIAN YOUTH IN PENTICOSTAL CHURHES IN KADUNA STATE, NIGERIA

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Abstract

This study is conducted with the main goal of investigating the impact of Prophetic Economic and political Life of Christian youths in Pentecostal Churches in Kaduna State. The problem is stated due to abuse of prophetic ministry by the so called men of God who are destroying the Christian faith by conjuring man made prophesies and commercializing the work of the Holy Spirit among other related growing happenings in the prophetic ministry. To effectively carry out the research, elevant and related kinds of literature were reviewed. A sample survey was the design adopted; appropriate sampling technique which is a combination of purposive, random and proportionate sampling techniques was used. The instruments used for collecting data are questionnaire and interview. The questionnaire was developed and validated along with a pilot test. A total of 1152 copies of questionnaire were administered to respondents in 18 Pentecostal Churches cut across the three Senatorial Zones in Kaduna State but 1133 completely filled their copies with the required information and were therefore used for the study. In the analysis of the research questions, mean scores for the items and variables were used in determining the direction of opinions and conclusions on the objectives and research questions is based on midpoint average of 2.50 on the four point scale. Data collected were analyzed using the Statistical Package for the Social Science (IBM version 20). The result reveals that; economically, prophetic ministry plays important role in the socio-economic advancement of youths, the prosperity gospel as an off-shoot of the prophetic Ministry in Pentecostal churches impacts the economic life of youth. The work recommends that Christian youths should participates actively in the political process in Nigeria.

Keywords: Prophetic Ministry, Christian youths, economic, politics and Pentecostal Churches

Introduction

Prophets were, first and foremost, spokespersons for God. The primary function of some of the Old Testaments prophets as the mouthpiece of God did not deter them from assessing the economic situation of their society. Prophets like Amos, Isaiah, and Micah were greatly concerned about the economic reality and social injustices in their time. They announced God's

judgment on the reprehensible economic conduct that was lopsided and trampled on social balance of people in the society. Some of the socio-economic malaise condemned by the prophets include the economically powerful people trampling on the rights of the poor and imposing burdensome taxes. Other instances include the elites using the proceeds of their unjust economic conduct to build gigantic homes. All the social justice prophets condemned these acts and pronounced God's judgment on them. It is not uncommon these days that even among Christians, people sometimes deliberately undermine the poor and take undue advantage of them. We often forget that God is concerned about the oppressed. This reminds us of Jesus's association with the lowly, the oppressed and strangers without discrimination (Matthew 25: 31-

46). Economically, Nigeria as a nation is blessed with both human and natural resources like crude oil and agricultural products, yet the gap between the poor and the rich has widened.

Clements (2012) says Elisha's prophetic ministry had great impact on the socio-economic activities of the people of Samaria. Quoting 2 Kings 7: 18-19, Clement reiterates the prophetic pronouncement of Prophet Elisha on God's intervention in the economic hardship experienced by the people. Similarly, a condemnation of economic injustices of Amos' days were condemned (Amos 8:4-6). Oluremi (2014) submits that quite often Israelites loved money more than human beings as also the Nigerian society today. He stressed that the poor were cheated in the market place, the business men of Israel used their economic power to enslave a poor man who owes a pair of sandals.

This was a clear violation of the humanitarian law (Deut. 24:12-13), where a poor person's cloak given in pledge for a debt need not to be kept overnight. Thus, Amos called for reforms of economic activities in line with God's commandment. He called for abolition of selfishness, structural injustice, economic oppression and commercial dishonesty (Amos 8:4-21). The situations Amos denounced in the 8thcentury is almost the same with contemporary one. His message of justice was timely as he saw the truth clearly and proclaimed it courageously and Israel did not remain the same (Ogedegbe, 2007). Amos' message impacted on the lives of his people and should be seen as addressed to the contemporary society in Nigeria. Justice must be sought at all levels irrespective of the wealth and status of the individuals involved (Oluremi, 2014). Divine justice is Amos' message to our society in which we live in order words, there should be a divine control of the lives and affairs of all mankind.

As evident in the Old and New Testament where Prophets helped to reconcile people to God, the Pentecostal churches have prophetic ministry which has equally helped them to relate positively to God and their fellow human beings. Sabuluyi (2016) expresses similar observation that in Nigeria society today, prophets encourage their hearers to repent and have faith, to trust and obey God as they wait for that great and awesome day of the Lord. Pentecostalism in Christianity has developed the prophetic experience into a subculture in which hearing the voice of God is normal spirituality. The movement believes that revelation is an on-going process in which God continually reveals himself. The emphasis on conversion and being "born again" are made, and every Christian needs a personal total conversion to Jesus and his church (Ezeh, 2009). Similarly, according to Ezeh (2009) "Youths need to focus on their faith in Jesus to the point where it is their 'own faith', and not that of their parents, teachers, leaders and those who influence them as they were growing up." Pentecostal makes the youths to develop the interest in reading of the Bible, because it attaches much importance to the ministry of the word. The lives of some youths have been touched through the experience of healing which is typical to the

movement. It is in the light of the above that the researcher intends to find out the impact of prophetic Ministry on Economic and Political life of christian youths in Pentecostal churches in Kaduna state.

Objectives of the Study

The major objective of this study is to investigate the impact of prophetic Ministry on Christian youths in Pentecostal churches in Kaduna State, Nigeria. The specific objectives are to:

i. assess the impact level of prophetic Ministry on the economic life of Christian youths in Pentecostal churches in Kaduna State, Nigeria.
ii. ascertain the impact level of prophetic Ministry on the political life of Christian youths in Pentecostal churches in Kaduna State, Nigeria.

Research Questions

This research will attempt to answer the following questions:

i. What is the impact of prophetic Ministry on the economic life of Christian youths in Pentecostal churches in Kaduna State, Nigeria?
ii. To what extent does prophetic ministry impacts on political life of youth in Pentecostal ministry in Kaduna State,

Research hypotheses

To guide this study, the following hypotheses were formulated.

1. There is no significant difference between the opinions of male and female respondents on the impact of prophetic Ministry on the economic life of Christian youth in Pentecostal churches in Kaduna State, Nigeria.
2. There is no significant difference between the opinions of youths in urban and rural areas of Christian youth in Pentecostal churches in Kaduna State, Nigeria.

Methodology

A sample survey was the design used in the study because it involves collecting and analysing data from representatives of an entire group. The population for this study comprises of four hundred and thirty five thousand and thirty (435,030).In Northern senatorial zone, 800 Pentecostal churches, central senatorial zone,810 and southern senatorial zone,650. Appropriate sampling technique which is a combination of purposive, random and proportionate sampling techniques was used. For this study, sampling was carried out at three levels, senatorial zones, Pentecostal Churches and selection of the subjects. The researcher selected three urban and three rural Pentecostal churches in each senatorial zone. A sample of 1,152 was used; the instruments used for collecting data are questionnaire and interview. The questionnaire was developed and validated along with a pilot test. A total of 1152 copies of questionnaire were administered to respondents in 18 Pentecostal Churches cut across the three Senatorial Zones in Kaduna State but 1133 completely filled their copies with the required information and were therefore used for the study. In the analysis of the research questions, mean scores for the items and variables were used in determining the direction of opinions and conclusions on the objectives and research questions is based on midpoint average of 2.50 on the four point scale. Data collected were analyzed using the Statistical Package for the Social Science (IBM version 20).

Results

The demographic characteristics of the respondents selected along with their expressed opinions on the investigated variables were gender, age, marital status, and respondent location. Classification of the Respondents by gender shows that 607 (53.6%) respondents were male while 526 (46.4%) were female. This classification reveals that the opinions of Pentecost Churches from male and female respondents are represented in the study relate to the investigated variables. Classification of the respondents by age shows that 555 (48.8%) of the respondents were between the age of 18 to 25 years while 580 (51.2%) were between the age of

26 to 40 years. This classification reveals that the opinions of Pentecost Churches from age 18-25 and 26-40 were fairly represented. Classification of the respondents by marital status reveals that 372 (32.8%) of the respondents were married while 761 (67.2%) of the respondents were single. This classification reveals that the opinions of Pentecost Churches from married and single were represented in the study relate to the investigated variables. Classification of the respondents by location shows that 648 (57.2%) of the respondents are from urban settlement while 485 (42.8%) were from rural settlement. This classification reveals that that the opinions of Pentecost Churches from urban and rural were represented in the study relate to the investigated variables.

Table 1: Impact of Prophetic Ministry on the Economic life of Christian Youths in Pentecostal churches in Kaduna State, Nigeria.

S/N	Impact of Prophetic Ministry on the Economic life	SA		A		D		SD		Mean
		F	%	F	%	F	%	F	%	
1	Prophetic Ministry has led to youths empowerment	333	29.4	609	53.8	165	14.6	26	2.3	3.10
2	Prophetic Ministry plays important role in the socio-economic advancement of youths in Pentecostal churches.	387	34.2	635	56.0	105	9.3	6	0.5	3.24
3	The prosperity gospel as an off-shoot of the prophetic Ministry in Pentecostal churches impacts the economic life of youths.	320	28.2	601	53.0	187	16.5	25	2.2	3.07
4	Prophetic Ministry in the Pentecostal churches has not improved my economic life as a Christian youth.	116	10.2	167	14.7	557	49.2	293	25.9	2.9
5	The prophetic Ministry in the Pentecostal churches have strengthened the economic life of Christian youths.	329	29.0	570	50.3	196	17.7	38	3.4	3.5
6	Excessive materialism associated with prophetic Ministry are causes for disregard to prophecies.	248	21.9	304	26.8	283	25.0	298	26.3	2.44
7	Owing to unhealthy factor, a significant section of youths have taken up prophetic Ministry in Pentecostal churches.	278	24.7	325	28.7	275	24.3	255	22.5	2.55
	Cumulative Mean									**2.97**

Majority of the respondents in table 1: item 1 above, agreed and strongly agreed that Prophetic Ministry has led to youths empowerment, as indicated by 333 (29.4%) and 609 (53.8%) of the respondents who strongly agreed with a mean score of 3.10. In item 2, majority of respondents believe that Prophetic Ministry plays important role in the socio-economic advancement of youths in Pentecostal churches, as indicated by 387 (34.2%) and 635 (56.0%) of the respondents

who agreed and strongly agreed with the suggestion, with score mean of 3.24. while 105 (9.3%) and 6 (0.5%) disagreed and strongly disagreed with the notion. In item 3, majority of respondents believe that the prosperity gospel as an off-shoot of the prophetic Ministry in Pentecostal churches impacts the economic life of youths, as indicated 320 (282%) and 601 (53.0%) of the respondents agreed and strongly agreed with the view, with score mean of 3.07, while 187 (16.5%) disagreed and 25 (2.2%) strongly disagreed with the notion. Item 4, the respondents show that 116 (10.2%) and 167 (14.7.2%) agreed and strongly agreed that Prophetic Ministry in the Pentecostal churches has not improved my economic life as a Christian youth. While

majority of the respondent 557 (49.2%) disagreed and 293 (25.9%) strongly disagreed with the suggestion, with score mean of 2.9. in item 5, 248 (29.0) agreed and 570 (50.3%) strongly agreed that the prophetic Ministry in the Pentecostal churches have strengthened the economic life of Christian youths, with score mean of 3.5, while 196 (17.7%) disagreed and 38 (3.4%) strongly disagreed with the view. In item 6, half of the respondents agreed and strongly agreed that excessive materialism associated with prophetic Ministry are causes for disregard to prophecies, as indicated by 248 (21.9%) and 304 (26.8%) respondents who agreed with the suggestion, while 283 (25.0%) and 298 (26.3%) disagreed and strongly disagreed with the notion, with a score mean of 2.44. In item 7, 278 (24.7%) and 325 (28.7%) respondents agreed and strongly agreed that owing to unhealthy factor, a significant section of youths have taken up prophetic Ministry in Pentecostal churches, 275 (24.3%) and 255 (22.5%) of the respondents disagreed and strongly disagreed this has the score mean of 2.55.

Table 2: Impact of Prophetic Ministry on Political life of Christian Youths in Pentecostal Churches in Kaduna State, Nigeria.

S/N	Impact of Prophetic Ministry on Political life	SA		A		D		SD		Mean
		F	%	F	%	F	%	F	%	
1	Prophecies have developed the political will in the life of youths such as nation building.	339	29.9	590	62.1	164	14.5	40	3.5	3.08
2	Prophecies neither emphasize patriotism nor nation building.	148	13.1	204	18.0	522	46.1	259	22.9	2.21
3	Prophetic Ministry in Pentecostal	231	20.4	312	27.5	371	32.	219	19.	2.49

	churches discourages indulgence of Christian youths in parties and politics.						7		3	
4	Prophetic Ministry gives youths adequate information and knowledge on how to be part of the political system	265	23.4	232	20.5	410	36.2	226	19.9	2.47
5	Prophetic Ministry discourages partisan politics on the bases of its potential to corrupt the mind of Christian youths in Pentecostal churches.	320	28.2	450	39.7	252	22.2	104	9.2	2.88
6	Prophetic Ministry in Pentecostal churches does not abhor political participation of Christian youths in Pentecostal churches.	170	15.0	330	29.1	441	38.9	192	16.9	2.42
7	Despite the hardship youths encounter in the society, they are encourage to improve on their political life through participation in politics.	398	35.1	485	42.8	178	15.7	72	6.4	3.06
	Cumulative Mean									**2.66**

Table 2: is on impact of Prophetic Ministry on Political life of Christian Youths in Pentecostal Churches in Kaduna State. Item 1, shows that 339 (29.9%) and 590 (62.1%) of the respondents strongly agreed and agreed respectively that Prophecies have developed the political will in the life of youths such as nation building. Only 164 (14.5%) and 40 (3.5%) of the respondents disagreed with the suggestion with the mean score was 3.08. In item 2, 148 (13.1%) and 204 (18.0%) of the respondents strongly agreed and agreed respectively that Prophecies neither emphasize patriotism nor nation building. On the other hand 522(4610) and 259(22.9%) disagree and strongly disagree with the statement respectively. The mean score of item two is 2.21. Item 3, 231 (20.4%) and 312 (27.5%) of the respondents strongly agreed and agreed respectively that Prophetic Ministry in Pentecostal churches discourages indulgence of Christian youths in parties and politics. While 371 (32.7%) and 219 (19.3%) of the respondents disagreed and strongly disagreed with this opinion. This as the score mean of 2.49.

Prophetic Ministry gives youths adequate information and knowledge on how to be part of the political system. In response to this suggestion in item 4 of the table, 265 (23.4%) and 232(20.5%) of the respondents strongly agreed and agreed respectively with this suggestion.

while 410 (36.2%) and 226 (19.9%) of the respondents disagreed and strongly disagreed with the suggestion. The mean score was 2.47. Prophetic Ministry discourages partisan politics on the bases of its potential to corrupt the mind of Christian youths in Pentecostal churches. In response to this suggestion in item 5 of the table, 320 (28.2%) and 450 (39.7%) of the respondents strongly agreed and agreed respectively with this suggestion. while 252 (22.2%) and 104 (9.2%) of the respondents disagreed and strongly disagreed with the suggestion. The mean score was 2.88. in item 6, 170 (15.0%) and 330 (29.1%) %) of the respondents strongly agreed and agreed respectively thatProphetic Ministry in Pentecostal churches does not abhor political participation of Christian youths in Pentecostal churches.in the other hand, 441 (38.9%) and 192 (16.9%) of the respondents disagreed and strongly disagreed with the suggestion. The mean score was 2.42.

Despite the hardship youths encounter in the society, they are encourage to improve on their political life through participation in politics. In response to this suggestion in item 7 of the table, 398 (35.1%) and 485 (42.8%) of the respondents strongly agreed and agreed respectively with this suggestion. while 178 (15.7%) and 72 (6.4%) of the respondents disagreed and strongly disagreed with the suggestion. The mean score was 3.06.

Table 3: Two Sample t-test on impact of prophetic Ministry on the economic life of Christian youth in Pentecostal churches

Variables	N	Mean	Std. Deviation	Std. Error	t-value	DF	p-value
Married	372	2.85	0.869	0.868			
Single	761	2.77	0.835	0.835	0.843	1131	0.213

(t-critical = 1.96, $p < 0.05$)

The result in the table reveals that the married and single respondents did not differ significantly in their rating of the impact level of prophetic Ministry on economic life of Christian youths in Pentecostal churches in Kaduna State. On the table, the observed t-value for the test is 0.843 obtained at 1131 degree of freedom while the critical value is 1.96. The observed level of significance in the test is 0.213 ($P > 0.05$). These observations did not provide enough evidence for rejecting the null hypothesis. The null hypothesis that married and single Christian youths do not differ significantly in their opinions of the way the impact level of prophetic Ministry on economic life of Christian youths in Pentecostal churches in Kaduna State is therefore retained. The mean scores showed that both male and female respondents have the same view of the impact of prophetic Ministry on economic life of Christian youth in Pentecostal churches in Kaduna State.

Table 4: Two Sample t-test on impact of prophetic Ministry on the political life of Christian youth in Pentecostal churches

Variables	N	Mean	Std. Deviation	Std. Error	t-value	DF	p-value
Old	553	2.673	0.823	0.040			
Young	580	2.993	0.759	0.031	1.023	1131	0.432

(t-critical = 1.96, $p < 0.05$)

The two groups of respondents differed significantly in their rating of the impact of prophetic Ministry on the political life of Christian youths in Pentecostal churches in Kaduna State. This is indicated with observed t-value of 1.023 obtained at 1131 degree of Freedom. The level of significance observed in the test is 0.432 ($P < 0.05$). These observations provide sufficient evidence for rejecting the null hypothesis. The null hypothesis that the old and young respondents do not differ significantly in their opinions on the impact of prophetic Ministry on the political life of Christian youth in Pentecostal churches in Kaduna State is therefore rejected. From the mean scores of the two groups, the observed significance is based on the magnitude of the rating by the elders who viewed the impact higher than the youths. Both groups agreed that the prophetic Ministry have adverse political impacts on the lives of Christian youths in Pentecostal Churches in the state.

Discussion of Findings

From the analysis of data relating to the first research objective and question where the perception of the respondents on the impact level of prophetic Ministry on economic life of

Christian youth is discussed. The study found that the respondents agree that Prophetic Ministry has led to youths' empowerment, plays important role in the socio-economic advancement of youths in Pentecostal churches, the prosperity gospel as an off-shoot of the prophetic Ministry in Pentecostal churches impacts the economic life of youths, and strengthened the economic life of Christian youths. The finding agrees with Clements (2012) that prophets were, first and foremost, spokespersons for God. The primary function of some of the Old Testament as the mouthpiece of God did not deter them from assessing the economic situation of their society. Prophets like Amos, Isaiah, and Micah were greatly concerned about the economic reality and social injustices in their time. They announced God's judgment on the reprehensible economic conduct that was lopsided and trampled on social balance of people in the society. Some of the socio-economic malaise condemned by the prophets includes the economically powerful people trampling on the rights of the poor and imposing burdensome taxes. Other instances include the elites using the proceeds of their unjust economic conduct to build lavish homes. All the social justice prophets condemned these acts and pronounced God's judgement on them. From the interview conducted interviewee (1, 2, 4, 6, 8, 9, 12,) elaborate that the prophetic ministry has help to improve the economic status through hard work and dedication. Youths learn to maximize every opportunity and the secret of expansion economically given to them by God. Youths have experienced divine blessings and opportunities even with the current economic situation.

The result of the study also agrees with Clement (2012) expression that Prophet Elisha's prophetic ministry had great impact on the socio-economy activities of the people of Samaria. Quoting 2 Kings 7: 18-19, Clement reiterates the prophetic pronouncement of Prophet Elisha on God's intervention in the economic hardship experienced by the people. Similarly, a condemnation of economic injustices of Amos' days were hightened (Amos 8:4-6). where a poor person's cloak given in pledge for a debt need not to be kept over night. Thus, Amos called for reforms of economic activities in line with God's commandment. He called for abolition of selfishness, structural injustice, economic oppression and commercial dishonesty (Amos 8:4-21). The situations Amos denounced in the 8th century is almost the same with our contemporary one. His message of justice was timely as he saw the truth clearly and proclaimed it courageously and Israel did not remain the same. Amos' message impacted on the lives of his people and should be seen as addressed to the contemporary society in Nigeria. Justice must be sought at all levels irrespective of the wealth and status of the individuals involved (Oluremi, 2014). Divine justice is Amos' message to our society in which we live. In order words, there should be a divine control of the lives and affairs of all mankind.

From the analysis of data relating to the second research objective and question where the perception of the respondents on the impact level of prophetic Ministry on political life of Christian youth, the study found that the respondents agree that Prophecies have developed the political will in the life of youths such as nation building Prophetic Ministry discourages partisan politics on the bases of its potential to corrupt the mind of Christian youths in Pentecostal churches. Despite the hardship youths encounter in the society, they are encourage to improve on their political life through participation in politics. Prophecy is not only concerned with enthroning but also monitoring the spiritual and moral rectitude of those enthroned as well as the conduct of the entire populace. The findings agrees with (Abioje, 2017) who says that in the Old

Testament, the intervention of Prophet Samuel is outstanding, with particular reference to the institution of the Jewish monarchy, the enthronement, and eventual replacement with David (1 Samuel 10:1-16). Likewise, the sin of King David, and his reprimand by Prophet Nathan (2 Sam. 12:1-15) which elicited David's repentance, signified an extremely clear example, regarding the chastising role of Prophets in relation to political leadership and public morality. From the interview, respondents ,(4, 5, 8, 17, 18, and 19) say in Pentecostal churches today, people are encouraged to participate in politics, in order to capture the political world for Christ. Bible says when the righteous is on the throne the people rejoices

Preus (2001), notes that "prophecy interprets the spiritual meaning of present events, condemns wickedness, both open and hidden, and makes warnings or promises about what God is going to do within history". The Prophets warn that the wrath of God is coming upon his own unfaithful, greedy, adulterous, and murderous people. Ndiokwere (1995) submits that during the centuries which followed the installation of Israel in Canaan, political power was in the hands of the prophets, and the Judges were, to an extent, nothing but these Prophets. In general terms, the Prophet is the man who speaks the intention of God, interpreting God's message to his people, and applying it to particular situations (Nmah, 2009).

Prophetic proclamation is the best way to remove a bad government. The Old Testament Prophets brought downs kings and rulers who had lost the plot. For example, Elijah's prophetic Ministry led to the destruction of Ahab (1 Kings 22:29-38), Daniel prophesied the fall of Belshazzar of Babylon the Great. (Daniel 5:25-30).However, prophetic Ministry on political scene cannot be over-emphasized. For instance, Orphin (2017) narrated the incident of an incumbent President in Nigeria been defeated in a general election in 2015. According to a Catholic Priest, Fr. Mbaka, had prophesied that the then president Goodluck Jonathan would be defeated in the 2015 presidential election because of his inability to pilot the affairs of the nation well. The Prophecy was made on December 31, 2014. It came at a time that nobody imagined the incumbent and the then dominant party to lose an election, but the prophecy came to past.

According to Quarcoopome (1984), Prophet Elisha had great impact in the political and religious lives of his people and the neighbours of Israel. He stressed that in the Moabite war, Elisha was approached by the combined forces of Israel, Judah, and Edom for water (2 king 3:16-17). Elisha supplied them with water and predicted victory for them (2 Kings 3:18, 19).

Elisha did not confine his activities to Israel only because Yahweh was the ruler of the world and as such his rule extended beyond the boundaries of Israel. Thus, if a foreign king did what was evil in the sight of God, the prophet would declare the counsel of God (Lesli, 2018).

Recommendations

1. The prophetic ministry has impacts positively on the economic life of Christian youths in Pentecostal churches through youths empowerment Youths should always be encourage maximize every opportunity around them.
2. Christian youths in Pentecostal churches should be involved in all the political affairs of Nigeria in other to serve as voice to the voiceless like prophet Amos who is regarded as the prophet of social justice

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COMPUTER ASSISTED INSTRUCTION (CAI) ON STUDENTS' GENDER AND ACHIEVEMENT IN PHYSICS IN IMO STATE

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Abstract

This study determined the effect of Computer Assisted Instruction (CAI) on students' gender and achievement in physics. Two research questions were posed and two hypotheses were formulated and tested. A quasi experiment design specifically for the non-randomized control group involving two intact classes was used. The sample of the study consist of 97 senior secondary school two (SSII) physics students from two government owned secondary schools

drawn using purposive sampling techniques from 63 government schools that offer physics in Imo State. One of the two schools used was assigned to experimental group (CAI) and the other one to the control group (LM). The Physics Achievement Test (PAT) was developed and validated. An internal consistency of PAT was computed and found to be 0.82 using Kuder – Richardson formula 20 (KR 20). Means and standard deviations were used to answer the research questions. Hypotheses were tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance. The result of the analysis indicated that CAI had significant effects on students' achievement in physics, where students in the CAI group achieved more than those in lecture method group. And that gender is a factor that accounted for the difference in the post test scores of the experimental group. Based on the findings, it was recommended among others, that Physics teachers should embrace the use of CAI packages in teaching different topics in physics for that deserved academic gains.

Keywords: Computer Assisted Instruction, Teaching Physics, Gender, Achievement

Introduction

The advancement in science and technology and their application in education have high dividends in almost all disciplines related to the management and organization of educational system. This applied aspect of technology in the educational discipline has tremendous capacity and provide the best possible output for both the teachers and students in physics. Technological tool like computer supports instructional materials with different sounds, images and simulations with more lasting, pleasurable and effective learning outcome (Amaonye, 2018).

Computer Assisted Instruction (CAI*)* is simply the use of computer programmes in different modes to facilitate and improve teaching and learning (Bennett, 2018). It is also known as

Computer-Assisted Learning (CAL), Computer-Assisted Education (CAE) and Computer-Assisted Training (CAT). Different modes of computer assisted instruction exist. These include; Drill and Practice for repetitive exercise and rote skills, Instructional Games which Increase learners' motivation by adding game rules to learning activity. Tutorials which Deliver instructional activities, quiz and feedback. Problem solving software which present problems relevant to learning objectives, provide necessary directions, hints and assistance to solve problem according to the learners' need. Simulation which presents a computerized model of a real or imagined system to teach how a system works. Integrated learning system is a combination of drill and practice, tutorial, simulation and problem solving. Micro computer based laboratories which enable the experimenters to automate the process of gathering data from experiment, conduct relevant analysis and production of meaningful reports (Igwebuike, 2017).

Presently, Physics teaching in Nigerian schools has not been encouraging because of the poor performance of students in physics relative to their counterparts in other countries. Research indicates that many students found physics to be difficult, boring and not interesting (Salau, 2015). A number of factors have been identified to be responsible for these poor performances and seeming lack of interest in physics from the various studies conducted in Nigeria. These include the lack of motivation for most teachers, poor infrastructural facilities, inadequate textual materials, attitude of students to learning, lack and inappropriate teaching method to meet the demand of the society in which we live and the yelling of the changing world among others (Braimoh, 2018). Regrettably, most physics classes are characterized by a brief chat as an

introduction. This is followed by the reading of the notes by the teacher to the students. At the end of the lesson, note on the topic is given to the class captain. In the class free time, the class captain writes the notes on the chalkboard or models the teacher by reading the notes for other students to copy (Olaleye, 2017).

Teaching methods could result in poor state of learning and students' achievement in physics (Okebukola, 2017). There are many methods of teaching physics in secondary schools called Conventional Teaching Methods, which include; lecture method, project method, demonstration method, field trip method, (Gambari, 2018).The conventional approach has some short comings, which cannot be overlooked. The dissemination of instruction in this approach is mostly through verbal medium and this can be affected by a number of communication flows. Instructions may be understood or misinterpreted as the case may be. Ivowi (2017) highlighted that similarly, an instructor may not be patient enough to give out the information required in a step-by-step fashion. Rather than doing that, he is only concerned about covering the syllabus on time and this may have adverse effect on the learner. Chukwu (2016) further stated that since every learner has different learning paces, it will be difficult for the instructor to carry every person along; thus, the conventional approach will not allow learners learn at their own pace.

In spite of the importance of physics as a requirement for many specialized science and technology courses at the university level, it is sad to note that students' performance at the secondary school level in the subject is not encouraging. This problem has major implications on university admission. For instance, secondary schools may no longer produce adequate number of qualified candidates in science-based courses for university admission. The current situation of physics teaching and learning in Imo State and Nigeria is a concern to all including government and the society at large. Since researchers have identified teaching method as one of

the reasons for the poor performance of students in physics at the senior secondary school level. And CAI is one of the technology- driven and student-centred teaching method, which can be used to improve students' achievement in science subjects and in physics in particular (Bishin, 2016). Physics on its own is a natural science which deals with the study of matter and energy and the interaction between them. Energy plays a vital role in human life and physics has made it possible to achieve energy not only from the coal, petrol etc, but also has extracted energy from the core of the atom and the sun (Udousoro, 2016). It is due to physics that developments in the field of energy are being made and new weapons are being developed which put the world in a new era, which is truly called the era of computer and technology (Khatak, 2017).

Academic achievement refers to the observed and measured aspect of a student's mastery of skills and subject contents as measured with valid and reliable tests (Iderima, 2015). Academic achievement of student is the ability of the student to study and remember facts and being able to communicate his knowledge practically, orally, in written form even in an examination condition. However, different factors that influence students' academic achievement at the senior secondary school may include students' attitude towards school, interest in learning, teaching method, study habit, self-efficacy, intelligence, and motivation (Udoh, 2018). It has become increasingly common to find youths who have written their Senior Secondary Certificate Examination (SSCE) conducted by the West African Examination Council (WAEC) but could neither fit into the tertiary institutions of learning nor the labour market in Nigeria because their academic achievement (performance in the SSCE) was poor, not up to the minimum required five credit passes that include physics, English Language and Mathematics for admission. Such

unsatisfactory academic performance might have been occasioned by a combination of psychological, sociological and environmental factors (Okedeyi, 2016).

A student's academic performance is usually measured by teacher-made tests or standardized tests which in most cases are referred to as external examinations like the Senior School Certificate Examination (SSCE) conducted in Nigeria by the West African Examinations Council (WAEC) and the National Examinations Council (NECO) (Ekwebelem, 2014). Gender difference is one of the factors affecting learning and students' achievement in science. Gender is defined as the amount of masculinity and feminity found in a person (Oakley, 2014). The normal male has a preponderance of masculinity and the normal female has a preponderance of feminity. Odusanya (2015) observed female low enrolment in physics and other vocational subjects hence women think that the study of physics and other vocational courses are for men alone. According to Manthorpe (2017), men make decisions about science and technologies that even affect female because women are under-represented in decision-making on science and technological development. Various student's centered teaching methods like Computer Assisted Instruction (CAI) could be used to balance un-equilibrium situation between male and female in physics or other vocational subjects (Range & Wehb,2017). Based on this, the problem of this study stated as a question is "what is the effect of computer assisted instruction (CAI) on physics students' gender and achievement in senior secondary schools in Imo state.

Research Questions

The following research questions were formulated to guide this study:

1. What are the mean achievement scores of male and female students taught physics using Computer assisted instruction (CAI)?
2. How different are the mean achievement scores of students taught Physics with Computer assisted instruction (CAI) and those taught using the lecture method?

Research Hypotheses

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

Ho1: There is no statistically significant difference between the mean achievement scores of male and female students taught Physics using Computer assisted instruction (CAI).

Ho2: There is no statistically significant difference between the mean achievement scores of students taught Physics with Computer assisted instruction (CAI) and those taught using lecture teaching method (LM).

Methodology

This study adopted quasi–experimental design which involves the pre - test post – test non-equivalent control group. The study was carried out in Imo State which comprises three education zones, namely Orlu, Owerri and Okigwe. The population of this study comprised

7,825 senior secondary two (SSII) physics students in all the public senior secondary schools in Imo state (SEMB, 2017). A total number that was sampled for this study from the two sampled schools is 97 which constitute the sample size of the students (54 male & 43 female). A purposive sampling technique was adopted to select two secondary schools in Imo State. The two sampled equivalent and co-educational/mixed schools were randomly assigned to experimental group and control group using simple random sampling technique. One school was assigned to experimental group with 49 physics students and was treated with Computer Assisted instruction method (CAI), the other school was assigned to control group with 48 physics students and was taught using the Lecture Method (LM). Instrument used for collecting data is the Physics Achievement Test (PAT). One expert in Physics Education Department and ,two experts from Measurement and Evaluation Department of Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria validated the instrument used for data collections.

A pilot test was conducted with a school not included in the sample of the study to ascertain the reliability and suitability of the physics achievement test. The result of the test was analysed using the Kuder-Richardson formula 20 (K-R 20). Reliability coefficients of 0.82 was obtained. The instrument for data collection (PAT) was administered to the students before the experimental treatment. The students' scores in this first administration served as pre-test scores of the study. After the pretest, the treatment commenced and lasted for six weeks. At the expiration of the treatment, the items of this instrument were reshuffled and were re-administered to the students. The scores obtained from the second administration served as post-test scores of the study. The test scores generated from the pre-test and post-test were collected using physics Achievement Test (PAT) which was scored 2 marks for one. After the experiment, the achievement test was marked from which data were generated. The scores generated from the

pre-test and post-test were recorded accordingly in a tabular form. Descriptive statistics (mean & standard deviation) were used to answer the research questions, while the analysis of covariance (ANCOVA) was used for testing the hypotheses at 0.05 level of significance.

Results

Table 1: Mean achievement scores of male and female students taught physics using computer assisted instruction method (experimental group)

VARIABLES	N	MEAN	SD	Pre-test mean	Post-test mean	Mean gain
Male	28	74.98	5.81	38.53	74.28	36.48
Female	21	63.29	7.34	34.65	63.29	28.68
MEAN DIFF.	49	11.69	-1.51	3.88	10.99	7.80

Data analysis result in Table 1 showed that the male students taught with CAI performed better than their female counterparts as indicated by the mean achievement scores of 74.98(Male), 63.29(Female) with the mean difference of 7.80

Table 2: Mean achievement scores of students taught physics with computer assisted instruction and those taught using the lecture method

VARIABLES	N	MEAN	SD	Pre-test mean	Post -test mean	Mean Gain
CAI	49	75.08	6.03	36.90	75.8	38.18

LM	48	63.13	7.14	36.94	63.13	26.23
MEAN DIFF.	97	11.95	-1.11	-0.04	12.67	11.95

Data analysis result in Table 2 shows that the students taught with CAI performed better than those taught using the lecture method as indicated by the mean achievement scores of 75.08(CAI), 63.13(LM) with the mean difference of 11.95.

Table 3: Analysis of covariance on the mean achievement scores of male and female students exposed to CAI

Source of variation	Sum of Squares	Df	Mean Square	F	P-value.	Partial Squared
Corrected Model	4314.027[a]	2	2157.01	65.87	.000	.584
Intercept	6612.710	1	6612.71	201.95	.000	.682
GENDER	3395.670	1	3395.67	103.70	.000	.525
Post test	1016.314	1	1016.31	31.03	.000	.248
Error	3077.911	94	32.74			
Total	476691.00	97				
Corrected Total	7391.938	96				

a. R Squared = .584 (Adjusted R Squared = .575)

Data presented in Table 3 shows the F-ratio of 103.70with (1, 94) degree of freedom. However, since the alpha at 0.05 is greater than the p-value at 0.000. ($p<0.05$) we have enough evidence to reject the null hypothesis and state that there is a significant difference between the mean achievement scores of male and female students taught physics with computer assisted

instruction (CAI) as measured by PAT. Moreover, that there is a statistically significant difference between adjusted mean of the two gender used (Adjusted R Squared = .575). This suggests that male students treated with CAI performed better than their female counterpart.

Table 4. Analysis of covariance on the mean achievement scores of students exposed to CAI and LM

Source of variation	Sum of Squares	Df	Mean Square	F	p-value.	Partial Squared
Corrected Model	4317.548[a]	2	2158.77	61.65	.000	.567
Intercept	6942.716	1	6942.72	198.25	.000	.678
Teaching Method	3528.143	1	3528.14	100.75	.000	.517
Post test	851.111	1	851.11	24.30	.000	.205
Error	3291.813	94	35.01			
Total	471637.00	97				
Corrected Total	7609.361	96				

a. R Squared = .567 (Adjusted R Squared = .558)

Data analysis result in Table 4 shows an F-ratio of 100.749 with (1, 94) degrees of freedom. However, since the alpha at 0.05 is greater than the p-value at 0.000. ($p<0.05$), we have enough evidence to reject the null hypothesis and state that there is a significant difference between the

mean achievement scores of students taught physics with computer assisted instruction (CAI) and those taught using the lecture method as measured by PAT. Moreover, that, there is a statistically significant difference between the adjusted mean of the two Teaching Method used (Adjusted R Squared = .558).This suggests that students treated with CAI performed beter than those in lecture group.

Discussion of the Findings.

Findings in table 1 showed that the Male students taught with CAI performed better than their Female counterpart as indicated by the mean achievement scores of 74.98 (Male), 63.29 (Female) with the mean difference of 7.80. Again, data in Table 3 showed that the F-ratio is103.704with (1, 94) degree of freedom. However, since the alpha at 0.05 is greater than the p-value at 0.000. ($p<0.05$) we reject the null hypothesis and state that there is a significant difference between the mean achievement scores of male and female students taught physics with computer assisted instruction (CAI) as measured by PAT. Moreover, there is a statistically significant difference between adjusted mean of the two gender used (Adjusted R Squared = .575).This suggests that male students treated with CAI performed better than the female counterpart. The result implied that gender produced a significant effect on the post-test achievement scores of students. This result is in agreement with the findings of Ezenwa (2017),who states that gender is a factor that accounted for the difference in the post-test achievement scores of the students. This implies that a significant difference exist in the achievement of male and female students when CAI is used.

Findings from table 2 revealed that students taught with CAI performed better than those in LM as indicated by the mean achievement scores of 75.08(CAI), 63.13(LM). In the same vain, the result of table 4 shows that the F-ratio is100.749 with (1, 94) degree of freedom. However, since

the alpha at 0.05 is greater than the p-value at 0.000. ($p<0.05$) we reject the null hypothesis and state that there is a significant difference between the mean achievement scores of students taught physics with computer assisted instruction (CAI) and those taught using lecture teaching method as measured by PAT. Moreover, this suggests that students treated with CAI performed better than those in the control groups.

The findings of this study revealed that the use of computer assisted Instruction method had a significant effect on students‟ achievement in physics. The students' taught using computer assisted instruction method achieved significantly better than those taught using lecture method. This result is in agreement with the result of Dange and Wehb (2017). They found out that computer assisted instruction enhanced students achievement in school. This result is also in agreement with Chukwu and Igwebuike (2017), who investigated the effect of integrating concept mapping into computer assisted instruction in chemistry achievement. Their findings revealed that the students in the experimental group who were treated with computer assisted instruction achieved significantly better than those in the control group. The trend of higher performance by the treatment (CAI) group could be as a result of self -evaluation and remedial activities provided by (CAI) which helped students to master the chemistry concepts without much difficulty than the (LM) group.

Conclusion

The use of computer technology to all aspects of human endeavour coupled with the need to create student-centred classroom to engage learners in their leaning tasks, improve learners'

achievement in the school subjects has necessitated the use of computer assisted instruction (CAI) in teaching physics. This study has found out that CAI improved students' achievement in physics than the lecture teaching methods. And that significant difference exists in the achievement scores of male and female students when CAI is used. This means that gender is a factor that accounted for the difference in the post-test achievement scores of the students.

Recommendations

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

1. Physics teachers should embrace the use of CAI packages in teaching different topics in physics for that deserved academic gains.
2. Computer literacy and operation in the secondary schools should be given more attention to enhance computer compliant among science students.
3. There is need for more female in the field of physics as well as in decision making positions as this would enable them to control the direction of physics research and promote policies which will encourage and favour female species to study physics
4. Further empirical studies should be carried out on why male students performed better than their female counterparts in physics.

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AN ASSESSMENT OF SEXUAL HARASSMENT IN CIVIL SERVICE COMMISSION, ABUJA, NIGERIA

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Abstract

This study is an assessment of sexual harassment in civil service commission, Abuja, Nigeria. The descriptive research designed was used to investigate the causes and consequences of sexual harassment on female employees at work place with particular reference to NCSC. The population for the study was 402 respondents. The population was randomly selected from each sections and units of NCSC. The researcher used simple random sampling techniques at the interval of five to select the sample size of 200 respondents. The questionnaire on "An Assessment of Sexual Harassment in Civil Service Commission" Abuja, Nigeria (AASHCSC) was formulated to elucidate responses from the respondents. The data collected was analysed using simple percentages (%). The study discovered that sexual harassment is prevalent in NCSC headquarters, Abuja. This is because the work environment (NCSC) encourages sexual harassment because there is no defined law against it on women, no disciplinary measure on ground to checkmate and deal with it. The study however concludes that, sexual harassment has become a hydra headed problem in NCSC and should be faced drastically with the law to reduce its occurrences in the organization. The study therefore recommends, among others, that mechanisms should be put in place whereby victims can report and necessary justice given to avert more of its kind.

Key Words: Assessment, sexual harassment, civil service commission

Introduction

Sexual harassment has been perceived to be one of the prevailing crimes frequently committed among the civil servants globally. Sexuality is part of human life and existence. Ideally, sexual relationship should be mutual and between two adults who consented without any form of coercion Haruna, Joseph, Samson & Aye (2016), but that has not been the case in many work places today.

The first survey by the U.S. Merit Systems Protection Board conducted in 1980 showed that sexual harassment in the workplace was perceived to be a problem (USMSPB (1995). According to the 1995 U.S. Merit Systems Protection Board, over 40% of women and nearly 20% of men reported experiencing some form of sexually harassments. The report states that because these numbers have not significantly changed since an earlier administration of the survey (1987), sexual harassment is still an issue that needs to be addressed.

There is no clear data about the statistics of sexual harassment because some victims experience harassment but do not report it Goldhill & Bingham (2015). However, according to World

Health Organization reports, one in every five women is a victim of sexual assault (cited in Garcia-Moreno & Watts, 2011) and globally, 35% of women have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence WHO (2013).

Sexual harassment is a growing social problem in Nigeria. In a survey conducted among five commercial banks in Lagos, the workers, especially females, experienced and perceived various kinds of sexual harassment Fapohunda, (2014). Another Nigerian survey conducted on selected workplaces revealed that 68 per cent of the sample size had been victims of sexual harassment in their work places Idris, (2016) Hutagalung & Ishak, (2012); Idris, (2012); Veale & Gold, (1998). The organizational climate may not have aided harassment-free workplace due to many industry-related problems. Ezeh & Etodike, (2016) posit that these problems are not unconnected with institutional corruption. Uncontrolled abusive relationship between superiors and their subordinates in most public organizations, high levels of incivility among workers, and most importantly, the prevailing organizational climate are also some of the problems breeding sexual harassment in work places Ezeh, Etodike & Chukwura, (2018), (Ezeh & Etodike, (2017), and Joe-Akune, Ogbeide, Davies & Otedike, (2018).

In fact, sexual harassments have been exacerbated by the patriarchal nature of the society and the various cultures found amongst the various ethnic groups in the country. It is believed that these problems are transferred into work settings and have contributed to gender gaps found at senior management positions within the organisation. Okeke, (2011) and Ladebo, (2003) to this effect posit that this partly supports arguments that the Nigerian society does not accept the concept of sexual harassment and does not perceive it as evil or violation of the right of individuals in the workplace.

This view was corroborated by the submission of the defendant's counsel in the recent case of Stella Ayam Odey versus Ferdinand Daapah & Cuso International (2016) who posited that it is expected among adults that a man would naturally chase a woman and make romantic overtures, even in the office… (National Industrial Court, 2016). This indicates that it is mostly perceived as a part of the societal fabric in Nigeria.

One aspect of sexual harassment in the workplace that has not been explored is sex of the employee, as recent studies have focused primarily on female demographics (Buchanan & Fitzgerald, 2008; Hutagalung & Ishak, 2012; Woods, Buchanan, & Settles, 2009). Previous researchers noted that 40% to 70% of victims of sexual harassment are women (Hutagalung & Ishak, 2012; Idris et al., 2012). This may be because more sexual harassment allegations were filed by female employees (EEOC, 2014). However, male employees are also likely targets of sexual harassment Berdahl, Magley, & Waldo, 1996; EEOC, 2014; Waldo, Berdahl, & Fitzgerald (1998). Although female employees report more, male employees may have the tendency to underreport their workplace sexual harassment experiences Goldhill & Bingham, 2015; Parker & Griffin, (2002).

However, the prevalence of data on sexual harassment suggest that it is a widespread problem among working women worldwide. As far back as 1976, Redbook published the results of a groundbreaking readership mail survey which found that 88% of the 9,000 respondents claimed they had experienced some form of workplace harassment in the course of their employment Safran (1976). The Redbook survey overlapped with an historical period that involved a large

influx of women into the workforce and drew much needed attention to the then emerging issue of sexual harassment. If one is to take this survey at face value, then an astounding nine in ten women have been sexually harassed at work places. Ramakrishnan, (2019) States that when a sexual activity is as a result of intimidation of any sort, it becomes worrisome and an infringement to the individual's human right and this intimidation into unsolicited sexual activity usually puts the victim at a disadvantaged position for lack of consent.

This is why Shaw, Hegewisch & Hess (2018) contended that in the workplace, sexual harassment is a serious crime with grievous cost to the victims, co-workers and the organization. This attribute makes sexual harassment in the workplace a much talked about organizational vice outside inherent job factors. Pierce, Byrne & Aguinis, (2005) in their view posit that notwithstanding, workplace romances may benefit the participants with respect to factors such as preferential treatment, financial satisfaction, gifts or large promises but punitive managerial actions also abound such as denial of appointment or promotion, job relocation or redeployment and even termination of employment.

Unfortunately, Hersch (2015) discovered in his research that about Seventy-Eight (78) countries have nationally defined or structured legislative provision for defining the term 'sexual harassment' with the exclusion of Nigeria. Also, evidence abounds that, of the thirty-six (36) States and the Federal Capital Territory, only Federal Capital Territory (FCT) and Lagos State have a precise definition of sexual harassment in the workplace and this applies to only residence of those terrains Violence against Persons Prohibition Act, (2015). In fact, the Nigerian labour/criminal law has no specific provision for sexual harassment in the work place to criminalize, prevent, prohibit and redress issues of unwanted sexual misconduct within the civil service alone till date. Hence, the focus of this study. That is a critical investigation into the causes and context of sexual harassment in Nigeria, with a particular focus on the Nigerian Civil Service Commission (NCSC), Abuja.

There are various factors responsible for sexual harassment in schools and the society at large, and it varies from individuals to individual and from different situations. Many of these factors are interrelated and are linked to the culture and values of the society, Halper and Rios (2018).

Pierce, Byrne & Aguinis, (2005) also posited that the feeling of insecurity can also lead to sexual harassment. In view of the above, some of these causes are: Indecent dressing; Family background; Poverty; Laziness of the female students to study; Lust from male students; Poor system of redress; bad influence from peers and the society; Quest for quick wealth; and Excessive intake of alcohol Awasthi (2017).

Statement of the Problem

The increasing incidences of sexual harassment at work places are unacceptable, and the situation is more pervasive in Nigeria. The commonest forms of sexual harassments experienced in the Nigerian workplaces varies from sexual advances, unwanted touch, sex-related gestures, sexual remarks, money enticement, intimidation (Yusuf, 2010). The percentage of victims of sexual harassment at Nigerian work places can significantly be reduced if victims come forward to report cases as they should.

In the developed countries, especially the United States and the United Kingdom, there is a high level of awareness of the problem of sexual harassment and women's willingness to report. Unfortunately, in Nigeria, general public awareness of the sexual harassment issue has never been strong with the media not focusing attention on it as they should over the years. Irrespective of the various opinions people may hold about the often-controversial topic of sexual harassment, it seems at the very least that the issue has finally been brought to the fore and is receiving deserved attention.

Sexually harassment wherever it is found is problematic as most often it is perpetrated by superiors against subordinates or between people of uneven status with one capable of taking advantage of the other or willing to exploit the other's vulnerability as inferior (Sadler, Lindsay, Hunter & , 2018). Despite its devastating consequences, the majority of the research on sexual harassment during this time dealt primarily with incidence levels and consequences of sexual harassment, using simple checklist methodologies.

As noted by Gelfand (1995), these studies made little attempt to aggregate behaviors at a higher level of generality. In addition, little or no attention was given to defining the construct of sexual harassment, nor to identifying its structure. Consequently, the measures used had essentially no theoretical foundation. Furthermore, the various studies did not employ a standard definition of sexual harassment, which are the areas of focus in this study. Identifying the actual causes of sexual harassment in a work place like the NCSC, with special attention on why women are mostly affected is crucial in order to know their roles and raise more awareness about the menace.

In view of the above, (Menon (2011) described sexual harassment as unwanted sexual advances, requests for sexual favours, and other verbal or physical conducts of a sexual nature. This confirms that the acts described by the respondents above constitute sexual harassment at work place. This also collaborates with one of the qualitative findings of this study which revealed that employees of the organization, especially women have complained of unwanted sexual advancement from some of their male counterpart.

Purpose of the Study

The main purpose of this study is to assess the level of sexual harassment in Nigeria Civil Service Commission, Abuja, Nigeria. The specific objectives are to:

1. Assess the causes of sexual harassment in Nigerian Civil Service Commission;
2. Assess the measures put in place to address the menace of sexual harassment can be in NCSC; and
3. Assess the negative impact of sexual harassment on women in their work places.

Research Questions

For the purpose of this study, the following research question were proffered;

1. What are the causes of sexual harassment in Nigerian Civil Service Commission, Abuja?
2. Are there measures put in place to checkmate the menace of sexual harassment in Nigerian Civil Service Commission, Abuja?
3. What are the negative impact of sexual harassment on women in their work places in Nigerian Civil Service Commission, Abuja?
4. Are the male workers also harassed sexually?

Methodology

Descriptive survey research design was used for this study to assess the level sexual harassment in Nigerian Civil Service Commission Abuja. The population for this study was randomly selected from each sections and units of NCSC to have 402 respondents and with simple random sampling techniques at the interval of five, a sample of 200 respondents were chosen.

Four (4) research questions were formulated to guide the study. The questionnaire was used for data collection and validated by some experts in the department of Educational Foundations with a reliability coefficient of 0.06. The data collected was analyzed using simple percentages.

Results

Research Question 1: What are the causes of sexual harassment in Nigerian Civil Service Commission, Abuja?

Table 1: Responses from the respondents in the causes of sexual harassment in NCSC

S/N	Responses	Frequency	Percentage (%)
1.	Indecent dressing	27	14.5
2.	Family background	22	11.8
3.	Poverty	21	11.3
4.	Laziness of the female students to study	15	8.07
5.	Lust from male students	25	13.4
6.	Poor system of redress	20	10.8
7.	Bad influence from peers and the society	20	10.8
8.	Quest for quick wealth	11	5.9
9.	Excessive intake of alcohol	25	13.4
	Total	**186**	**100%**

From table one above, the respondents expressed their positions on each question items as it affects the causes of sexual harassment in NCSC, Abuja. On the whole, they all agreed that these factors and more are responsible for the sexual harassment that takes place in NCSC, Abuja. This is in line with Pierce, Byrne & Aguinis, (2005) who posited that most of the causes of sexual harassment in workplaces are attributed to these variables. They further posit that notwithstanding, school romances/harassment may benefit the participants with respect to factors such as preferential treatment in class, financial satisfaction, gifts or large promises but punitive managerial actions also abound such actions.

Research Question 2: What are the measures put in place to checkmate the menace of sexual harassment in Nigerian Civil Service Commission, Abuja?

Table 2: Indicates the responses of the respondents on whether there are aid rules guiding against sexual harassment in NCSC

S/N	Variable	Frequency	Percentage (%)
1.	Code of conduct towards fellow employees	35	26.9
2.	Employees to have no dealing with bosses outside work environment/hours	15	11.54
3.	Relationship with colleagues must be purely official	10	7.7
4.	Promised to caution harassers	8	6.2
5.	Civil Service Rule /Law on sexual harassment	60	46.2
6.	Laws on fundamental human rights	2	1.53
	Total	**130**	**100**

From the table above, the respondents indicated that there are some rules put in place to guide against sexual harassment in NCSC. In line with this, Thomas (2004) stated that it is important to design and develop a strong sexual harassment policy. He went further to posit that this document should provide all employees with a clear view of inappropriate behaviour and ensure that sexual harassment will not be tolerated. Grobler (2003) posits that rather than the policy emphasizing a proactive and preventative programme of education against sexual harassment, the approach tended to look at more reactive strategies, when it actually occurs. He also stated that the reactive strategy therefore focuses on measures that will be taken in terms of handling sexual harassment behaviour, once such behaviour has made itself noticeable within the workplace.

Research Question 3: What are the negative impact of sexual harassment on women in their work places in Nigerian Civil Service Commission, Abuja?

Table 3: Showing the negative impact of sexual harassment in workplace

S/N	Responses	Frequency	Percentage (%)
1.	Relative peace with their bosses	25	12.5
2.	Promotion and juicy positions	35	17.5
3.	Access to valuable resources/privilege information	21	10.5
4.	Emotional trauma/depression	38	19.0

5.	Feeling of humiliation	26	13.0
6.	Feeling irritated and angry with the harasser	30	15.0
7.	Feeling of guilt when with spouse	25	12.5
	Total	200	100

The table above indicates the negative impact of sexual harassment on workers as observed by the respondents. From the responses of the respondents, there are so many negative impacts to this effect. These are seen in the works of (Dionisi & Barlin, 2015; McDonald, 2012; Merkin, 2013; Merkin & Shan, 2014). They posited that the impact on the individual who experiences sexual harassment in the employment context can range from irritation to serious disability, with long-term physical and/or psychological implications. Such harassment can create a work environment in which a person feels constantly humiliated, degraded and angry. Some victims also experience guilt, the sense that they are somehow to blame for the treatment they receive. Victims also worry about discriminations if they take action to report or otherwise speak out to discourage the treatment. Occasionally, victims feel they have no choice but to resign, and thereby may suffer permanent damage to their careers.

Research Question 4: Are the Male Workers also harassed sexually?

Table 4: Shows responses indicting whether the male workers are also harassed.

S/N	Responses	Frequency	Percentage (%)
1.	Male workers are also sexually harassed	45	30.0%
2.	The way men appear attract the female counter parts	38	25.3%
3.	The male workers lure the females to themselves by making some attractive signs	35	23.3%
4.	Give some expensive perfumes and other gifts to lure their female colleagues	32	21.3%
	Total	150	100

From the table above, the respondents agreed that not only the female workers are susceptible to sexual harassment, the male too are involved. This is in line with Hutagalung, Ishak and Idris (2012) in their research work stated that 40% to 70% of victims of sexual harassment are women, not that men are not involved. This is because sexual harassment allegations are filed more by the female workers than the men EECO (2014). Berdahl, Magley, & Waldo, 1996; EEOC, (2014), Waldo, Berdahl, & Fitzgerald (1998) posited that the male employees are also likely targets of sexual harassment.

Discussion of Findings

Based on the findings of this study, it was discovered that sexual harassment is prevalent at the NCSC. This could be seen in some surveys carried out by some Nigerians conducted on selected workplaces. This survey revealed that 68 per cent of the sample size had been victims of sexual harassment in their work places, Idris (2016) Hutagalung & Ishak, (2012), Idris, (2012), Veale & Gold, (1998). Some acts of sexual harassment identified by the respondents at the workplace are

unsolicited sexual advances, unwarranted sexual remarks, boldly requesting for sex from non-partner, seductive gesture, unreasonable touch of sensitive body parts, and jokes of sexual nature. It was also discovered that some bosses have asked some of them out, colleagues have touched their buttocks, and usually guess at them seductively. Some supervisors or bosses also usually demand for sex openly, while many complained of experiencing regular jokes about sex from their colleagues.

Further findings also, revealed that majority of the respondents attest to the fact they were induced before the actual acts of harassment. The victims are usually enticed with money, offer of promotion, offer of posting to good places, and offer of gifts/snacks. Also, a sizable number of the respondents complained that their work environments in NCSC encourages or breeds sexual harassment. This is because there is no defined law against sexual harassment at the work place, no disciplinary measure on ground to checkmate and deal with the cases of sexual harassment at

the work place, and the fact that the organization has never punished any harasser. Also, the respondents expressed their dismay that sexual harassment is prevalent in their work place because the environment is dominated by men who see sexually harassing behaviours as normal, and the fact that promotion and posting is based on who knows who and what one has to offer.
The above findings corroborate with the discovery where majority of the respondents mentioned that the environment they are working in makes sexual harassment inevitable. Some of the women interviewed lamented that the men feel that it is a man's world and women are under their control, including the desire to satisfy their sexual libido at will.
According to (Gateway 2015), moral values and cultural differences are at the root of sexual harassment. In a man's world, sexually harassing women may be seen as normal.

Conclusion

The research work was carried out to unravel the causes and implications of sexual harassment on women working in the Nigerian Civil Service Commission's Headquarters Abuja, and found that sexual harassment takes place in the commission more often. This is to the fact that the commission is dominated by men who see sexual harassment of women as normal. Many of the male employees strive to induce or entice women with money, offer of promotion, offer of posting to good places, and offer of gifts/snacks in order to harass them sexually. This does not imply that it is only the female folk that are affected by the menace of sexual harassment in the commission, men are also sexually harassed by female employees but not as much as their female counterpart. The study also reveals that the work environments in NCSC Headquarters is such that sexual harassment takes place due to lack of defined laws against sexual harassment of women, disciplinary measure on ground to checkmate and deal with cases of sexual harassment of women, failure to punish previous harasser, and encouragement of promotion and posting based on who knows who and what one has to offer.

In respect of the effect of sexual harassment on the female employees of the commission, the study discovered that women who do not succumb to sexual advancement are greatly affected because they are prone to emotional trauma or depression, humiliation, irritation, anger and bitterness. In the same vain, it was discovered that the other fellows who succumb secure undue advantage over them while they are tactically being punished especially by some supervisors and

bosses who had wanted to harass or have harassed them sexually but met with strict resistance. This situation usually affects their performance at work.

Recommendations

The study recommends as follows:

1. A committee should be set up to receive and deal with cases of sexual harassment in NCSC;
2. Policies and rules to guide against the occurrence of sexual harassment should be put in place;
3. There should be information box where victims who may not openly report such cases due to stigmatization may drop their complains there;
4. Specific laws should put in place to protect women from sexual harassment in their work places;
5. Culprits of this act should be punished appropriately to deter others; and
6. There should be some enlightenment programmes on ills sexual harassment.

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COMPARATIVE ANALYSIS OF DEMOCRATIC AND AUTOCRATIC LEADERSHIP STYLES AND THEIR IMPACT ON STUDENTS ACADEMIC PERFORMANCE IN PUBLIC SECONDARY SCHOOLS IN ENUGU STATE

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Abstract
The study examined Comparative Analysis of Democratic and Autocratic Leadership Styles and their impact on Students Academic Performance in Public Secondary Schools in Enugu State. Two research questions were developed and answered and two hypotheses formulated and tested for the study. The study adopted a descriptive survey design, an ex- facto. A total population of 4864 teachers were gathered from the total number of public secondary schools in Enugu State, and a sample of 352 teachers was used for the study. A research instrument was constructed by the researcher and used for the data collection. The instrument was validated ant its reliability established through a test re-tests method. The data obtained were analyzed using the Pearson Product Moment correlation coefficient. The results revealed that democratic leadership style positively influenced academic performance of students, autocratic leadership style was not adopted by principals' and did not influence academic performance of students and that there is no significant difference in the mean responses of male and female teachers on the influenced of the democratic leadership style of principals on the students' academic performance. It was recommended among others that democratic leadership style should be adopted as it promote students' academic performance.

Keywords: Leadership Styles, Principals, Academic Performance

Introduction
Leadership is the ability of a leader to act in other to enable others work in an environment where in each individual serving under him finds himself encouraged and stimulated to a point where he is helped to realise his potential to contribute meaningfully. Leadership has to do with casting vision and motivating people to catch and actualize the vision. The emergence of a leader is usually caused by the need to work towards a common goal and coordinated interests to achieve a common purpose. Supporting the above view, Ukdeje (2009) has it that leadership is the major determinant of success in any organisation or group. However, leadership is the process of

influencing group activity towards goal achievement (Stoghill, 2001). It is the behaviour of an individual when he is guiding and directing activities of the group towards a shared goal (Unachukwu & Okoji, 2014). It is an impute into an organisation and involves interpersonal influences as one initiates structures and acts that result in a consistent pattern of group interaction aimed at high productivity and individual fulfilment. The school leader can be called by a variety of titles: Principal, Head teacher, leader of school, the school father, adviser, chief executive, chief administrator, public relations man, policy maker, organiser, school authority, projectionist and others. These and many other nomenclatures reveal a great deal about the way

people see the school leader performing his tasks. Principals are instructional leaders of their schools. Upon them depends to a large extent the instructional programmes of their schools.

In running a successful school leadership, effective administration is of prime importance. According to Hornby (2002), administration is seen as activity carried out by the administrator in order to plan, organize and successfully run a business, school or other institutions, a process or act of organizing activities in such a way that something is done/achieved. Edem (2006), in his view sees administration as that which involves planning of activities which the aim is to fulfil the goals of a particular organization. This therefore calls for the ability of the administrator to make the right decisions in order to fulfil the required goals. In this view therefore, it has to do with educational setting, while administration is regarded as a service, activity or tool with which the cardinal objectives of the educational process may be adequately realized.

Nkwoh (2011) is of the opinion that educational leadership deals with the organisation of human and material resources available in education sector which are tactically implemented for the realization of educational goals. It could be seen that a quality school leadership is otherwise, in accordance with the quality of a schools' product as determined by the quality of students admitted into the school, calibre of teachers, quality of instructional materials, resource maintenance and teaching /learning environment. Invariably, the quality of any school leadership determine the quality of staff, students, resource availability, classroom management and instructional processes in the school (Diwunma, 2006)

In this clew, school leadership therefore involves the effective management of the educational curriculum and teaching, moral care, discipline, evaluation of assessment and examinations, resource allocation, costing and forward planning, staff appraisal, community relationship, use of practical skills necessary for surviving the policies of school organizations; which includes-decision making, negotiation, bargaining, communication, conflict resolution, organizing of meetings and others.

Unachukwu and Okoji (2014) sees poor academic performance as any performance which falls below a desired standard. The criteria of excellence could range between 40% and 100%, which is dependent on the subject yard stick of the evaluator or assessor. For instance an English Language SS3 student scoring 70% is in no doubt regarded to be a very good performance. According to Babalola and Ayeni (2009), poor academic performance of a student in an academic institution in examination is one in which the person fails to attain a set standard or performance in a given evaluation exercise such as test, examination or series of continuous assessment. This standard is usually based on a number of stipulated objectives and other school activities. A candidate who scores below the standard is regarded as showing a poor academic performance in school. Studies carried out by Lawal (2011) unfolds that there are four major

leadership styles. These include; Democratic leadership style, autocratic leadership style, laissez-faire leadership style, and situational/ contingent leadership style. Aviolio and Bass (2002) noted that democratic leadership style is where the leader accommodates and allows the subordinates to be part of decision making during meetings, consultations, conferences, etc. This style of leadership also allows criticisms and praises by the led. A feeling of responsibility, welcomes new ideas and changes, as well as creates a forum for interactions. In the case of its relationship on the students' academic performance, when the principal accommodates the teachers and co-opt them as part of the planning and decision making body at their level, they perform optimally

towards the discharge of their duties hence they are part of the vision, this in turn enhances the students' academic performance.

In his view Ihedioha (2003) is of the opinion that democratic leadership style creates a palliative teaching and learning environment whereby the learner in his academic activities develops a positive influence of success in the carrier. Again, Eze (2014) opines that the adoption of democratic leadership style by principals is one of the best ways of encouraging the teacher(s) to freely drive home into the learner(s) the virtues of positive influence. In view of these facts, democratic leadership style has some positive contributions towards enhancing students' academic performance.

The autocratic leader does not give his subordinates' opportunity to contribute to decision making. Mgbenu (2005) and Alaezi (2002) opined that autocratic leadership style deters the productive ego of the teacher towards his students; the straights' which affects the leaner negatively. According to Shankea (2014), autocratic leadership style is a system which is characterized by the leader taking decisions alone without any form of consultation/consideration of his subjects, after which he simply announces or issues instruction on what is expected of them. Here the members of the group are not offered the chance of making their individual contributions in matters pertaining to the organization; rather they are only on the acceptance side. Ibiam (2015) assert that this is a type of leadership by force. Another important principal's leadership style is the democratic style. According to Mgbenu (2005) described democratic leadership style as the kind of principals leadership style where the leader gives consideration to his subordinates granting them opportunity to contribute in decision making during meetings, conferences and consultations. Stroud (2006) revealed that it is the kind of leadership that considers the effort, suggestion, contribution and weakness of teachers and students during decision making.. In his view, Anyanwu (2004) frowns at the negative tendencies of autocratic leadership style which its adoption as a leadership style produces little or no result in the learner. Lawal (2011) explained that democratic leadership style, coercive leadership style and charismatic leadership style has been seen as one of the most important factors in the school improvement which enhances academic performances of the students. Based on the background, the study investigated the Comparative Analysis of Democratic and Autocratic Leadership Styles and their impact on Students Academic Performance in Public Secondary Schools in Enugu State.

Research Question One:

i. What is the influence of democratic leadership style on the academic performance of students in public secondary schools in Enugu State?
ii. What is the influence of autocratic leadership style on the academic performance of students in public secondary schools in Enugu State, Nigeria?

Hypotheses

Two null hypotheses were postulated to guide the study which was;

$H0_1$. There is no significant difference in the mean responses of male and female teachers on the influence of democratic leadership style of principals on the academic performance of students in public secondary schools in Enugu State.

$H0_2$ There is no significant difference in the mean responses of male and female teachers on the influence of autocratic leadership styles of principals on the academic performance of students in public secondary schools in Enugu State.

Methodology

The study adopted a descriptive survey design, and an ex- facto. This is because the event had already taken place and the researcher cannot manipulate the independent variable. The study was carried out in Enugu State. A total population of 4864 teachers were gathered from the total number of public secondary schools in Enugu State, and a sample of 352 teachers was used for the study. The sample was selected using multi-stage sampling technique. A research instrument was constructed by the researcher and used for the data collection. The questionnaire of two sections titled Influence of leadership styles of principals on the academic performance of students in public secondary schools (ILSPAPSPSS). The instrument was validated by three experts, two from Educational Management and one from Measurement and Evaluation in College of Education, Michael Okpara University of Agriculture, Umudike. The reliability of the instruments ILSPAPSPSS was established through a test re-test method for stability of the instrument. 50 copies of the questionnaire were administered to the secondary schools teachers that were part the population but not included in the sample size. The instruments were re-administered to the same respondents within an interval of two weeks. The response (results) of the first and second administration of the instrument were analysed using the Pearson Product Moment correlation coefficient, which yielded a reliability index of 0.85. The data collected through the administration of the instruments were analyzed using mean-scores and standard deviation in answering the research questions. The research hypotheses for this study were tested using t-test statistic at 0.05 level of significance.

Results

Research Question One

What is the influence of democratic leadership style on the academic performance of students of public secondary schools in Enugu State?

Table 1 Mean responses of respondents on the influence of democratic leadership style on the academic performance of students.

Item No	Item Statement	No of Respondents	Total	Mean	SD	Remarks
1.	Democratic leadership style adopted by principals' promotes effective teaching and learning.	352	1072	3.05	1.75	Accepted
2.	Democratic leadership style adopted by principals' brings conducive learning environment.	352	1014	2.88	1.70	Accepted
3.	Democratic -leadership style adopted by principals' brings principal-teacher relationship.	352	1062	3.02	1.74	Accepted
4.	Democratic leadership adopted by principals' promotes students academics performance.	352	1049	2.98	1.73	Accepted
	Average score			2.98	1.73	Accepted

Data in Table 1 above showed that items 1, 2, 3 and 4 had mean scores above 2.50. It implies that the items are accepted as positive, since they received mean scores above the acceptance level of 2.50. It also implies that the respondents agree that democratic leadership style adopted by principals' promotes effective teaching and learning, agree that democratic leadership style adopted by principals' brings conducive learning environment, agree that democratic -leadership style adopted by principals' brings principal-teacher relationship and agree that democratic leadership adopted by principals' promotes students academics performance influence academic performance of students. Therefore, one can find out that from the responses of the respondents that democratic leadership style, influence academic performance of students of public secondary schools in Enugu State as show by the average mean scores of 2.98 and standard deviation of 1.73.

Hypothesis One

There is no significant difference in the mean responses of male and female teachers on influence of democratic leadership style of principals on the academic performance of students in public secondary schools in Enugu State.

Table 2: t-test analysis of the mean responses of male and female teachers on the influenced of democratic leadership style.

Variable	N	Mean	SD	DF	Standard	t-cal	t-critical	P-value

			error					
Male Teachers	186	2.65	1.63					
				350	0.17	0.43	1.97	0.83
Female Teachers	166	2.63	1.62					

The results of the above analysis showed that the calculated t-value of 0.43 was less than the critical t–value of 1.97 when tested at 0.05 level of significance with 350 degree of freedom. We fail to reject null hypothesis and state that there is no significant difference in the mean responses of male and female teachers on influence of the democratic leadership style of principals on the students' academic performance. This implies that male and female teachers are of the same view that the democratic leadership style adopted by principals' has a great influenced on the academic performance of the students.

Research Question Two

What is the influence of autocratic leadership style on the academic performance of students of public secondary schools in Enugu State, Nigeria?

The results of the analyses are presented on table 3 below.

Table 3 Mean responses of the respondents on the influence of autocratic leadership style on the academic performance of students.

Item No	Item Statement	No of Respondents	Total	Mean	SD	Remarks
5.	Autocratic leadership style adopted by principals' promotes effective teaching and learning.	352	789	2.24	1.50	Rejected
6.	Autocratic leadership style adopted by principals' brings conducive learning environment.	352	806	2.29	1.51	Rejected
7	Autocratic -leadership style adopted by principals' brings principal-teacher relationship.	352	811	2.30	1.52	Rejected
8	Autocratic leadership adopted by principals' promotes students academics performance.	352	804	2.28	1.51	Rejected
	Average score			2.28	1.53	Rejected

Data in Table 3 above show that items 5, 6, 7 and 8 had mean scores above 2.50. It implies that the items are not accepted since they received mean scores below the acceptance level of 2.50. it also implies that the respondents agreed that autocratic leadership style adopted by principals' did not promotes effective teaching and learning, agreed that autocratic leadership style adopted by principals' did not brings conducive learning environment, agreed that autocratic -leadership style adopted by principals' did not brings principal-teacher relationship, agreed that autocratic leadership adopted by principals' did not promotes students academics performance. However, one can find out that from the responses of the respondents that autocratic leadership style was

not adopted by principals' and did not influence academic performance of students of public secondary schools in Enugu State as shown by the average mean of 2.28 and standard deviation of 1.53.

Hypothesis Two

There is no significant difference in the mean responses of male and female teachers on the autocratic leadership styles adopted by principals of public secondary schools on the students' academic performance.

Table 4 t-test analysis of the mean responses of male and female teachers on the autocratic leadership styles on the students' academic performance.

Variable	N	Mean	SD	DF	Standard error	t-cal	t-critical
Male Teachers	186	2.43	1.56				
				350	0.17	0.48	1.97
Female Teachers	166	2.39	1.55				

The results of the above analysis showed that the calculated t-value of 0.48 was less than the critical t-value of 1.97 when tested at 0.05 level of significance with 350 degree of freedom. Therefore, the null is accepted that there is no significant difference in the mean responses of male and female teachers on the autocratic leadership styles adopted by principals of public secondary schools on the students' academic performance. This implies that male and female teachers are of the same view that principals did not adopt autocratic leadership styles in public secondary schools.

Discussion of Findings

The influenced of democratic leadership style on the academic performance of students of public secondary.

This study revealed that democratic leadership style, influence academic performance of students of public secondary schools in Enugu State. The corresponding hypothesis affirmed that there is no significant difference in the mean responses of male and female teachers on the influenced of the democratic leadership style of principals on the students' academic performance. This implies that male and female teachers are of the same view that the democratic leadership style adopted by principals has a great influenced on the academic performance of the students. This finding is in line with the finding of Lawal (2011) who explained that there are three major leadership styles that can be adopted by secondary schools principals such as democratic leadership style, charismatic leadership style and coercive leadership style. This finding also agree with the finding of Obi (2003) who opined that this styles of leadership is an achievement oriented which sets challenges goals and emphasizes improvement in work performance.

This study found out that autocratic leadership style was not adopted by principals' and did not influence academic performance of students of public secondary schools in Enugu State. The corresponding hypothesis affirmed that there is no significant difference in the mean responses of male and female teachers on the autocratic leadership styles adopted by principals of public secondary schools on the students' academic performance. This implies that male and female teachers are of the same view that principals' did not adopt autocratic leadership styles in public secondary schools. This implies that male and female teachers are of the same view that the type of leadership style adopted by principals' has a great influenced on the academic performance of the students. This finding is in agreement with the view of Lawal (2011) who explained that democratic leadership style, coercive leadership style and charismatic leadership style has been seen as one of the most important factors in the school improvement which enhances academic performances of the students.

Conclusion

This study examined the Comparative Analysis of Democratic and Autocratic Leadership Styles and their impact on Students Academic Performance in Public Secondary Schools in Enugu State. From the findings, the researcher concluded that democratic leadership style, influence academic performance of students of public secondary schools in Enugu State, autocratic leadership style was not adopted by principals' and did not influence academic performance of students of public secondary schools in Enugu State, and that there is no significant difference in the mean responses of male and female teachers on the influenced of the democratic leadership style of principals on the students' academic performance. This implies that male and female teachers are of the same view that the democratic leadership style adopted by principals' has a great influenced on the academic performance of the students.

Recommendations

Based on the findings of the study, the researcher recommends that;

1. Principals' should adopt democratic leadership style in Enugu State Public secondary schools in order to promote students' academic performance.
2. More of democratic leadership style should be further encouraged and autocratic leadership style should be discourage.
3. Periodic monitoring of schools by the education board should be carried out so as to ensure democratic leadership towards students' academic performance.

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MANAGEMENT OF FACILITIES AS CORRELATE OF EFFECTIVE INSTRUCTIONAL DELIVERY FOR ENHANCEMENT OF CAPACITY BUILDINGS OPPORTUNITIES IN PUBLIC UNIVERSITIES IN SOUTH EAST, NIGERIA

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Abstract

The study investigated the management of facilities as correlate of effective instructional delivery for enhancing capacity buildings opportunities in public universities in South-East, Nigeria. Three research questions and three null hypotheses were raised and formulated to guide the study. The study adopted a correlational survey design. Based on Krejcie and Morgan's (1971) formular, a sample size of 334 public universities academic staff were proportionately drawn from the population of 2,576 academic staff from ten public universities in the South East Zone. Two instruments titled "Management of University Facilities Questionnaire (MUFQ) and Effective Instructional Delivery Capacity Building Questionnaire" (EIDCBQ) were developed by the researcher and used for the study. The instruments were validated by three experts, from Michael Okpara University of Agriculture, Umudike. Reliability estimates of 0.83 and 0.87 were obtained for the MSFQ and EIDCBQ respectively. Pearson's r, R^2 (coefficient of determination) was used to answer the research questions and simple linear regressions was also used to test the null hypotheses at 0.05 levels of significance. The results of the analysed data revealed that there are high extent of correlation between provision of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public universities, that there are very high extent of relationship between utilisation and maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities. Based on the findings, it was recommended that there is need to always make university facilities available for lecturers at all times so as to enhance capacity buildings opportunities and effective instructional delivery in public universities in Nigeria.

Keywords: Capacity Buildings, School Facilities, Provision, Utilization

Introduction

Education is a major item in any national development. It is one of the greatest human investments that can ensure and sustain the quick development of the economic, political, social and human resources of a country. Nigeria like other developing nations in the world needs education for development. A number of policy statements have recognized and articulated the indispensability of education in national development. For example, the Federal Republic of Nigeria FRN (2013) stipulated that education is an instrument per excellence for national development. The National Policy on Education further made a clarion call that education shall

continue to be highly rated in the national development plans because education is the most important instrument of change. This education that is instrument of change for National development is categorized into the primary, secondary and tertiary. These three categories of education play different roles for the wholesome development of the individuals. For the purpose of this study, the focus is the facilities management for the enhancement of capacity building opportunities in university and effective instructional delivery.

Thus a university is an institution of higher education and research which grants academic degrees in various academic disciplines. The public universities are those universities established by either the Federal Government or State Government for the sole purpose of providing education for the service of humanity. These universities must possess the needed school facilities for capacity building enhancement which if well managed it should ensure effective service delivery. For the university system to be very functional and productive, its instructional delivery must be effective which must reflect on the product of the system for the enhancement of capacity building opportunities in public universities in South-East, Nigeria.

Capacity building can be defined straightforwardly as a process for strengthening the management and governance of an organization so that it can effectively achieve its objectives and fulfill its mission (Beesley & Shebby, 2010). Capacity building is an intervention that strengthens an organization's ability to fulfill its mission by promoting sound management, strong governance, and persistent rededication to achieving results. In the field of education, change usually involves developing four types of capacity: human, organizational, structural, and material (Milèn, 2001). Human capacity includes both the intellectual capacity (knowledge, skills) and the will (interest, patience, and persistence) to implement needed changes. Organization capacity involves interaction, collaboration, and communication among people within the organizations. Structural capacity exists independently of the people working within the organizations and includes elements like policies, procedures, and practices. Material capacity includes the fiscal resources, materials and equipment needed to meet public institution goals and implement change. The four types of capacity are interdependent, and growth in one area is dependent on growth in another (Beesley & Shebby, 2010). Consequently, while a particular capacity-building initiative might focus on one type of capacity; all four types of capacity must be "aligned and addressed" if the university is to meet its goals for change (Harsh, 2010).

Capacity building has been readily seen in the research literature as a means to educational reform (Edvantia Research Group, 2005; Fullan, 2007; Newmann, King, & Youngs, 2001). Fullan, (2007) view capacity as the ability of the education system to help all students meet more challenging standards and identify four areas where capacity can be enhanced to strengthen reform efforts: lecturers performance, resource availability, organization of work, and delivery of professional development services. Furthermore, they argue that while lecturers' capacity is an essential factor for educational change, other factors that collectively constitute university capacity like facilities are also critical to affect change in the classroom.

Capacity building can be seen as a change process targeted at aligning beliefs and new or refined practices with desired growth targets" within an organization (Harsh, 2010). To be effective, university capacity building requires deliberate and planned change. Some universities make the mistake of training staff in new skills without carrying out the necessary follow-up to make sure those skills are being utilized appropriately (Fixsen, Naoom, Blase, Friedman & Wallace, 2005).

One major index for measuring the successful enhancement of capacity building opportunities in the universities are the provision, utilization and maintenance of the facilities provision for the university. However, it has been observed that there are problems in the areas of provision, utilization and maintenance of school facilities which may pose some difficulties to the effective instructional delivery.

School facilities can be defined as those things that enable the teacher to do his/her work very well and help the learners to learn effectively. School facilities are made up of the school land and all the physical structures on it. They represent the totality of the school environment for the realization of the school objectives. Olutola (2011) classified school facilities to include classrooms, dormitories, libraries, laboratories, staffrooms, teacher quarters, examination halls, and administrative buildings. Ozidi (2011) provided a further list of educational equipment to include textbooks, stationary, laboratory chemicals and equipment and items of furniture. According to Ndu, Ocho and Okeke (Eds) (2007), school facilities represents the location, the school buildings and other material resources provided in the school for the purpose of enhancing teaching and learning processes. According to them, school facilities include the fixed structures and materials in the school such as the classroom buildings. To this extent, school facilities are designed to enhance capacity buildings and effective instructional delivery.

The importance attached to school facilities implies that not only should they be provided but that they should also be well managed. Provision, utilization and maintenance of school facilities is a function of school management. Management is an art as well as science of organizing, planning, directing and controlling activities to accomplish certain goals. Management is also an academic discipline, a social science whose objective is to study social organization and organizational leadership (Kwosah, 2014).

School facilities management is a systematic process of rationalizing the provision, use and maintenance of these facilities within an educational institution to ensure their optimal utilization and achievement of educational objectives both in the immediate and in the future; given the available resources. Management of school facilities may also involve how these facilities could be provided or made available; it also involves the utilisation, maintenance and other management components such as planning, coordination and controlling.

Provision of quality education through effective instructional delivery is enhanced by providing adequate school facilities. The provision of school facilities and its management in any higher institution of learning is of great importance. This is because effective and efficient running of the school system depends on the right procurement, usage and maintenance of available facilities. Supporting this, Lois (2013) asserts that our schools can only be what we want them to be if only proper steps are taken in the provision of all that will make teaching and learning effective and enhance effective instructional delivery.

Effective instructional delivery and learning may take place where facilities are not adequately provided. However, Egomo and Tah(2012) reported that there is a low relationship between the provision of school facilities such as I.C.T and effective instructional delivery in secondary schools. Bizimana and John (2014) indicated a positive and significant correlation between level of teaching and learning resource availability and level of teacher effective classroom management and content delivery. Provision of school facilities becomes the most important aspect of school facilities management. Enyi(2006) and Egomo and Tah (2012) revealed that the

instructional facilities provided by the schools are not always utilized to meet instructional delivery; hence low correlation could exist between utilization of school facilities and effective instructional delivery.

Utilization as an aspect of management component entails making use of available facilities for effective instructional delivery (Eya, 2015). Utilization of school facilities helps to enhance students' learning via instructional delivery. School facility utilization also entails efficient engagement of the best and most economical facility for the specific organizational process or purpose. Bennett (2014) stressed that utilization entails the use of set of skills, knowledge and experience by organizational workers to attain high satisfaction, achieve target; simply because of better planning and making more effective use of time.

By implication therefore, once facilities are put to use, they could enhance effective instructional delivery. Thus, based on this the present study was determined to find out whether utilisation and maintenance of school facilities correlate with effective instructional delivery for the enhancement of capacity buildings opportunities.

Maintenance of school facilities entails repair and servicing of component in order to restore the physical condition and sustain their working capacity. Maintenance of school facilities ensures that school facilities are kept near their original condition and state. It is worthy of note that poorly maintained facilities could lead to poor service delivery. For instance, if the toilets are broken down and students defecate indiscriminately, epidemics and other contagious diseases may occur to endanger not only the lives of the students, but also of the staff, the immediate neighbourhood and the nation at large (Oladipo & Oni, 2010). Thus, in accordance with the opinions of Ahmed (2008) who stated that when facilities are poorly maintained, they do not last longer and function effectively in achieving capacity buildings opportunities and instructional objectives.

Effective instructional delivery for enhancing capacity buildings opportunities in the universities may be influenced by factors which include management of school facilities. These school facilities, when managed effectively through provision, utilisation and maintenance, may be expected to aid capacity buildings opportunities in the universities which could ensure that sound graduates are produced from our university education system. The quality of Nigerian graduates that are produced from Nigerian public universities have been labelled as half -baked thus making them to lose their relevance in the labour market. This has questioned the functionality and productivity of our university education. Efforts have been made to solve the problem of poor quality graduates in Nigeria, but the problem still persists. Literature evidences tend to suggest that lack of effective instructional delivery which depends on the facilities that are provision, utilization and maintenance of the school facilities. Therefore, the problem of this study put in a question form is: to what extent does management (provision, utilization and maintenance) of facilities serve as correlates of effective instructional delivery for enhancing capacity buildings opportunities in universities in South-East, Nigeria?

Research Questions

The following research questions guided the study:

i. To what extent does provision of facilities correlate with effective instructional delivery for the enhancement of capacity buildings opportunities in public universities?

ii. To what extent does utilization of facilities correlate with effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities?
iii. To what extent does maintenance of facilities correlate with effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities?

Hypotheses

The following null hypotheses were tested at 0.05 levels of significance.
H_{O1}: There is no significant relationship between the extent of Provision of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities.
H_{O2}: There is no significant relationship between the extent of utilizations of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities.
H_{O3}: There is no significant relationship between the extent of maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in Public Universities.

Methodology

A correlational research design was adopted for the study**.** This is because it seeks to establish a relation/association/correlation between two or more variables that do not readily lend themselves to experimental manipulation. The target population was made up of 2,576 academic staff from ten public universities in the South East Zone. The five states are Abia state, Anambra state, Ebonyi state, Enugu state and Imo state that constituted the southeast Nigeria. Based on Krejcie and Morgan's (1971) formular for determining sample size from a known/finite population, a sample of 334 from six public universities were used. Three stages sampling techniques were used for the study. The first stage of sampling involved the use of simple random sampling in selecting three states out of five states that constitute south east using balloting technique which involved balloting without replacement. The states that were randomly selected include Abia, Anambra and Ebonyi state. The second stage involved the selection of all the six universities in the states that were used for the study.

There are six public universities in the selected three states taking into consideration of the university and cadre of staff. The third stage involved the selection of universities staff based on their cadre (assistant lecturer, lecturer II, lecturer I and senior lecturer of the selected universities). Finally, proportionate stratified simple random sampling technique was used in selection of the academic staff in each of the university using a sampling fraction of 0.1297. The instrument used for data collection was Management of School Facilities Questionnaire' (MSFQ) and 'Effective Instructional Delivery Capacity Building Questionnaire' (EIDCBQ). MSFQ and EIDCBQ had five (5) clusters with 10 items each. These instruments were measured on a 4 (five) point Likert-type scale such as: Very High Extent (VHE) - 5, High Extent (HE) - 4, No Extent (NE) – 3 Low Extent (LE) - 2 and Very Low Extent (VLE) - 1.

It was validated by three experts, one from Measurement and Evaluation; two from the Department of Educational Management; all from Michael Okpara University of Agriculture, Umudike. The test-retest method of reliability of the instrument was used and the data obtained

were analysed using Pearson Product Moment Correlation and yielded a correlation coefficient of 0.83 and 0.87 for MSFQ and EIDCBQ respectively.

A total of 334 copies of questionnaire were administered to the respondents. The questionnaire was distributed by hand with the help of four research assistants and all the copies of the instruments were returned. The data obtained from this study were analyzed using Pearson's r, R^2 (coefficient of determination) to answer the research questions and simple linear regressions was also used to test the null hypotheses at 0.05 levels of significance.

Results

Research Question 1

To what extent does provision of facilities correlate with effective instructional delivery for the enhancement of capacity buildings opportunities in public universities?

Table 1: Simple Linear Regression Analysis of Extent of Correlation between Provision of Facilities and Effective Instructional Delivery for the enhancement of capacity buildings opportunities in public universities

Variables	R	R^2	% of Contribution	Decisions
Provision of Facilities				
	0.770[a]	.544	54.4	HPR
Effective Instructional Delivery				

HPR = High and Positive Relationship
N = 334

Results in Table 1 show that there are high extent of correlation between provision of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public universities as indicated by the correlation coefficient r (0.770).
A corresponding hypothesis formulated to further address the research question is:

Hypothesis 1

There is no significant relationship between the extent of Provision of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities.

Table 2: Simple Linear Regression Analysis for the Extent of Provision of Facilities and Effective Instructional Delivery for the Enhancement of Capacity Buildings Opportunities in Public Universities

Variables	Term	Sum of Square	Df	Mean Square	F-cal	p-value	Decisions
Provision of Facilities	Regression	6202.022	**1**	3101.011			
					63.492	0.013	S
	Residual	16215.212	332	48.841			
	Total	**22417.234**	**333**				

R = 0.770, R^2 = 0.544 (value of the consistent), S = significant at P≤ 0.05
Predictor = Effective Instructional Delivery for enhancing capacity buildings opportunities

The result of analysis in Table 2 shows the F- calculated of 48.841. Since the alpha value of 0.05 is greater than p-value value of 0.01 at 0.05 level of significance with (1, 332) degree of freedom. Thus, null hypothesis which states that there is no significant relationship between the extent of Provision of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities is thereby rejected. This means that the provision of facilities significantly predict effective instructional delivery for enhancing capacity buildings opportunities in public Universities.

Research Question 2

To what extent does utilization of facilities correlate with effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities?

Table 3: Simple Linear Regression Analysis of Extent of Correlation between Utilisation of Facilities and Effective Instructional Delivery in Public Universities

Variables	R	R^2	% of Contribution	Decisions
Utilisation of facilities				
	0.962[a]	0.925	92.5	SVR
Effective Instructional Delivery				

SVR = Strong/Very High Relationship
N = 334

Results in Table 3 show that there are very high extent of relationship between utilisation of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities as indicated by correlation coefficient r (0.962) and coefficient of determination (R2) 0.925 (92.5%) of the variance observed.

A corresponding hypothesis formulated to further address the research question is:

Hypothesis 2

There is no significant relationship between the extent of utilizations of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities.

Table 4: Simple Linear Regression Analysis for the Extent of Relationship between utilization of Facilitiesand Effective Instructional Delivery for Enhancing Capacity Buildings Opportunities in Public Universities

Variables	Term	Sum of Square	Df	Mean Square	F-cal	p-value	Decisions
Utilisation of facilities	Regression	3788,491	1	3788.491			
					68.005	**0.01**	**S**
	Residual	18495.388	332	55.709			
	Total	**44902.590**	**333**				

$R = 0.962$, $R^2 = 0.925$ (value of the consistent), S = significant at $P \leq 0.05$
Predictor = Effective Instructional Delivery

The result of analysis in Table 4 shows the F- calculated value of 68.005. Since the alpha value of 0.05 is greater than p-value value of 0.01 at 0.05 level of significance with (1, 332) degree of freedom. Thus, null hypothesis which states that there is no significant relationship between the extent of utilizations of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities is thereby rejected. It implies that there was a significant relationship between the extent of utilizations of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities.

Research Question 3
To what extent does maintenance of facilities correlate with effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities?

Table 5: Simple Linear Regression Analysis of Extent of Relationship between Maintenance of facilities and effective instructional delivery in Public Universities

Variables	R	R^2	% of Contribution	Decisions
Maintenance of Facilities				
	0.805^a	0.776	77.6	HR
Effective Instructional Delivery				

HR = High Relationship
N = 334

Results in Table 5 show that there are high extent of relationship between maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in Universities as indicated by correlation coefficient r (0.805^a) and coefficient of determination (R^2) 0.776 (77.6%) of the variance observed.

A corresponding hypothesis formulated to further address the research question is:

Hypothesis 3

There is no significant relationship between the extent of maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in Public Universities.

Table 6: Simple Linear Regression Analysis for the Extent of Maintenance of Facilities and Effective Instructional Delivery in Public Universities

Variables	Term	Sum of Square	Df	Mean Square	F-cal	p-value	Decisions
Maintenance of Facilities	Regression	1080.499	**1**	1080.499			
					42.105	0.023	S
	Residual	8519.784	332	25.662			
	Total	**9600.283**	**333**				

$R = 0.805^a$, $R^2 = 0.776$ (value of the consistent), S = significant at $P \leq 0.05$

Predictor = Effective Instructional Delivery

The result of analysis in Table 6 shows the F- calculated of 42.105. Since the alpha value of 0.05 is greater than p-value value of 0.02 at 0.05 level of significance with (1, 332) degree of freedom. Thus, the null hypothesis which states that there is no significant relationship between the extent of maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in Public Universities is thereby rejected. This means that there was a significant relationship between the extent of maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in Public Universities.

Discussion of Findings

The findings of the study showed that that there are high extent of correlation between provision of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public universities as indicated by the correlation coefficient r (0.770). The correspondents' hypothesis revealed that the provision of facilities significantly predict effective instructional delivery for enhancing capacity buildings opportunities in public Universities. This finding is in agreement with the findings of Bizimana and John (2014) which indicated a positive and significant correlation between level of teaching and learning resource provided and level of teacher effective classroom management and content delivery in the study located at Huye district. Thus, when teachers have facilities at their disposal it will enhance their effective instructional delivery in public universities.

The findings of the study indicated that there are very high extent of relationship between utilisation of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities as indicated by correlation coefficient r (0.962) and coefficient of determination (R2) 0.925 (92.5%) of the variance observed. The correspondents' hypothesis affirmed that there was a significant relationship between the extent of utilizations of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities. The finding is in agreement with the findings of the findings

of Egomo and Tah(2012) revealed that that the utilization of I.C.T resources have significant influence on the effective service delivery; as such the ability of the teachers to utilise resources will have a significant effect on the content or service delivery.

The findings revealed that there are high extent of relationship between maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in Universities as indicated by correlation coefficient r (0.805^a) and coefficient of determination (R^2) 0.776 (77.6%) of the variance observed. The correspondents' hypothesis affirmed that there was a significant relationship between the extent of maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in Public Universities. The finding is in accordance with the opinions of Ahmed (2008) who stated that when facilities are poorly maintained, they do not last longer and do not function effectively in achieving instructional objectives.

Conclusion

The study investigated the management of facilities as correlate of effective instructional delivery for enhancing capacity buildings opportunities in public universities in South-East, Nigeria. Based on the findings of the study, it was concludes that that there are high extent of correlation between provision of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public universities, that there are very high extent of relationship between utilisation of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in public Universities and that there are high extent of relationship between maintenance of facilities and effective instructional delivery for the enhancement of capacity buildings opportunities in Universities. It is not enough to provide facilities but the utilization and maintenance of the facilities matter if instructional delivery is to be effective and produce the desired educational goals by enhancing capacity buildings opportunities in public universities.

Recommendations

Based on the findings and their educational implications, the following recommendations were made:

1. There is need to always make university facilities available for lecturers at all times so as to enhance capacity buildings opportunities and effective instructional delivery in public universities in Nigeria.
2. Since the use of facilities in instructional delivery cuts across every field of education or instruction, special course should be designated as management of university facilities at undergraduate levels. This will give lecturers the capacity buildings opportunities to possess the requisite skills for managing university facilities.
3. Since there are so many cases of inadequate lack of maintenance of facilities in Universities for instruction delivery, government and University administrators should endeavour to provide adequate maintenance of facilities in Universities to enhance capacity buildings opportunities and effective instructional delivery.

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TECHNIQUES AND PROCEDURES FOR DIAGNOSING AND ASSESSING LEANERS WITH MATHEMATICS DISABILITIES IN NIGERIA SECONDARY SCHOOLS

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Abstract

The paper attempted to clarify the concepts of learning disabilities as well as Mathematics learning disabilities. Mathematics Learning Disability which is technically referred to as dyscalculia has been viewed from the perspectives of difficulties in understanding numbers, manipulating numbers learning Mathematics facts, recognising shapes, lines, Mathematics symbols, following simple verbal directions, understanding spatial relationships and a host of other related symptoms. Besides, overview of diagnosis and that of assessment in special education as a whole and learning disabilities in particular has been clearly highlighted. Some of the techniques that are used in conducting diagnosis and assessment of Mathematics learning disabilities among learners have been extensively elaborated. The procedures that are employed in assessing Mathematics disorder have also been explicitly described. Major signs and symptoms which learners with dyscalculia tend to exhibit have equally been clearly expressed. Conclusion was made by drawing the attention of teachers both regular and special as well as other stakeholders in special education to apply appropriate procedures for assessing learners with Mathematics Learning Disabilities. This is with a view to guard against making wrong diagnosis.

Key Words: Diagnosis, Assessment, Mathematics Learning Disabilities, Techniques and Procedures.

Introduction

In a school setting, particularly primary and post-primary levels, it is not uncommon to come across learners who are experiencing difficulties in learning to read, write or even do simple calculations. These unusual difficulties in learning are otherwise referred to as learning disability. Thus, learning disability could be regarded as an inability to perform at a level commensurate with evident potentials even though there is no apparent and visible handicapping condition. In fact, it is a problem that affects the smooth progression of teaching-learning processes. Assessment of the actual learning difficulty being faced by a particular learner or group of learners is paramount. This is based on the fact that it is only by doing so that appropriate remediation and intervention could be provided. However, since the said learning disabilities are exhibited in specific areas, it is essential to conduct the assessment along that line so that the actual learning problem could be diagnosed and assessed.

Mathematics disability which is technically referred to as dyscalculia is one of the specific areas that need to be assessed among school children. This is with a view to providing appropriate intervention particularly at the early stage so that learners could be able to obtain higher grades in Mathematics in both WAEC and NECO examinations for securing admission into institutions of higher learning. The contribution of Mathematics as a language and bedrock of science and technology has given the subject the prominence it enjoys among school subjects. In fact, no meaningful level of science and technological advancement could be achieved without good

Mathematics background (Acharya, 2017; Dowker et al., 2012; Leon, 2013; Yadav, 2019), who observed that often the mathematics difficulties that emerged in elementary schools continue throughout secondary school years. Certainly, in view of the importance of mathematics therefore, there is the need to conduct an assessment in order to provide appropriate intervention to the learners that have been diagnosed and identified (Kaufmann & von Aster, 2012).

Overview of Learning Disabilities

Learning disability has various definitions. One of the definitions was the one incorporated into the Individual with Disabilities Education Act (IDEA) (2004). This definition goes as follows: The term Specific Learning Disability means those children who have a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do Mathematical calculations. Furthermore, Cavioni et al. (2017) opined that students with Learning Disability (LD) are identified through difficulties in academic work, mainly reading, writing, and/or calculation difficulties.

The term includes such conditions as perceptual handicaps, brain injury, minimal Brain dysfunction, dyslexia and developmental aphasia. The term does not include a learning problem which is primarily the result of visual, 1hearing or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural or economic disadvantages (p. 9).
However, as posited by Garuba (2001), learning disability refers to a condition of significant discrepancy between intellectual capacity and actual educational achievement manifested by unusual difficulties in reading, writing, spelling and mathematical abilities. Therefore, a learning disability is present when there is a marked difference between what the child is supposed to be doing and what he or she is actually doing in terms of performance. In fact, individuals with learning disabilities tend to take longer time to learn a particular concept compared to their non-learning disabled counterparts. All these may be attributed to deficits in one or more of the basic processes of learning which may include listening, speaking and reasoning as well as discrimination abilities among others. Fundamentally, all these specific learning disabilities are independent of any handicapping condition.

Mathematics Learning Disability (Dyscalculia)

Dyscalculia is defined as a specific learning disability affecting the normal acquisition of arithmetic skills in spite of normal intelligence emotional stability, scholastic opportunity and motivation (Shalev, 2008). Butterworth (2010) postulated that Dyscalculia or Mathematics disability is a specific learning disability involving innate difficulty in learning or comprehending arithmetic. Three to seven percent of all children, adolescents, and adults, observed Haberstroh and Schulte-Körne (2019), suffer from dyscalculia. It is akin to dyslexia and includes difficulty in understanding numbers, learning how to manipulate numbers, learning Mathematics facts and a number of other related symptoms. Persons with dyscalculia have marked persistent problems in applying the basic methods of arithmetic and in knowledge of math facts (Haberstroh & Schulte-Körne, 2019). They went on to assert that these problems are not merely due to low intelligence or inadequate schooling. These problems are often associated with impaired basic processing of numbers and quantities. Dyscalculia or math learning disorder has been referred to as current academic skills in mathematics well below the average range in culturally and linguistically appropriate tests, and significantly interfering with academic achievement, occupational performance, or activities of daily living (Soares & Patel, 2015).

Children with dyscalculia may be faced with difficulty in learning to count, estimating numbers and quantities, telling time, doing mental math and learning math concepts.

Regardless of the way and manner in which dyscalculia is defined, the fact remains that it is a condition that affects the ability to acquire Mathematical skills. These include basic skills of addition, subtraction, multiplication and division. Besides, students with Mathematics disabilities have problems that stem from their difficulties retrieving information from long-term memory; brain damage can also contribute to dyscalculia (Haberstroh & Schulte-Körne, 2019). Price and Ansari (2013) stated that this disorder causes difficulties in accessing arithmetic information during learning and development. Children suffering from this disorder have trouble remembering basic number facts.

It should be noted that Mathematics disability sometimes called dyscalculia can cause such difficulties as learning Mathematical concepts (such as quantity, place value and time), difficulty memorizing Mathematical facts, difficulty organizing numbers and understanding how problems are organized. Individuals with dyscalculia are often referred to as having poor number sense (Mahmud, et al., 2020; Ysseldyke & Algozzine, 2009).

Assessment in Special Education

Assessment in special education involves taking a decision on the nature of the intervention programme to be set for the child while using the information collected from the diagnosis and identification processes. It is a process used to determine a child's specific learning strengths and needs, so as to ascertain whether or not the child is eligible for special education services. Assessment can be formal by using standardized test such as; Stanford-Binet Test, Wechsler Intelligence or informal which is implemented by using teacher-made tests which include observations, using rating scales, check-list, teacher nomination inventory among others. Actually, assessment serves a lot of purposes in special education. These include; determining the extent of special needs condition and the period of its onset, evaluating the degree of the programme, understanding the strengths and weaknesses of the child, determining the nature of remedial or intervention programmes to be designed for the child, providing special education workers and other professionals with comprehensive information on the child and also providing statistics for planning in special education (Garuba, 2001). Thus, assessment helps in preventing children from been labelled as having a particular special needs condition or the other. Besides, following the conduct of assessment, necessary and appropriate special educational provision and or intervention programme could be made available for the affected child.

Diagnosis of Mathematics Learning Disabilities (Dyscalculia)

In general, as observed Mahmud et al. (2020), dyscalculia is a learning disability in mathematics. People suffering from dyscalculia often have trouble relating to the numbers that will represent the quantity. They may also have trouble recognizing patterns, which is an essential part of understanding how to perform basic mathematical operations (Peters et al., 2018). Besides, Jacobson (2020) has identified some signs that needed to be observed in children related to dyscalculia. A child with dyscalculia may: have difficulties in recognizing and remembering numbers; be slow in learning counting and derail easily when counting; show inability to associate number symbol with the number value; have difficulty identifying patterns and placing things in order; and always need concrete or visual aids to help them calculate. In addition, as

math becomes a significant part of learning in the school, children with dyscalculia are likely to: have difficulties in understanding and remembering basic mathematical operations such as addition, subtraction, multiplication and division; cannot be able to understand the principles behind word problems and other non-numerical mathematical calculations; have difficulties to estimate time; struggle with math homework, tasks and exams; and it is becoming hard for them to understand learning involving visual-spatial representations like charts and graphs (Jacobson, 2020).

Smith (2007) suggested that in diagnosing specific deficits in Mathematics, it is very essential to evaluate factors related to successful performance in arithmetic computation and reasoning. The author further maintained that there is a need to equally combine the formal and informal methods of assessing arithmetic achievement. Such tests can be administered either in group situations or individually. In order to obtain a more accurate estimate of an individual, Smith preferred individual administration of the instruments because in that way, the examiner obtains greater control over the students' behaviour.

It is relevant to emphasize that Smith saw the danger of frequent use of formal instruments which may lead the child to become test-wise and consequently instruments lose their meaning. Informal individual checks of achievement are therefore preferred since they seem to provide general indications of specific weaknesses such as difficulties in carrying over values, borrowing, grouping, combinations or counting problems (Smith, 2007). However, in conducting formal assessment, strong emphasis has been placed on the need to note some factors which could affect the outcome of the assessment. These include clarity of the trait being assessed, appropriateness of data collection instruments and procedures, technical adequacy of the procedures, representative sampling procedures as well as individual and multidisciplinary procedures (Ozoji et al., 2016)**.**

How the Diagnosis is Carried Out

It should be noted that, the diagnosis is carried out by using checklist which contains the characteristics of learners with dyscalculia. In this respect a criteria should be set and which has to be met before one is diagnosed as having mathematics disability. For instance, for a child to be considered as experiencing mathematics problem, he/she must be noted to possess at least seventy percent of the listed characteristics. Besides, students' workbook should be screened in order to watch for the manifestation of errors in mathematics. This is what is known as error analysis. Also, mathematics achievement test suitable to the class level of the student should also be administered. This is with a view to examine students' responses to the test items. A student who failed the test is an indication that he/she manifests evidence of mathematics disability.

Diagnosis in Special Education

In education, diagnosis refers to techniques by which a trained diagnostician discovers and evaluates the academic strengths and weaknesses of an individual. He gathers pertinent data about the child and on the basis of the analysis and interpretation of data suggests developmental or instructional modifications that might be essential. Ozoji et al. (2016) highlighted that diagnosis in special education is simply the process of determining the actual cause or nature of a special needs condition by evaluating the signs and symptoms in the individual. It may involve

an analysis of the cause or nature of the condition in an individual. More elaborately, within the context of special needs education, diagnosis has earlier been viewed as the process of determining the cause or causes of disability with a view to knowing how an impending or attendant handicapping condition can be ameliorated to enable a person to optimally benefit from special settings and approaches. Diagnosis has also been referred to as the blue print for instruction and that it takes over from screening and assessment. It involves the identification and description of the problem, the discovery of its cause and projection of remediation required (Ozoji et al 2016). In fact, diagnosis and assessment in special education practice are often linked together. But the diagnosis is usually done before assessment is conducted. Thus, diagnosis is usually regarded in practice as part of the on-going process of assessment.

Techniques for Assessing Mathematics Disability

In assessing mathematics learning disability, multifaceted techniques are used which cover both the formal and informal. The following are some of the techniques and the way by which they can be used.

1. Psychological Techniques

This technique entails using psychological tests which are mostly standardized. An independent diagnosis of dyscalculia is often too difficult to ascertain, nevertheless, there are some methods that educational psychologists utilize to detect dyscalculia in a child. These include child's attainment of age-appropriate Mathematical skills. This can be implemented easily in schools using existing student data and resources. Through administration of a standardized assessment designed to measure the child's attainment of age-appropriate Mathematical skills, Shalev (2008) maintained that educators may be able to form a diagnosis of dyscalculia if at least one of the following two circumstances is revealed. Also, the existence of inconsistency between the intellectual capability of the child and the results of the assessment or a significant disparity, usually of at least two year levels between the child's ordinal year of study and his or her arithmetic aptitude (Geary, 2004). However, scholar like Butterworth (2010) is of the view that both circumstances are too inadequate to assess accurately the specific extent to which a child may have dyscalculia. Therefore, some students might be incorrectly ascertained as dyscalculic when they might actually be affected by other more predominant learning difficulties.

2. Direct Observation Technique

Direct observation of dyscalculic tendencies is very fundamental. In other words, another technique for detecting the signs of dyscalculia involves the direct observation of a majority of certain behaviours such as underdeveloped strategies for problem-solving (Geary, 2004), computational errors caused by a poor working memory span (Siegel & Ryan, 1989), deficiencies in the long-term recall of arithmetic facts (Jordan & Montani, 1997), slow rate of processing of basic Mathematical skills (Geary 2004), as well as high rates of errors, particularly those that appear careless. What is worthy of noting is that any student who is struggling with Mathematics would routinely demonstrate one or more of these performance indicators. Therefore, just the assessment of a child's attainment of age-appropriate Mathematical skills, this method may incorrectly assess non-dyscalculic children as dyscalculic. Hence, a comprehensive and unambiguous approach is needed to correctly identify dyscalculia in students so that instructional designs can be modified to accommodate them in the classroom. Thus, other methods of diagnosing dyscalculia such as the criteria highlighted in the Diagnostic and Statistical Manual of Mental Disorders are preferred.

3. Diagnostic and Statistical Manual of Mental Disorders Technique

It is pertinent to note that the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (2000) published by the American Psychiatric Association, explicitly stated that the following criteria is used in diagnosing dyscalculia or Mathematic learning disability.

(a) Mathematical ability as measured by individually administered standardized tests is substantially below that expected given the person's chronological age, measured intelligence and age-appropriate education.

(b) The disturbance in criterion A significantly interferes with academic achievement or activities of daily living that require Mathematical ability.

(c) If a sensory deficit is present, the difficulties in Mathematical ability are in excess of those usually associated to it.

Besides, signs and symptoms which children with dyscalculia tend to exhibit are also used in diagnosing dyscalculia (Mcnamara, 2007; Smith, 2007). Such symptoms include difficulty in understanding concepts of place value, word problem, fraction, recognizing patterns when adding, subtracting, multiplying or dividing, carrying, borrowing and difficulty sequencing information or events (Smith, 2007). However, for children's manifestation of certain characteristics to be regarded as symptoms of dyscalculia, such symptoms must be evaluated in the light of the person's age, educational experience or exposure to Mathematics learning. Also, person's Mathematical ability must fall substantially below the level of others with similar characteristics.

4. Error-Analysis Technique

In this technique teachers can screen the students' exercise books in order to watch for the manifestation of mathematics errors. Series of errors may be committed by students and if persistently appear on almost all pages, it could help in assessing mathematics disability. Mcnamara (2007) emphasised that many teachers use error analysis to identify mathematics error patterns and remediate them. Ashlock (1998) described this process. According to Cohen and Spencer (2003), some of the common errors that students may display include number reversals, misconception of number facts, error of irresponsiveness, random errors which are difficult to understand, confusing of units and tenth in carrying and writing, forgetting to carry numbers when faced with computational task, defective algorithm among others. Therefore, the prevalence of these and similar related errors constitute the assessment and diagnosis of mathematics disorder among learners.

5. Curriculum-Based Assessment Technique

In this context assessment is linked to the material that is being taught in the mathematics curriculum. This may involve administering a teacher-made test in order to measure students' progress on the mathematics curriculum taking into consideration the target objective. Accordingly, curriculum-based assessment consists of four steps which include; identification of target skills which may involve computation like addition of two-digits number, determining the objectives to be met such as in a period of two weeks, pupils should be able to write correctly the answers to 10 two-digits subtraction problem in three minutes, developing test items to sample each skill such as assembling a collection of three-digits number problems and developing

criteria to measure achievement like the pupils should be able to write answers without errors to ten randomly selected two-digit mathematics problem in a period of five minutes (Smith, 2007)

Procedures for Assessing Mathematics Disability

Kirk and Gallagher (2006) dwelt extensively on the procedures to be followed in diagnosing Mathematics difficulties as follows:

(i) Determining the child's attitude towards Mathematics.

(ii) Determining the achievement level in Mathematics by using either achievement test or using practical approach. For instance, the teacher can ask the child to perform series of Mathematics tasks and then compare the performance with his potential for learning Mathematics.

(iii) Determining the discrepancy that exists between potential and achievement. This also helps in finding out whether the child is performing at potential, below or above potential.

(iv) Determining errors in Mathematic computation and reasoning and the procedures followed in committing the errors. This can be done through giving assignments teacher observation, workbooks, oral questioning, use of checklists, teacher-made tests among other things. Examples of the errors relating to sequencing, those relating to selecting information, structure of the numeration as well as random errors with no detectible patterns.

(v) Identification of contributory factors is the next step to be followed equally in diagnosing arithmetic difficulties. Such factors include poorly developed pre-requisite skills for Mathematics, visual and hearing impairments, deficits in visio-spatial skills which occur in a situation when the child reverses numerals (41 reverses to 14, 71 reverses to 17) or even rotates numerals (6 as 9) and poor sensory-integration which refers to the inability on the part of the child to use hearing and vision to touch and manipulate objects. Poor concepts formation could also be a contributory factor to difficulties in Mathematics.

(vi) The last step is to develop a hypothesis about the nature of the problem. This can be done by analyzing the child's level of arithmetic achievement and potentials, the kind of Mathematical errors made and the status of the child's developmental abilities in order to determine the nature of the problem Kirk & Gallagher, 2006).

Conclusion

In conclusion, it could be rightly posited that mathematics learning disability is a common problem that is being experienced by learners in school settings. Given the usefulness of mathematics as a school subject particularly in the present era of information communication technology, it is very crucial for teachers to conduct an assessment and diagnosis in order to determine the learners that are actually affected by the problem. Certainly, such assessment should be conducted by following the laid down techniques and procedures. These include; Psychological techniques, direct observation, Diagnostic and Statistical Manual of Mental Disorders Technique, Error-analysis Technique as well as adopting the useful procedures that have been vividly described. It is only by so doing that proper diagnosis can be made on the one hand, and on the other hand, appropriate intervention could be organized, planned and implemented.

Recommendations

In the light of the foregone discussion, the writers deemed fit to posit the following recommendations.

1. Teachers, particularly at primary and post-primary institutions should become aware of the existence of learners with learning disabilities.
2. Early diagnosis of learning disabilities is paramount and should be taken seriously by teachers.
3. There is the need for teachers to take note of the fact that each specific learning disability calls for different ways of diagnosis and assessment.
4. Parents should be informed on the condition of their children with learning disabilities and that they should be involved in watching the manifestation of learning disability.
5. Teachers should focus their attention on providing remediation to the learners so diagnosed.
6. There is also the need for teachers to apply appropriate diagnostic techniques while conducting the diagnosis.

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EDUCATIONAL NEED AND ITS IMPACT ON CHILDREN WITH SPEECH AND LANGUAGE DISORDER IN SPECIAL SCHOOLS IN NASARAWA STATE, NIGERIA.

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Abstract
The study investigates the educational needs and its impact on children with speech and language disorder in special schools in Nasarawa state. Specifically, the study was designed to measure the educational needs and its impact on children with speech and language disorder in special

schools in Nasarawa state, Nigeria. Descriptive survey research design was used in the study. Two research questions were raised and answered. The sample for the study was 180 special pupils' selected from special primary schools in Lafia. Simple random sampling technique was used to select the respondents. The instrument used for data collection was structured questionnaire on educational need of children with speech and language disorder (ECSLD). The data obtained was analysed using mean and standard deviation. The results showed that the educational needs of children with language disorder in Special schools in Lafia, Nasarawa State include: labelling and naming of objects, actions and people, Singing, reciting of poems and rhyming with children and speaking to the child in a language the parent is very fluent. The study recommended that state government should deploy more skilled special education instructors in order to help address the issue of speech and language disorders in children. The study concluded that speech disorders among children can be addressed through reading books or singing songs with a loud voice, **t**alking to children using modeling appropriate sentences for children to imitate sentences.

Keywords: Assessment, Language disorder, Speech disorder, Children with Education needs

Introduction

Societies all over the world have used education as an instrument for the achievement of national interests and objectives. Education is an instrument par excellence for effecting national development. It fosters the worth and development of the individual, and for the general development of the society (Federal Republic of Nigeria (FRN, 2013).The goals of education in Nigeria include the development of appropriate skills, mental, physical, and social abilities and competence to empower the individual to live in and contribute positively to the society. It is particularly important for children who are often excluded. Taking part at school is an important way the children with special needs to correct misconceptions that prevent their inclusion. In principle, all children have the same right to education. In practice, children with special needs are disproportionately denied certain rights.

Special needs is an umbrella term for a wide array of diagnoses, from those that resolve quickly to those that will be a challenge for life and those that are relatively mild to those that are profound. Children with special needs may have developmental delays, medical conditions, psychiatric conditions, and/or congenital conditions. This is also referred to as special educational needs (SEN) or special educational needs and disabilities (SEND).These special needs require accommodations so children can reach their potential (Palomba & Banta, 1999).

A special needs child is a youth who has been firm to require special attention and specific necessities that other children do not (Amedeker,2005). More often, the state may declare this status for the purpose of offering benefits and assistance for the child's well-being and growth. Special needs pertaining to a child includes a wide variety of conditions including physical ailments, learning disabilities, and terminal illness or psychological (Amedeker, 2005). Some special needs children are able to go to public schools that offer a wide range of educational and emotional support programs, such as occupational therapy and one-on-one teacher aides in the classroom.

Special needs in children can range from autism, Asperger syndrome, cerebral palsy, Down syndrome, dyslexia, dyscalculia, dyspraxia, dysgraphia, blindness, deafness, ADHD, and cystic

fibrosis (Nott, 2009). Nott added that they can also include cleft lips and missing limbs. The types of special needs vary in severity, and the child with a special need is classified as being a severe case when the child IQ is between 20 and 35. This child typically needs assistance in school, and have different services provided for them to succeed in a different setting (Nott, 2009).
Children with special needs, like all children, education is not only vital in itself but also instrumental for participating in employment and other areas of social activity. In some cultures, attending school is part of becoming a complete person. Social relations can change the status of people with educational need (Nott, 2009). Children who are not disabled, contact with children with a disability in an inclusive setting can, over the longer term, increase familiarity and reduce prejudice.

Assessment involves the use of empirical data from students learning to refine programs and improve teaching and learning processes. Assessment is the process of gathering, analysing and interpreting information from multiple and diverse sources in order to develop a deep understanding of what students know, understand, and can do with their knowledge as a result of their educational experiences; the process culminates when assessment results are used to improve subsequent learning. Assessment is the systematic basis for making inferences about the learning and development of students or a programmed instruction. It is the process of defining, selecting, designing, collecting, analysing, interpreting, and using information to increase students' learning and development. On the other hand assessment is the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development (Palomba& Banta, 1999).

Assessments are often designed quite differently to ensure their fitness for different purposes. Put in another away, result that are fit to be used for one particular (intended) purpose may not be fit for use for another, regardless of whether they are actually used for that additional purpose. We must therefore carefully assess the educational need of children with language and speech disorder in order to add quality to their learning and education.

Speech involves inputs from various sensory modalities like the auditory, visual, tactile and kinaesthetic systems. It is the coordination of four processes; Respiration or breathing, Phonation- production of sound, resonance- vibratory response to air filled cavity and articulation- use of lips teeth, tongue, hard palate and soft palates.

An individual's anatomical structures physiological and neuromuscular functioning, cognitive and psychosocial maturity and adjustment affect voice, speech and language. In essence, speech is how we say sounds and words. Speech includes or issues in articulation, voicing and fluency. Students with speech problems or disorder's may: not say sounds clearly, have a hoarse or raspy voice, repeat sounds or pause when speaking. Speech and language deficiencies seem to have retards the individual's fluency in sound production and other associative learning task and education. Speech disorders such as; stuttering, impaired articulation or language/voice impairments that have an adverse effect on a child's educational performance (Abitha, 2018). As a result, students with speech disorders may perform at a poor or insufficient academic level, struggle with reading, struggle to understanding and expressing language, misunderstand social cues, avoid attending school, show poor judgment, or have difficulty with tests. Speech and language services can help children become effective communicators, problem solvers, and decision makers, allowing them to benefit from a more successful and satisfying educational experience as well as improved peer relationships.

Language refers to the words individual use and how they use them to share ideas and get what they want. Individual can have trouble in language. Having trouble understanding what others say is a receptive language disorder. Having problems sharing thoughts, ideas, and feelings is an expressive language disorder. It is possible to have both a receptive and an expressive language problem (Dockrell& Lindsay, 2001; Wilson et al., 2016).

Language disorders can affect the way children talk, understand or process information. Learning takes place in forms of communications. To succeed in any school environment it's paramount that a student should effortlessly be able to communicate with friends and adults in a school environment. Language disorders include a child's inability to hold meaningful conversations, understand others, problem solve, read and comprehend, and express thoughts through spoken.
Strand and Lindsay (2009), states that children are born ready to learn a language but, they need to learn the language or languages of their environment use. Strand and Lindsay (2009), explained that learning a language takes time, and children vary in understanding and mastering of languages. Language provides the foundation for the development of reading and writing. Spoken and written language have a reciprocal relationship – each builds on the other to result in general language and literacy competence, starting early and continuing through childhood into adulthood.

Ayo (2013) stated that when Nigerian parents are concerned with their child's communication abilities; they often seek assistance from doctors and teachers because there are few speech language pathologists practicing in Nigeria. This study will however review some practical suggestions and steps suggested for meeting the educational needs of children with speech and language disorders. Talking to children using short sentences during daily activities and modeling appropriate sentences for their child to imitate can help correct their speech and language disorders
Bernthal, Bankson and Flipsen, (2013) explained that expanding on what the child says can be used in correcting speech and language deficiencies in children. For example, when the child says "rice", parents can ask "Do you want rice?" and the child answered, "I want rice". Expansion, recasting, parallel talk, and child-directed speech strategies were effective at increasing the number of single words.

Owens (2005) explained that singing, reciting poems and rhyming with children is an effective practical step for improving speech and language disorders**.** There are numerous books and nursery rhymes that have repetitive words and phrase that offer opportunities to learn sounds and words. Brandtet(2015) posits that music is essential to learning oral language. Playing outdoor games, puzzles, card game and other games that require turn taking with the children. He continues by the use of games such as Ayo and Checkers and Hand clapping games are great ways to facilitate speech and language at home.

Aremu, Afolabi, Alabi, and Elemunkan (2001) however observed that speaking to children in a language the parents are fluent will go a long way to help the child develop good vocabulary. Thus, providing a good language model allows children to incorporate the appropriate structures learned from their primary language of exposure in to their secondary language. Educational needs must be assessed from the perspective of what is best for the individual (Farrell, 2017). Some disability advocates have made the case that it should be a matter of individual choice whether to mainstream or segregate settings to meet the needs of the child. It is against this

background that the present study is design to assess the educational need of children with speech and language disorder in special schools in Nasarawa state.

Statement of the Problem

Language is the ingredient of all communication. It affects how individuals express themselves, decode, process, analyze, and understand information. This is precisely why a strong command of language is essential to a child's classroom and academic success. Language disorders can affect the way children talk, understand or process information. Learning takes place in forms of communications. To succeed in any school environment it's paramount that a student should effortlessly be able to communicate with friends and adults in a school environment. It's important that parents and educators have a thorough understanding of the types of communication disorders that commonly affect children and their ability to succeed in school. Children with language and speech disorders manifest it in different ways; expressive language Disorders, receptive language disorder, speech disorders and cognitive-communication disorders. with language problems often need extra help and special instruction. Speech-language pathologists can work directly with children and their parents, caregivers, and teachers. Having a language or speech delay or disorder can qualify a child for early intervention external icon and special education services. Schools can do their own testing for language or speech disorders to see if a child needs intervention. An evaluation by a healthcare professional is needed if there are other concerns about the child's hearing, behavior, or emotions. Parents, healthcare providers, and the school can work together to find the right referrals and treatment. The thrust of this study is therefore to assess the Educational need of Children with Speech and Language Disorder in Special Schools in Nasarawa State.

Purpose of the Study

The purpose of this study was to assess the educational needs of children with speech and language disorder in Special Schools in Nasarawa State. Specific objectives include to;

1. determine the impact of the educational need of children with speech disorder in special schools in Lafia, Nasarawa state.
2. ascertain the impact of the educational need of children with language disorder in special schools in Lafia, Nasarawa state.

Research Questions

1. What is the impact of the educational needs of children with speech disorder in special school in Lafia, Nasarawa state?
2. What is the impact of the educational needs of children with language disorder in special school in Lafia, Nasarawa state?

Methodology

The study adopted descriptive survey research design. The method permits researchers to sample opinions from a large population which will serve as the representative of the entire group. Descriptive Survey research is a data collection technique in which information is gathered from

respondents (Otuka & Bamidele, 2004). The design was considered suitable because it assisted in collecting data to assess the educational need of children with speech and language disorder in special schools.

The pupils' population as at 2020/2021 academic session stands at 1250 in the study area. The population comprised all the pupils' in special school in Lafia, Nasarawa State. The sample for this study was 180 pupils selected from Special five public schools in Lafia. The sampled pupils were selected using simple random sampling technique.

The instrument used for data collection was a structured questionnaire named, Educational needs of Children with Speech and Language Disorder (ECSLD). The questionnaire contained two sections. Section one contains 5 items; 1-5 addressed the educational need of children with speech disorder. While section two also has five items (6-10) which address the educational need of children with language disorder. Pathologists' records were used to check children speech and land language deficiencies. Mean and standard deviation were used in answering the research questions raised All analysis was done using SPSS application. For mean values below 3.00, such were considered low while those above 3.00 were considered high.

Results

Research Questions

Research Question 1: What is the impact of educational need of children with speech disorder in Special School in Lafia, Nasarawa State?

Table 1: Mean and Standard Deviation Scores Showing the Impact of educational need on children with speech disorder in special school in Lafia, Nasarawa state

S/N	Items	SA	A	D	SD	Mean	Std. Dev	Remarks
1	Reading books or singing songs with a loud has impact on children with speech disorder	100	50	20	10	3.33	1.02	Agree
2	Talking to children using short sentences during daily activities has impact on children with speech disorders.	86	52	34	8	3.20	0.92	Agree

3	Modeling appropriate sentences for children to imitate has impact on their speech disorders	70	55	40	15	3.00	0.78	Agree
4	Reduction of distractions in the classroom has impact on speech disorders	44	33	60	43	2.43	0.58	Disagree
5	The use of sound discrimination exercises impacts speech disorders in learners.	36	31	59	54	2.27	0.51	Disagree
	Cluster Mean					**2.85**	**0.76**	

Table 1 shows the views of respondents on the educational need of children and its impact on speech disorders in special school in Lafia, Nasarawa state. Responses from the questionnaire items which were scored using mean and standard deviation showed that Items 1 to 5 yielded mean values of 3.33, 3.20, 3.00, 2.43 and 2.27 while standard deviation values of 1.02, 0.92, 0.78, 0.58 and 0.51 were obtained respectively. The average mean obtained was 2.85. However, items 1 to 3 indicated high mean values of 3.33, 3.20 and 3.00. These values are equal or above the acceptance mean value of 3.00. Hence, the educational need of children has a high impact on speech disorders in special school in Lafia, Nasarawa state include: reading books or singing songs with a loud voice, talking to children using modeling appropriate sentences for children to imitate sentences. Owens (2005) posited that singing, reciting poems and rhyming with children is an effective practical step and has impact in improving speech disorders.

Research Question 2: What is the impact of the educational needs of children with language disorder in special school in Lafia, Nasarawa state?

Table 2: Mean and Standard Deviation Scores Showing educational need of children and its impact on language disorder in special school in Lafia, Nasarawa state

S/N	Items	SA	A	D	SD	Mean	StdDev	Remarks
6	Labelling and naming objects, actions and people has impact on language disorders.	77	80	20	2	3.28	0.98	Agree
7	Modelling children behaviours impacts on their language behaviours	42	30	28	80	2.18	0.46	Disagree
8	Giving them directions and instructions differently has no impact on their language disorders.	30	44	75	31	2.41	0.57	Disagree
9	Singing, reciting poems and rhyming with children impacts on language disorders	102	50	20	8	3.37	1.18	Agree
10	Speaking to child in a language the parent is very fluent has impact on language disorders.	105	45	30	5	3.44	1.04	Agree
	Cluster Mean					**2.94**	**0.85**	

Table 2 shows the views of respondents on the educational need of children with language disorder in special school in Lafia, Nasarawa state. Responses from the questionnaire items which were scored using mean and standard deviation showed that Items 6 to 10 yielded mean

values of 3.28, 2.18, 2.41, 3.37 and 3.44 while standard deviation values of 0.98, 0.46, 0.57, 1.18 and 1.04 were obtained respectively. The average mean obtained was 2.94. However, items 6, 9 and 10 indicated high mean values of 3.28, 3.37 and 3.44. These values are above the acceptance mean value of 3.00. Hence, the educational need of children has a high impact on language disorder in special school in Lafia, Nasarawa state**.** Aremu, Afolabi, Alabi, and Elemunkan (2001) stated that speaking to children in a language the parents are fluent will go a long way to helping the child develop good vocabulary b**y** providing a good language model that allows children to incorporate the appropriate structures learned from their primary language of exposure into their secondary language.

Discussion

Findings on research question one indicated educational needs of children has a high impact on speech disorders in special primary schools in Lafia, Nasarawa State. This is in line with the views of Owens (2005) posited that **s**inging, reciting poems and rhyming with children is an effective practical step and has impact in improving speech disorders. Ayo (2013) stated that talking to children using short sentences during daily activities, modeling appropriate sentences for their child to and talking to children using shortsentences during daily activities and modeling appropriate sentences for their child to imitate can help correct their speech and language disorders.

Findings on research question two indicated that an educational need of children has a high impact. Language disorders in special primary schools in Lafia, Nasarawa State. Owens (2005) posited that singing, reciting poems and rhyming with children is an effective practical step for improving speech and language disorders. There are numerous books and nursery rhymes that have repetitive words and phrase that offer opportunities to learn sounds and words. Aremu, Afolabi, Alabi, and Elemunkan (2001) stated that speaking to children in a language the parents are fluent will go a long way to helping the child develop good vocabulary by providing a good language model that allows children to incorporate the appropriate structures learned from their primary language of exposure into their secondary language.

Conclusion

Based on the findings of this study, the following conclusions were made:

1. Speech disorders in children can be addressed through reading books or singing songs with a loud voice, talking to children using modelling appropriate sentences for children to imitate sentences.
2. Language disorders in children can be addressed through labelling and naming objects, actions and people, Singing, reciting poems and rhyming with children and speaking to child in a language the parent is very fluent.

Recommendations

Based on the above findings, the following recommendations were made:

1. Teachers in nursery and primary schools should be adequately trained on the strategies for helping children with speech and language disorders to improve their communication skills within and outside the classroom.
2. Parents and guardians should get themselves educated or sensitized on how they can correct speech and language disorders in their children and wards.

3. More skilled special education instructors should be deployed to primary schools by the government in order to help address the issue of speech and language disorders in children. These instructors should be equipped with necessary materials that will enhance their efforts.

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MANANAGEMENT OF EDUCATION FOR SUSTAINABLE DEVELOPMENT UNDER CLIMATE CHANGE IN NIGERIA

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Abstract

The issue of national development is a continuous discuss globally as every nation strives to reasonably upgrade in every facet of life. In the process of achieving this, there seems to be a danger signal which if ignored would jeopardize the future generation. On this note the United Nations, came up with Agenda 2030 with emphasis on achieving a sustainable development. Nevertheless, the change in the climate which has considerable side effects is posing a threat to this. This paper focused on how education could manage the effect of climate change. It discussed the causes and effects of climate change and buttressed on the social implications of climate change which include and not limited to displacement of persons and families, unplanned teenage pregnancies, increase in crime rate and disruption of academic activities. It addressed the education for sustainable development in the era of climate change with emphasis on teacher and teacher education programme, provision of entrepreneurial education, environmental education

and sex education. The following suggestions but not limited to these were made: non politicization of national development, proper attention to the curriculum of teacher education programmes and teachers welfare, sex education to be taught and co-curricular activities relating to such should be encouraged; attention to be given to teaching of environmental and entrepreneurial education.

Keywords: Education, sustainable development, climate change.

Introduction

The survival and sustenance of human, animal and plant life require that a certain range of atmospheric temperature be maintained. Forces within the nature ordinarily play themselves out for the safety of lives. Nature has the mechanism that restores equilibrium when there is any form of distortion or imbalance. The vegetation as well plays a veritable role in the process especially in the stability of atmospheric gaseous interplay, with particular reference to Carbon dioxide (Co_2) and Oxygen (O_2). Obasi (2010) citing O'Hara, Sweeny & Wilby (2005) stated that when the average condition of a system is relatively constant overtime, an equilibrium exists which reflects the ability of the system to cope with the forces either internal or external seeking to disturb it.

Invariably in the recent times a limitation has been placed on the capacity of the atmosphere for self-regulation and internal adjustment. The feedback mechanism according to Obasi (2010) have been grossly weakened.

This is due to excessive change in climate which is caused by volcanic eruption, ocean current, variation in solar output of the sun, and human activities (rise in fossil fuel, deforestation, industrial activities and land use) among others. This change on the other hand leads to flooding especially at the coastal area thereby given rise to 'forced' migration; outbreak of diseases due to air pollution; scarcity of food resulting from flood and draught; destruction of infrastructural facilities like buildings and roads due to flood, erosion etc. However terrible the effect of climate change might be, education at various times has served as a veritable tool through which societal problems are addressed. It consists of all efforts made by society to accomplish set objectives which are considered to be desirable in terms of the individual as well as the societal needs. In addition, the excerpts from the National policy on education showed that education is a basic instrument for development and a strategic tool for liberating people from ignorance, poverty, disease and ensure progress. Hence in managing the effects of climate change, it is important that a conscientious effort be made to invest on teachers and teacher education, increase people's awareness on environmental issues through environmental education, and empowering and equipping individuals on relevant skills and attitudes capable of transforming them to be productive and resourceful so as to cope with the unemployment caused by climate change

Climate and Climate Change

Climate is the long-term average pattern of weather in a place. Whereas weather is referred to as the degree of temperature (Sunny, moist, warm) of a place at a particular time. Ekpoh (2002) defines climate as a composite of day to day weather conditions and atmospheric elements of a place for a long period of time. While weather is observed hourly, daily or seasonally, climate stretches over a long period of time of more than twenty years.

Climate change is the regular variation of weather in a region over a period of time. United Nations frame work convention (1994) defined climate change as, a change of climate that is

attributed directly or indirectly to human activity that alters the composition of the global atmosphere in addition to natural climate variability observed over comparable time period. ADB (2002) defined it as the concentration of greenhouse gases (GHGs) and aerosols in the environment.

Sustainable Development

Sustainability as defined by Lynn and Eda (2014) is the practice of maintaining processes of productivity indefinitely, whether natural or man-made, by replacing resources used with resources of equal or greater value without degrading or endangering natural biotic systems. In other words, it is the ability to pursue and maintain the quality and quantity of a resource over a long period of time without depreciating or breaking up. Development on the other hand is seen as a phenomenon in which individual and society interact with their physical, biological and inter-human environment, transforming them for their own betterment and in the process, lessons that are learnt are passed on to future generation to enable them improve their capacity to make further valuable changes (Ofuebe, 1992). Development emphasizes on positive change that can lead to an improved lifestyle and total wellbeing of the people.

Sustainable development therefore is that aspect of development where resource use and activities aimed at satisfying the needs of the people do not endanger the future users. It is maintaining a balance between the human need to improve lifestyles and preservation of natural resources and ecosystem in which future generations depend. Similarly, Kendason (2012) affirms that sustainable development demands that as we make effort to better the society today, we should also think about how the next generation will benefit from our activities of today. Igbo (2017) citing Pearce, Makanda and Barbier (1989) opined that sustainable development involves designing a social and economic system which ensures that rise in real income is sustained, educational standards increase, the health of a nation improves and the generality of life is advanced. The above definition covers the economic, social and health institutions which can be regarded as the pillars of every society. Hence the increase and improvement of these and ability to sustain them over a long period of time in addition to the maintenance of the natural reasons equals to sustainable development. This is similar to the view of Sachs (2015) that sustainable development recommends a holistic framework, in which society aims at economic, social and environmental goals.

Causes of Climate Change

There are two major causes of climate change – Natural and Human activities. According to Norgaard (2010), the earth's climate is influenced and changed through natural causes like volcanic eruption, ocean current, earth's orbital change, solar variations, plate tectonics as well as gradual and sudden shifts.

i. Volcanic Eruptions: A process of conveying materials from the crust and centre of the earth to the atmosphere. Such occurrence throws out large volume of Sulphur dioxide (So_2), water vapours, and ash into the atmosphere. Climate patterns due to this are influenced for years which cause increased planetary reflectivity causing atmospheric cooling (by partially blocking the transmission of solar radiation to the earth's surface) for a few years.
ii. Ocean Current: This moves vast amount of heat across the planet. Wind push horizontally against the sea surface and drive ocean current patterns. Osaat (2010) citing Norgaard (2010) stated that interactions between the oceans and atmosphere can produce

phenomenon such as El Nino which occurs every two to six years. Changes in ocean circulation may affect the climate through the movement of Co_2 into or out of the atmosphere.

iii. Variation in Solar Output of the Sun: The sun is the main energy source of the earth. Small changes in the sun's energy output over a long period of time can lead to climate changes. Scientific studies show that solar variations have performed a role in past climate change, for instance between 1650 and 1850, it was said to have triggered the little ice age when Greenland was largely cut off by ice (Norgaard, 2010).

iv. Earth Orbital Variations: The earth makes one full orbit around the sun each year. It is tilted an angle of 23.5 degrees to the perpendicular plane of its orbit path. Changes in the tilt of the earth can bring about seasonal distribution of sunlight reaching the earth and its distribution across the globe. More tilt means warmer summers and colder winters, less tilt means cooler summers and milder winters.

v. Human Activities: According to IPCC (2007), the scientific consciousness on climate change is that human activities are the likely cause of the rapid increase in global average temperatures in the past several decades. IPCC further reported that the earth's average temperature has risen by 0.74 degrees from 1905 – 2005 and this shall continue to rise due to the emission of the greenhouse gases.

Going further on the greenhouse effect, it is the trapping of heat on the earth's surface by some gases that allow heat from the sun to pass through them to get to the earth's surface but prevent the heat on the earth's surface from escaping from the earth. This invariably results to heating up the earth's global temperature (global warming) GHGs include Carbon dioxide (Co_2), Methane (CH_4), Nitrous oxide (N_2O) and water vapour.

The human activities that contribute to the GHGs in the atmosphere are as follows:

(a) Rise in the use of fossil fuel which release large amount of Co_2 and CH_4 in the atmosphere.

(b) Cement Manufacture, which is considered as the largest cause of man-made Co_2 emission (Oyegun, 2007).

(c) Deforestation which increases the amount of Co_2 in the atmosphere. Cutting down rainforest faster than they can be replaced has a devastating effect on the carbon emission cycle producing an extra 17% of GHGs (Norgaard, 2010). He further stated that rainforest absorb almost 20% of man-made Co_2 yearly.

(d) Industrial activities. This leads to increase in combustion of fossil fuels which invariably, it has the capacity of high emissions of Co_2. Unachukwu (2010) citing the government of United Kingdom, stated that 4% of the Co_2 emissions to the atmosphere come from this source.

(e) Land use. The varied usage of land poses threat as it alters the greenhouse effect. For instance, blasting of mountains to make way for construction works, and quarrying of sand and stones affect climbs that control temperature (Unachukwu, 2010). Also, livestock farming and the crop farming (through the use of fertilizer) have significant effect on climate as they increase the amount of methane and nitrous oxide respectively in the atmosphere.

Effects of Climate Change

The effects of climate change are numerous and are devastating. It affects both the rich and poor, developed, developing and undeveloped nations. It is summed up as follows:

1. Effect on the coastal areas especially due to flooding and rising sea levels caused by melting of glacier ice due to rise in global temperature. This has resulted in forced migration and in most causes such people become refugees and as such lack basic necessities of life thereby shooting up the poverty level.
2. Outbreak of diseases due to air pollution. Pollution resulting from industrial activities, burning of firewood and crop residues and fumes from generators and automobiles are dangerous to health. People generally are prone to develop some respiratory tract infection, like, bronchitis, tuberculosis, asthma and other cardiovascular diseases.
3. Scarcity of food and hunger resulting from flooding and draught have devastating effecting on agricultural activities.
4. Desertification and loss of biodiversity which is as a result of increase in land use which are attributed partly due to flooding and drought hence the quest for more lands. In Nigeria for instance, many forest reserves have been lost due to activities of man like fetching firewood, farming, and bush burning by farmers and hunters (Unachukwu, 2010).
5. Destruction of infrastructural facilities – buildings (residential / offices), roads, ports due to flood, hurricane, tornadoes etc introduce hardship, set back and aggravates crime.

The Social Implication

Climate change as said earlier on, has posed a serious threat to man. It affects every facet of societal life such as economic, politics, health, psychological and social. This section will consider the social effects of climate change, which include:

1. Displacement of persons and families. Climate change – induced events like floods, drought, landslide and hurricane, trigger refugee-like settlement. When any of the above occurred people are forced to relocate. Such movements are not really planned, it is rather impromptu. The impromptu nature of the movement made it unbearable.

2. The challenge of where to reside, whom to reside with and what to do (economic activity) in the new location complicate the trauma. In such a situation family life is seriously disrupted. The togetherness, discipline, privacy and so on enjoyed in a family are lost. Often times family members do not reside in one place, they shared themselves to families of friends and relations. Whereas some found a home in an uncompleted building, others may find themselves in a concentrated camp popularly referred to as

internally displaced persons camps (IDPs) raised by the government or non-governmental organizations.

Life in the IDP camp for instance is not an easy one. The IDPs are usually overcrowded and do not respect the minimum standards in terms of shelter and sanitation. This has resulted to critical health conditions such as cholera, dysentery, tuberculosis and other infectious diseases.

The want of shelter has made privacy impossible as people are looking for any available space to lay their heads. This has given room for sexual abuse of different kinds and indiscriminate sexual activities, which sometimes result into unplanned pregnancy especially among the youth. The unplanned pregnancy has so much negative effects on the victim, family and society at large. On the part of the victim, it is traumatic, the thought of how to manage oneself is scary bearing in mind the emotional, health, economic and social implications.

The first shocking experience most times is denial by the very person responsible for the pregnancy. Oftentimes it is really confusing as to who is responsible. The thought of dropping out of school which turns out to be a reality is terrible. The victim spends not less than a year at home making her to lose one session if not more.

Another effect on the victim is loss of self-confidence. This is basically because of public stigma, the stress of pregnancy as well as the newly acquired shape (Okoye 2007). Hence, she gets withdrawn lose interest on things she used to enjoy and a feeling of sense of worthlessness. This sense of worthlessness would be heightened in a social system where having children outside wedlock is a taboo and such a person is treated as "a used material" or "second class citizen" and many have difficulty in getting married. She can only be left with a choice of marrying older men who are either married, widowed or irresponsible. According to Okoye (2007) teenage motherhood makes men look at a woman as "fairly used" or "scrab". It limits the chances of getting what one wants in life in terms of Mr. Right. He noted that no responsible man wants unnecessary commitment or take responsibility of children he does not know their genetic make-up. Some victims may not come out of the ripples of unplanned pregnancy – this may lead to not fulfilling life's vision as the only option left may be to get married to anyone who is interested in her. She doesn't marry out of love and affection rather of necessity, especially those who come from low income earning family. On the other hand, she can decide to live as a single mother. In the face of economic hardship may decide to use her body for money leading to more pregnancies. Of course, the situation grows worse as she has more mouths to feed. This, as a matter of fact, affect the children adversely which may turn out to be societal nuisance if care is not taken.

The implication on the society is enormous. Firstly, it will increase dependency ratio and the countries income level. Secondly, it is a loss to a nation since the chances of the victims to engage in meaningful employment is minimal hence denying the nation the supposed accrued revenue. Thirdly it can lead to untimely death as some victims may enter into depression which may give room for abortion, suicide, or substance abuse. Citing the work of Saha (2009) teenage moms are more prone to committing suicides, as the humiliations and embarrassment and the lack of social support can trigger depression. Such death is a great loss on the nation's labour force.

(2) Unemployment: Unemployment is a terrible societal phenomenon. Climate change contributes so much to the rate of unemployment in Nigeria. For instance, erosion reduces soil fertility making good production difficult; Rising sea level affect-fishing; while deforestation and desertification affect animal husbandry and family.

(3) Migration: This can be in form of rural – urban migration or riverrine – upland migration. Rural-urban migration are induced by climate change can come in-form of

desertification. A situation where deserts have taken most of the land making farming (crop and livestock) which seems to be the major occupation of most rural dwellers very difficult. Similarly, those living in the coastal area due to sporadic rainfall and oil exploration find it difficult to do their fishing business and the only option left with so many of them is to relocate to the city. Migration has its challenges which include overcrowding, underemployment / unemployment, hunger, increase in crime rate etc.

(4) Increase in crime Rate: This is another social implication of climate change. As earlier pointed out that climate triggers shortage of food supply due to unemployment caused by flooding, pollution, desertification etc. Hunger has the capability of breeding stealing, robbery, violence, kidnapping and other notorious crime. The saying that no society can thrive in the face of chaos, crisis and confusion engineered by crime would play out. This eventually leads to loss of lives and properties.

(5) Disruption of educational activities. Floods and heavy rainfalls often affect some school buildings thereby crippling academic activities. There are situations where classroom buildings are partly or completely damaged. Students are forced to learn under the tress or converge into the available classroom blocks; increasing the student teacher ratio. By and large, no meaningful learning would take place in such an environment. As pointed out by Edward (2010) that for education in school to be effective, the environment needs to be conducive to learning and that learning environment requires a climate that is supportive, challenging and conducive to risk-taking. Sometimes the damages can be irreparable leading to relocation of schools. Consequently, it will affect school attendance, if the distance is far as many children would not be able to cope. This of course will trigger stress in the students and even teachers, hence the readiness and enthusiasm to learn and teach would be very low as such lesson is inhibited.

Education for sustainable development under climate change

The inability to properly handle the various changes that arose due to climate change would definitely have ripples effect on the development of individuals in particular and society at large. The task before this paper is to ascertain the contributions of education under climate change for sustainable development. As pointed out earlier, sustainable development lays emphasis on improving the quality of life of the people in particular and the nation at large such that the future development would not be compromised. Onyido (2016 citing Chaulkey, Haigh & Higgitt, 2009) argued that to achieve sustainable development, the world needs people 'who live well in their places to make the world both habitable and humane and that the main challenge for education is to help learners make their minds fit for life on earth'. This exactly was captured by the UNESCO website as cited by Onyido (2016) "Sustainable development cannot be achieved by technological solutions, political regulation or financial instrument alone. We need to change the way people **think and act**, this requires quality education and learning for sustainable development at all levels and in all social contexts".

One of the end results of education is to enable the recipients to acquire not just skills but the right attitudes and values needed for positive transformation of the society. Education of the citizens is part and parcel of of the process of nation building, hence education ought not to be treated as as an autonomous process of knowledge dissemination but as an integral part of nation building project. To this effect, Unachukwu (2010) stated that education for development

prepares people of all walks of life to plan for, cope with and find solution to issues that threaten the sustainability of the planet and encourages change in behavior that will create a more sustainable future. The most important aspect of education for sustainable development is such that requires working with learners to help them understand, appreciate and consider the meaning of global citizenship and environmental stewardship in relation to their personal lives, disciplines and professions. It should also focus on developing a future outlook, learning to think about the consequences of their action and how systems and societies can be adapted to ensure a sustainable future (Ugodulunwa, 2016). For an effective response to the challenges of climate change, education has the following input to make:

The teacher factor: A plethora of literature articulates clearly how teachers are the driving force behind education system at any given time, especially in the equipment of the requisite manpower for accelerating national development. The teacher is strategic in every facet of societal life. He is an influencer, morale booster, knowledge enhancer and an epitome of a great nation. The central role of teachers in this regard requires adequate education programmes that encourage and promote sustainable development. By implication, any positive contribution made in a teacher is an unquantifiable investment that will yield a great dividend. Ugodulunwa, (2016) opined that this can be done by reorienting the existing teacher education programmes to address sustainable development concerns in the curriculum, practices and policies (where they do not exist) to ensure that they fit into the environmental, social, and economic goals of the nation. Also helping teachers move from the traditional role of dispensing knowledge to facilitating learning, assessing lower order learning outcomes to assessing higher-level outcomes where students engage in critical and creative thinking thereby encouraging active participation in teaching learning process. He added that essential pedagogical principles of education for sustainability such as engaging learners to actively think of the future, engage in participatory learning and building partnership into teacher education curriculum and making teacher education policy more sensitive to global long-term perspective. The quality of teaching and effectiveness of the teacher primarily depend on the level of teacher's exposure. To effectively combat the issue of climate change, the teacher education programmes must experience an intentional and intensive overhauling making it have both local, national and global relevance.

In addition to the above, teachers' motivation is of utmost important if they must effectively discharge their duties. The strategies of motivating the teachers should be properly addressed. Such strategies include: payment and remuneration of teachers, sponsorship to workshops and conferences, conducive and safe classroom/ learning environment etc. Moreover, it is not out of place to say that teachers are equally affected by climate change, for example, some may have lost their properties, loved ones or displaced due to flood, erosion, earthquake or any other disaster. This causes emotional trauma and instability which makes it very difficult for one to concentrate. Therefore, a considerable welfare package should be made available to enable those affected to continue their work without much ado.

Sex education: As pointed out earlier, the rate of unplanned pregnancy is high with its attended problems. The educational programs (program of studies and activities) should contain basic information on sex education. Pupils/students need to acquire the knowledge, skills, values and attitudes capable of helping them develop healthy and responsible relationships and make informed and responsible decisions Sex education help to reduce the rate of teenage pregnancy and rate at which sexually transmitted diseases are spread. The onus therefore lies on the

education institution especially through the services of guidance and counseling unit to make this information available.

Entrepreneurial education: This is the education designed to equip and empower recipients of relevant skills and attitudes capable of transforming them to productive, effective and self-reliant persons. This will help to combat the challenge of unemployment created by climate change. It is seen as the engine fueling innovation, employment generation and economic growth (Onah & Eguzo, 2016 citing Schwab, 2009). Emphasising on this, Nwafor (2010.249) citing Alberti, Sciascia and Poli summarized the impact of entrepreneur education as "leaving students better prepared to cope with dynamic change by equipping them with a set of skills that will help them identify viable business ideas…helping students to foster an entrepreneurial culture, providing students with practical approach to entrepreneurship and helping create strong school policies. According to Anyaogu (2016) the study of entrepreneurial education for sustainable development will provide students opportunities to gain economic independence with the acquired knowledge, skill and new orientation as well as develop managerial competence to be able to take calculated risk as the need arises. This help to cushion the effect of climate change. It is therefore imperative to assert that climate change can be properly managed by engaging in a well-planned entrepreneurship programme which provide practical work experience and skills targeted at solving problems.

Environmental education: It is an education designed to enhance the awareness of people on environmental issues at all levels of education. It exposes and equip students on how to explore and conserve the environment naturally, enhance their understanding in such a way that may be able to cater for the future events. It is making conscientious effort to establish the relationship between man and his environment, helping him acquire the necessary knowledge, skills, attitude and expertise needed to harness the potentials and cope with and combat with challenges. Environmental education helps one to develop love and concern for the environment, avoiding engaging in activities that will be detriment to living. The goal of environmental education is to enable the individuals appreciate the values of natural resources, their benefits if judiciously managed, and consequences if neglected, mismanaged and overused; inculcate in people skills to tackle environmental problems; and create a future where people are aware of their civic responsibilities and are willing to passionately play their roles. This type of education is a lifelong exercise and can be carried out within and outside the classroom, for both young and old.

Conclusion

From the foregoing, it is obvious that climate change is a serious threat to achieving sustainable development due to the adverse effect it has on the land, water and air. While it might be difficult to control the natural occurrences such as volcanic eruptions, ocean current, variation in solar output of the sun, and earth orbital variations among others, human activities resulting to a release of large amount of carbon dioxide, nitrous oxide and methane in the atmosphere, can be tamed to an extent.

This is greatly important considering the social and economic implications of climate change which include displacement of persons and families leading to overcrowding, increase in crime rate, outbreak of diseases and even death; unemployment; disruption of academic activities and

migration. However, this condition can be managed by providing education for sustainable development which lays emphasis on investment on teacher and teacher education, acquisition of skills, practical work experience, development of creative thinking and problem-solving technique, attitudes and values capable of making the individual responsible, productive and resourceful; solving societal needs, and promoting development.

Recommendations

In view of the salient issues raised in this paper, the researcher wishes to recommend as follows:

1. Government at various levels should desist from politicizing and paying lips service to the matters of national development, training and welfare of teachers should not be treated lightly.
2. The programme of teacher education at all levels should be reviewed so as to address the contemporary issues of national and global concern.
3. There should be a paradigm shift on how environmental education is delivered. Teachers should ensure that there is relationship between what happens in the class and what is obtainable in the society.
4. Sex education should be given attention and special programs should be organized from time to time as part of co-curricular activities in school.
5. Environmental education should be given attention, both by the teachers, Non-governmental agencies and government.

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IMPACT OF GEOMETER'S SKETCHPAD ON PERFORMANCE AND INTEREST IN GEOMETRY AMONG SENIOR SECONDARY SCHOOLS STUDENTS IN KATSINA STATE, NIGERIA

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Abstract

The study investigated the Impact of Geometer's Sketchpad on Performance and Interest in Geometry among senior secondary school Students in Katsina State. Two objectives guided the study, two research questions and hypotheses were formulated to guide the study. The study used a pre-test and post-test quasi-experimental design. The study randomly sampled 124 students in two schools out of a population of 10,810 SS II mathematics students' from eleven senior secondary schools in Katsina metropolis. The two schools were randomly placed as experimental and control groups. Two validated 20 multiple-choice items and 20 four-point Likert item instruments, namely Geometric Performance Test (GPT) and Geometry Students Interest Questionnaire (GSIQ) with reliability coefficients of 0.74 and 0.70 respectively was used for data collection. The data collected were analysed to answer the research questions while the hypotheses were tested using Mann Whitney U-test and t-test independent sample at 0.05 level of significance using SPSS. The study findings revealed that students' taught using GSP performed significantly higher and demonstrated positive interest on the concepts of geometry than those in the control group. The researcher recommends the use of GSP in teaching and learning geometry among secondary schools in Katsina State, Nigeria.

Key words: Geometer's Sketchpad, Students' performance and Interest

Introduction

The role of science and technology in the lives of individuals for the development of mankind and the society in general is very crucial. Scientific literacy which is the gateway to achieve scientific and technological advancement and economic survival is achievable through science education. Akpan (2010) states that nations at the forefront of modern development are those that have invested enormous resources over considerable time in the establishment and nurturing of a stable, well supported, science and technology education.

Mathematics is a compulsory subject that cuts across every other field. According to Ayinla (2011), mathematics is the pillar of all knowledge showing its relevance to all disciplines. The role of mathematics in any society cannot be over-emphasized due to its importance in national growth and development. National Policy on Education FRN (2013) submitted that mathematics is one of the core subjects offered by all students at both junior and senior secondary schools. Adegun and Adegun (2013) emphasize the need to make mathematics a compulsory subject at both primary and secondary school levels if scientists, technologist and engineers are to be produced in our universities; hence, they argue that teaching and learning of mathematics should be taken very seriously.

Geometry is perceived difficult area in Mathematics and requires a problem-based approach in its teaching and learning as it entails different geometrical problem scenarios that compel learners to explore different problem- solving approaches (National Centre for Mathematic Studies 2011). In a bid to make the teaching and learning of geometry real, computer software programs are the viable platform by which problem-based skills are developed in learners through interactions with computers to construct knowledge. A primary skill taught in geometry

classes has long been compass and straightedge construction; in geometry, it's been function plotting. Paper-and-pencil work will always have an important place in math classrooms, but it has two major drawbacks: It's time-consuming (or sloppy), and the finished products are static. It's easy to see how a computer program like The Geometer's Sketchpad can solve the time problem: Commands such as Angle Bisector and Reflect instantly perform tasks that would take a much longer time with pencil and paper, allowing you to construct and explore many more and much more complex figures in a given amount of time.

Geometer's sketchpad (GSP) is a dynamic geometry software program which enables teachers and students to construct and transform geometric objects or components of objects, by dragging different objects across a computer screen. GSP provides immediate feedback, motivates students to think mathematically, and engages students (Ruthven, 2008). According to Noraini (2013), GSP provides a flexibly structured mathematics laboratory that supports the investigation and exploration of concepts at a representational level, linking the concrete to the abstract. The students' difficulties are especially compounded when the topic is geometry which many students find too abstract and difficult to comprehend or relate to real life situations. According to Stacey (2017), the use of GSP with exploratory technique in the teaching and learning of Mathematics enhances the understanding of geometry. The lack of understanding in learning geometry often discourages students, which invariably might leads to poor achievement in geometry.

Statement of the Problem

In Katsina State, the persistent poor academic performance, low retention of the learning concepts, as well as emotional aspect of learners (interest) in Mathematics has been a major concern to stakeholders. Learners lack visualization and spatial skills which can only be developed by the use of a combination of cognitive, affective, and psychomotor skills. Students inability to accurately observe objects, measure, relate, manipulate, draw, and even re-arrange objects form reasons for poor academic performance in geometry (Eze, 2011).
WAEC Chief Examiners' Reports (2015-2019) indicates in spite of the seeming improvement of candidates' achievement in mathematics, findings shows that their level of achievement in geometry is still very poor, in comparison with other areas of the subject. Could this be because little regard is given to how well the students understand geometrical concepts? because of the nature and mathematics (Geometry) concepts is been taught abstractly, could this lead to students' lack of interest as the methods seems to lack students involvement by engaging them to relates the concepts to the real life situations? This leaves the doubt about the effectiveness of instructional tools and strategies popularly used by the teachers in teaching and learning mathematics (Geometry). Also, mathematics teachers consider the cognitive aspect of learners and neglect affective (interest), as such teachers constantly use conventional (traditional) approaches in teaching which ignores improvisation of modern instructional tools such as Dynamic Geometric Software DGS (cabri, GSP, Geogebra, Mathlab e.t.c.). Therefore, this study was designed to explore the impact of Geometers' Sketchpad on performance, interest, and retention in geometry among senior secondary school students in Katsina State.

Objective of the Study

The objectives of the study are to:

1. Determine the impact of Geometer's sketchpad on the performance of senior secondary school students on geometry in Katsina state.

2. Investigate the impact of Geometer's Sketchpad on the interest of senior secondary school students in Katsina state.

Research Questions

The study attempted to answer the following research questions:

1. What is the difference in the mean performance scores of senior secondary school students taught geometry using Geometer's Sketchpad and those taught without it?
2. What is the difference in mean interest scores of students exposed to Geometer's Sketchpad and those taught geometry without it in senior secondary schools of Katsina state?

Research Hypotheses

The following null hypotheses were tested at 0.05 levels of significance.

H_{01}: There is no significant difference in the mean performance scores of senior secondary school students taught geometry using Geometer's Sketchpad and those taught without it.

H_{02}: There is no significant difference in the mean interest score of students exposed to Geometer's Sketchpad and those taught geometry without it.

Methodology

The study employed a quasi-experimental design involving pre-test and post-test. This design is appropriate because it provides an estimate of the relationship between the independent variable (Geometer's Sketchpad) and dependent variables (students' performance, interest, and retention). Nekan and Agwagah, (2010). However, the study used two groups: The experimental group (EG) was exposed to treatment (X_1) using guided discovery with the use of Geometer's Sketchpad, while the control group (CG) was taught without using Geometer's Sketchpad (X_0). The two groups were taught geometrical concepts for six weeks. Post-test (O_2) was administered after treatment to determine the impact of the use of Geometer's Sketchpad on students' performance and interest.

The study covered ten thousand eight hundred and ten (10,810) SS II mathematics students in the 2019/2020 session as shown in table 1.

Table 1: Population of the Study

S/N	Name of Schools	Male	Female	Total
1.	SUNCAIS KATSINA	1,162	87	1,249
2.	KCK SENIOR	488	794	1,282
3	GDSSS K/YANDAKA	1,027	1,320	2,347
4	GSSS KAMBARAWA	386	185	571
5	GSSS K/KAURA	426	670	1,096
6	GGC SNR KATSINA	00	719	719
7	GPSSS K/SAURI	456	244	700

8	GCK(DW) SENIOR	1,061	831	1,892
9	GSS D/SAFE LOW COST SNR	231	143	374
10	DCK SENIOR	441	00	441
11.	FAMILY SUPPORT KATSINA	80	59	139
	TOTAL	**5,758**	**5,052**	**10,810**

Source: *Katsina State Ministry of Education (March, 2020)*

Sample and Sampling Technique:

A total number of 124 SS II mathematics students drawn from two public senior secondary schools in Katsina metropolis formed the sample of the study. This is in line with the central limit theorem which prescribed that in experimental research, a researcher can select a minimum of thirty sample variables as adequately enough to form a study sample, (Gay, Mills, and Aresion 2009). The researcher used the purposive sampling technique to select all the coeducational, the schools with ICT facilities. The researcher used a simple random sampling technique to select two schools out of the coeducational and ICTs equipped schools namely school A and school B. school A was selected randomly as the control group while School B was selected to be the experimental group and one intact class in each of the sampled school was selected using the simple random sampling from the SS II arm of each school for the study which formed the sample size of 124 students.

Instruments

Two research instruments were developed by the researcher for this study.

The geometric Performance Test (GPT) was used to measure the performance of learners in the experimental and control group before and after the study. The instrument contains 20 items, 4-option multiple-choice objective test covering the concept of geometry, the items were adopted from senior schools certificates examinations.

The geometry students' interest questionnaire (GSIQ) was used to cover students' interests for both experimental and control groups on the geometrical concept. The GSIQ is a four-point Likert type item specifically adopted from Chukwu (2014).

Results

The data collected from the study using the instruments were analysed, the result obtained was used to answer the research questions and test the hypotheses. This section is divided into two: answers to research questions and testing of hypotheses.

Research Question One: What is the difference in the mean performance scores of senior secondary school students taught geometry using Geometer's Sketchpad and those taught without it?

To answer the above question, the scores of GPT in the experimental and control groups were subjected to descriptive statistics in form of Means and Standard Deviations. This is presented in table

Table 2: Mean and Standard Deviations Scores for GPT of the Experimental and Control Groups

Group	N	Mean	Std. Deviation	Std. Error	Mean Diff

Experimental	48	17.38	1.003	0.145	4.25
Control	76	13.13	1.075	0.123	

The above table revealed that the post-test means and standard deviations of students for GPT scores in the experimental Group were 17.38 and 1.003 while that of control group were 13.13 and 1.075, the post-test mean score difference was 4.25.

Research Question Two: What is the difference between the mean interest scores of students exposed to Geometer's Sketchpad and those taught geometry without it in senior secondary schools of Katsina state?

To answer the above question, the scores of GSIQ in the experimental and control groups were subjected to descriptive statistics in form of Mean rank and Sum of the rank. This is presented in table.

Table 3: Mean Rank Scores for GSIQ of the Experimental and Control Groups

GROUP	N	Mean Ranks	Sum of the Rank	Differences Between Mean Rank
Experimental	48	80.74	3875.50	29.76
Control	76	50.98	3874.50	

The table revealed that the post-test mean rank and sum of the mean rank of students for GSIQ scores in the experimental group were 80.74and 3875.50 while that of control group were 50.98 and 3874.50. The post-test mean rank score difference was 29.76

Hypotheses Testing

This section analysed data using statistical tools to test the six null hypotheses formulated for the study, using the inferential statistics of Mann-Whitney U-test for hypotheses one and two while t-test Independent sample for hypotheses three, four five and six both at 0.05 Level of significance.

Hypothesis One

Ho_1: There is no significant difference in the mean performance scores of senior secondary school students taught geometry using Geometer's Sketchpad and those taught without it.

In order to test hypotheses three the post-test scores in the experimental and the control groups for GPT were subjected to T-test of independent sample statistics. Summary of the analysis was presented in table.

Table 4: T-test analysis of the Post-Test Mean Scores for GPT **of the Experimental and Control Groups**

Groups	N	Mean	SD	Df	t-value	P-value	Decision
Experimental	48	17.38	1.003	122	21.967	0.000	Significant

Control	76	13.13	1.075

The table revealed that the t-value computed was 21.967 and the p-value of 0.000 is observed. Since the obtained p-value of 0.000 is less than the alpha value of 0.05, based on the decision rule, this study rejected the null hypothesis one (H_{01}) that says there is no significant difference in the mean academic performance scores of senior secondary school students taught geometry using Geometer's Sketchpad and those taught without it. The decision implies that, there is a significant difference in the mean score of students' performances between those taught geometry using Geometer's Sketchpad and those taught without it. This indicates that the students of experimental group performed significantly better than those in control group in academic performance.

Hypothesis Two

Ho_2: There is no significant difference in the mean interest score of students exposed to Geometer's Sketchpad and those taught without it.

In order to test hypotheses one the post-test scores in the experimental and the control groups for GSIQ were subjected to independent samples Mann-Whitney U test. Summary of the analysis was presented in table.

Table 5: U-test analysis of the Post-Test Mean Scores for GSIQ of the Experimental and Control Groups

Group	N	Mean Rank	Sum of the Mean Rank	U	P	Decision
Experimental	48	80.74	3875.50	948.50	0.000	Significant
Control	76	50.98	3874.50			

The table revealed that the calculated Mann-Whiten U-test value is 948.50 and the calculated p-value of 0.000 was observed. Since the obtained p-value of 0.000 is less than the alpha value of 0.05, $P \leq 0.05$ Based on the decision rule, this study rejected the null hypothesis two (H_{O2}) that says. There is no significant difference between the mean interest score of students exposed to use Geometer's Sketchpad and those taught without it. The decision implies that, there is a significant difference between the mean score of interest between those exposed to use Geometer's Sketchpad and those taught without it. This indicates that the students of experimental group improved significantly better than those in control group in interest.

Discussion of the Findings

The null hypothesis one of the study stated there is no significant difference in the mean academic performance scores of senior secondary school students taught geometry using Geometer's Sketchpad and those taught without it. But the finding shows that there significant difference in the mean academic performance scores of senior secondary school students taught geometry using Geometer's Sketchpad and those taught without it. The result of the study showed that there is a significant difference between the mean performance scores of senior secondary students taught geometry using Geometers' Sketchpad and students taught geometry without GSP. Senior secondary students who were taught geometry using Geometers'

Sketchpads had higher mean scores than students who were taught geometry using the guided discovery approach. The findings are in agreement with previous investigations. Nanteni (2020), the result of the study indicate that using GSP in teaching and learning of the circle properties have a positive impact on students. Gambari (2014) The results obtained showed that students taught Geometry using computer animation performed significantly better in post-test. Also Roble (2015) studied the impact of geometer's sketchpad on Malaysian students' achievement and Van Hiele geometric thinking in one of the secondary schools in Perak, Malaysia. The result of the test indicated a significant difference ($p<0.1$) between treatment and control groups on subjects' change in rank on van Hiele levels from pre-test to post-test. Another similar study was conducted by Meng and Idris (2012) to investigate the influence of the geometer's sketchpad on the geometry achievement of Greek school students. The t-test for equality of means was significant, indicating a significant difference in mean achievement scores between the experimental and control groups. The experimental group had higher geometry achievement than the control group, and the difference was statistically significant as in the present study. However, the studies of Dekker (2011), Sari (2019) discovered that using dynamic learning environment has no significant influences on students' performance. Kamariah, (2009) sees GSP as a dynamic geometry construction and exploration tool, which can make an enormous difference in the students' learning of mathematics.

The null hypothesis two of the study stated there is no significant difference between experimental and control groups of among Geometry Senior Secondary Students in Katsina metropolis exposed to Geometer's Sketchpad but the finding shows that there is significant differences in interest among senior secondary students in geometry. The findings of this study indicate that there is a significant difference between the mean interest ratings of senior secondary students taught geometry using geometers' sketchpad and those taught without GSP. Therefore, this study disagreed with the findings from O'Damnel's (2011) studies that found using Dynamic mathematics software has no significant impact on students' attitudes and interests. However, Dekker (2011) documented similar findings with the present study when he researched the effect of Geometer's Sketchpad on student knowledge and attitude at Calvin Christian High School in Grandville, Michigan, United State of America (USA). There were significant differences when looking at difference scores from the post-test of experimental and control groups. Similarly, Ramli (2015), Agbo-Egwu & Abakpa ((2015), as cited in Heidi (2004) in their studies found that technology use, adds to students' enjoyment and interest, hence the use of technology may be one of the measures taken to improve the senior secondary school students' interest in geometry. The findings of the above-stated studies agree with the findings of the present study, hence clearly showing that the use of GSP can improve students' interest in geometry.

Conclusion

Those students who were exposed to use GSP performed better in their academic performance than their counterparts who were taught without GSP

Those students who were exposed to use GSP demonstrate positive Interest in geometrical concepts than those who were exposed without using GSP.

Recommendations

From the findings of this study, the following recommendations are made:

1. The use of Geometers sketchpad (GSP) should be encouraged by Mathematics teachers in teaching geometrical concepts because it enhances the performance and interest of the students.
2. Teaching and learning materials such as computers as well as mathematical Dynamic Software (Geometer's Sketchpad) should be provided by government, agencies such as State Governments, Federal Ministry of Education, for effective utilization of teaching/learning Mathematics.
3. Professional associations like Science Teachers Association (STAN), Mathematics Association of Nigeria (MAN) and research center's like Nigerian Educational and Research Development Council (NERDC) should incorporate Geometers sketchpad (GSP) in their science curricula at the junior and senior secondary school levels to encourage the use of the instructional materials among teachers. Workshops may be needed for this by STAN.

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TEACHERS' PROFESSIONAL ETHICS: A TOOL FOR CURBING CORRUPTION IN THE EDUCATIONAL SYSTEM.

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Abstract

Education primarily is designed to convey knowledge, skills, attitudes, ideals and values capable of transforming and developing an individual, making him/her mature, reasonable, responsible, effective, functional and viable citizen. This transmission is done by teachers who consistently do the job of teaching. However, the educational system has been plagued with corruption and so raises doubt on what education is set out to achieve. This paper considered the teachers professional ethics one of the tools for curbing corruption in the educational system. It looked at the concepts of ethics, corruption and teaching profession, pointed out some of the ways teachers indulge in corrupt practices, and the issues raised in teachers' professional ethics and code of conduct. Conclusion was drawn on the basis of how the cherished values of teaching profession can be restored if there is a conscientious effort to re-educate the teachers on the ethics of their

profession. The following suggestions among others were made: Teachers to understand that their influence have generational impact, a wakeup call on the organisations/bodies saddled with training, recruitment and registration of teachers and the need for government to pay attention to teachers' welfare.

Keywords: Teachers, Ethics, Tool, Corruption, Education.

Introduction

The height of a nation's development is determined by its educational advancement. Education being the bedrock of a society, is centred on transmission of relevant knowledge, skill, attitudes, habits and ideas capable of making the recipient functional, productive and useful. The society in other words, is expected to benefit maximally from the graduates of the educational institution. According to Esu & Tunaid (2000) education is a tool for social transformation, growth and sustainable development of the nation. As rightly pointed out in the National Policy on Education that education is an instrument per excellence for affecting national development. This assertion without doubt is a reality. Looking at the quality of output of educational institutions at various levels in the recent times, it appears that education is not yielding the expected dividend, considering the number of schools in the country from primary to tertiary (both private and public) and the number of graduates that these institutions are rolling out yearly. It becomes obvious that something is definitely wrong. The lackadaisical attitude of students towards learning, the unnecessary interruptions of parents/guardians during admission and examination (both internal and external), the nonchalant attitude of some teachers in the discharge of their duties, the overbearing of school authorities and quest for materialism and government insensitivity to the educational needs in the country, are enough indicators that there is a problem.

The above scenario can be summed up as corruption, which is seen as any action carried out which violates standard of behaviour required of the office or for selfish purposes. It appears that all the actors in education system, (students, teachers, administrators, parents, community and government) are deeply affected. That notwithstanding, there is no problem without solution, this paper is centred on tackling the issue of corruption in the education system using the teacher. The teacher is someone trained and equipped to impart the right type of knowledge, skill, attitude and values to the learner as stipulated in the curriculum which will lead to the transformation of the mind and behavior. From time immemorial, teachers were regarded as models. The Christian missionaries in those days have the intention of raising a moral, disciplined and heaven-bound people. According to Nnachi (2010), they needed teachers that will help them make their intention a reality by producing the clergy, catechists, lay leaders and future teachers. Invariably the teacher exhibited a high moral standard which made them to be admired by almost everybody, hence were used as a yardstick for standard behavior. As time went on it became common for the government to appoint teachers to handle sensitive tasks, such as census, election duties and other special duties (Nnachi, 2010).

It is on this premise that the researcher seeks to look at the teachers' professional ethics as one of the tools to curbing the rate of corruption in the education system, bearing in mind that there are numerous ways to tackle corruption in the system.

Conceptual Clarifications:

Ethics:

Ethics is derived from a Greek word 'ethos' which can mean custom, habit, character or disposition. Ethics is referred to as moral philosophy. It is a system of moral principles on how people make decisions and live their lives. According to Britannica online dictionary, ethics is the discipline concerned with what is morally good and bad and morally right and wrong. It applies to any system of or theory of moral values or principles. In other words, ethics consists of standard of behaviour, a guiding principle on which behaviours, actions and habits are judged to be right or wrong.

Corruption

Oxford Advanced Learners Dictionary defines corruption as a dishonest or illegal behaviour and also an act or effect of changing from moral to immoral standards of behaviour. Lawal & Ogunro (2012) citing Oyezin considered corruption to be a behavioural attitude contrary to or at variance with the set rules and agreed norms. Corruption is a form of dishonesty or criminal offense undertaken by a person or organisation entrusted with a position of authority to acquire illicit benefit or abuse power for one's private gain (United Nations 1996). Summarily, corruption is a violation of morals, ethics and codes that are supposed to guide and govern behaviours and activities of individuals and organisation. It is a breakdown or and total abandonment of the established code of conduct.

The breakdown of morals introduces all kinds of lifestyles which have serious negative influence on the society. Corruption reshapes the society by destroying the foundation on which a society stands. Hence the injunction on the holy scriptures "if the foundations are destroyed, what can the righteous do? (Psalm 11:3). That means, no meaningful progress can be achieved in such a situation.

The alarming rate of corruption in the nation Nigeria is quite embarrassing and disturbing. Almost all segments of Nigerian society are plagued by corruption. Among the political class, it is like "if you cannot beat them, join them" In the education sector as confirmed by many researchers, corruption features prominently as touching students' admission, examination success, good grades, indiscipline among teachers, truancy, misappropriation of funds, sexual harassment and so on (Uche (2014), Ndu & Osere (2017)).

There is corruption in the power sector(Maja-Pearce,2017; Uduma,2009 & Uzuchukwu,2017), where bills are paid for a service that is never available or provided; the educational sector with examination malpractice and certificate racketeering(Azuka, 2014; Edinyang & Kalu, 2016:280), financial and internet fraud in the ICT and banking sectors (Uche, 2001:265 & Uzuchukwu, 2017), sale of fake and dangerous drugs to the unsuspecting public in the medical and pharmaceutical sector (Adebayo, 2017), bribery and other financial crimes in the armed forces(Emerson,2010; Uwimana & Ahwawro,2014), looting of public funds by elected office holders and appointed government officials(Idoko, 2017) as well as budget padding(Daniel, 2016) by some ministers and some legislators(Daniel, 2016), monies meant for state development are diverted into personal coffers(Adebayo, 2016… .(Gibson,2017:46) Corruption generally can be caused by a lot of factors. Domenec (2014) pointed out some possible causes of corruption which include: personal greed, decline of ethical personal sensitivity, no sense of service for most workers in public institutions, lack of moral criteria in promotion, slow judicial process, lack of transparency and cultural/environment that condone corruption. Chuks (2012) in

his work enumerated the causes of corruption in secondary schools, which are as follows: much emphasis on paper qualifications, poor remuneration of teachers, parental influence, poor funding,

Professional Ethics

Professional ethics are principles that govern the behaviour of a person or group of persons that belong to a particular organisation or business environment. They are standard of behaviour or code of conduct set up by the organisation to guide their actions behaviours, performances, duties and obligations. The ethics of the teaching profession according to Durosaro (2020) are the moral beliefs and rules about right and wrongs that influence teachers behaviours, attitudes and ideals. They are the cherished norms, values and principles guiding the conduct of teachers primarily enshrined to achieve the goal of teaching in particular and education at large. It includes the teacher's day to day activities.

These norms (ethics) are categorized into two, viz: Moral ethics and work ethics. The moral ethics as pointed out by Durosaro (2020) include honesty, loyalty, discipline, not smoking in presence of students and in public places, dressing neatly and decently to school, sexual comportment and punctuality. While work ethics include continuous learning, regular preparation of lesson plans, serving in-loco parentis of students, regular assessment of learners, being co-operative with other teachers at work and obedience to authority. While moral ethics is concerned with teachers personal development which qualifies him/her as a role model, and a source of inspiration to students, work ethics focused on attitude to his/her profession (work), responsibility towards the students, colleagues, those in authority and all that have anything to do with business of schooling (parents and community).

The Teacher and Teaching

The teacher is the centre point of every educational activity. Since education is concerned with transmission of the necessary values, a teacher plays the role of transmission. A teacher is the one who provides education to the learner. Obih, Aguguam, Mbah & Onyeonu (2017) opined that teachers are the most important factor contributing to student achievement and performance likewise the most influential factor in the educational system and even in the society at large. Nwanekezi & Ifonu (2010) added that a teacher is a trained person who helps a learner to acquire necessary knowledge, skills and attitude through a variety of ways all of which are intertwined. This implies that a teacher is trained to offer help to the learner whereas the learner is looked upon as someone that needs helps.

While trying to define teaching, Bidwell (1973) in Awotua-Efebo (2001) tried to throw more light on who a teacher in his own definition of teaching. Teaching may be defined as a series of interactions between someone in the role of a teacher and someone in the role of a learner with the explicit goal of changing one or more of the learners' cognitive states (what he knows or believes) or his skill in performing cognitive tasks or affective states (his attitudes), values or motives).

A teacher from the above assertion, is one who is trained to interact with the learners with the aim of bringing about a change of life and behaviour. Therefore, teaching is a purposeful activity, it is systematic and intentional, hence both the teacher and learner come together with the mindset of achieving something.

Looking at this objectively, one discovers that the teacher has the responsibility of steering the ship (giving direction). The kind of teachers, learners are exposed to, determines how far they can go, how deep the knowledge they are exposed to, how well they learn, the extent of transformation that can take place in their lives, how zealous they can be in pursing their careers and life's vision and level of their impact in their environment. What learners become, revolve greatly around the teacher. A teacher can make or mar the learners under him/her hence it is very important for a conscientious effort on the part of the teacher to understand who he/she really is and appreciate his/her inestimable position. It was Henry Adams that says that "A teacher affects eternity. He can never tell where his influence stops".

We shall therefore examine the roles of a teacher as outlined by Awotua-Efebo (2001). He pointed out seven roles of the teacher that affect his/her effectiveness.

vi. The teacher as a person
vii. The teacher as an interpreter of the school curriculum
viii. The teacher as a deliverer of instruction (classroom teaching)
ix. The teacher as a manager
x. The teacher as a counselor
xi. The teacher as a loco parentis
xii. The teacher as a community relations officer

A teacher before becoming a teacher is first a person and continues to be a person. He has innate abilities as well as acquired abilities (through training and exposures), he has emotions, expectations and varied experiences in life. This personality as a matter of fact is continuously upgraded to meet the expected need. Several researchers have come up with the personal qualities which a teacher must possess so as to inspire the learners (Clark, 1995; Awotua-Efebo, 2001; Kochhar, 2007). Some of these qualities are stated as follows:

i. Presentable appearance, good manners, courtesy and pleasant voice
ii. Intelligence, emotional stability and self-control
iii. Sympathy, kindness, helpfulness and patience
iv. Integrity, trustworthiness, honesty and loyalty
v. Sociability, friendliness and cooperativeness
vi. Flexibility, creativity and resourcefulness
vii. Fairness, impartiality and tolerance
viii. Sense of humour, cheerfulness and enthusiasm

These qualities present the teacher as a role model and an influencer.

Secondly, teachers role as a curriculum interpreter is reflected on the ability of the teacher to understand and develop the schemes and lesson plans in such a way that real learning takes place. Awotua-Efebo (2001) stated that the transformation of the curriculum into actions involves the content, (syllabus), pace (scheme) and emphasis of instruction (lesson plan), While Borich (2011:128) identified some guidelines that can help teachers plan and develop lessons. These include –

Formulating a good statement that indicates the principle(s) or concept(s) to be understood at the completion of the lesson; select the primary content base that will serve as the catalyst for instruction; identify events, discoveries and writings within other disciplines that relate to the primary content base in a meaningful way; Determine the key points of intersection between the disciplines that corresponds to the established terminal goal of instruction; formulate

instructional objectives; identify the necessary requisite knowledge that students must possess in each subject area and formulate instructional strategies that will compel students to use their knowledge in one discipline to understand better and appreciate one another.

Thirdly, the teacher's role in instruction delivery, that is teaching. This is the point of implementing the curriculum when he/she implores several techniques and methods to bring about a change in behaviour. To be able to do this, Nwamuo (2017) pointed out that the teacher should be able to do a self-improvement in his educational qualification, have knowledge of using innovative technology-internets, emails, YouTube etc. in teaching, attend conferences, seminars and workshops to be abreast of the 21st century constructivists strategies. Some of these strategies include concept mapping, brainstorming, pair work, jigsaw, think-pair-share etc.

Fourthly, the managerial role of the teacher which is concerned with proper arrangement and organisation of the teachers in such a way that teaching and learning can effectively take place alongside with the adequate management of the material resources. Classroom management as noted by Callahans (1971) in Obiefuna, Okoro & Iwuamadi (2010) is the intelligent manipulation of all circumstances and factors in the classroom to serve the purpose of instruction. While Nosiri (2007) opined that the management aspect of teaching involves establishing and maintaining an environment which encourages the release of human potential and which enables children to work together in the classroom as a group. To achieve this the following factors should be considered: Orderly arrangement of seats, instructional materials and other equipment used in the classroom; well ventilated classroom and good sanitation; teachers appearance/dressing; teachers adequate preparation for the lesson and good communication network among others. In addition, Awotua-Efebo (2001) asserted that the teacher should manage the material resources used in teaching by presenting them in an orderly and logical manner for delivering his/her lessons. Similarly, Onyejemezi (1991) maintained that the usefulness of the materials depends on what the teacher makes out of them. He therefore proposed that intelligent and careful handling of the materials is a prerequisite for effective learning and teaching and the achievement of the nation's educational goals. Creative use of materials by teachers increase the students' ability to learn more, retain better, and improve the performance of skills.

Fifthly, the teacher's roles as a counselor. The teacher by and large is regarded as the more knowledgeable and experienced and as such has so much to offer to the learners outside the assigned subject area. Learners as human beings are faced with challenges from time to time which might be arising from home, peers, academics or personal issues. These problems if not nipped in the bud will definitely have adverse effect on their learning abilities. Denga & Denga (2019) stated categorically that "if the school is to facilitate the all-round development of the children, then the classroom teachers whose responsibility it is to provide learning experiences and conducive atmosphere for bringing about the desired development must participate actively in assisting children cope with their problems of development" for the fact that teacher is the only person that spend more time daily with the students more than any other staff in the school even the school counselor (where there is any) give him/her an edge over others. This assertion is in line with Barr. (1959) in Denga & Denga (2019:163) who maintained that the unique position occupied by the teachers in the school give them a lot of opportunity not only to be around students a lot of time and be acquainted with their liabilities and strength but also to observe children in a variety of situations within the school and be able to get a 'moving picture' of the students as they develop.

It therefore becomes pertinent for teachers to possess basic counseling skills. Though according to Fairchild (1977) in Denga & Denga (2019) the knowledge of the basic counseling skills may not make teachers counselors but it will help them to become more effective in their relationship with the children. Boer & Hayes (1982) seeing teachers as agents of change opined that they need to be equipped with skills to perform more than teaching so as to contribute effectively and efficiently in the overall development of the learner. Some of these skills include Listening, Empathy, Genuineness, Concreteness, open questions, self-disclosure, focusing, attending etc.

Sixthly, the teacher's role as a loco parentis A teacher by this role assumes the place of a parent in the school and is under obligation to correct, discipline, protect and care for the learners within the stipulated guideline.

Seventhly, is the role of the teacher as community relations officer. This offers her the opportunity to interact with the members of the community in other to establish, develop and sustain a good school versus community relationship.

The Teachers' professional ethics or code of conduct

The teachers' professional ethics shall be considered under four main subheads:

1. Teachers personality development. Teachers must model strong character traits. The place of a teacher is so strategic in any learning situation, due to the regard the learners especially have on them. A teacher before a learner is a perfect person, that the learners would want to copy after directly or indirectly. The teacher is under obligation to develop him/herself such that he/she can stand out both in character and learning. The traits include discipline, honesty, integrity, patience, hard work and respect.
2. Responsibility towards the students ensuring that effective teaching takes place. That is, a teacher must ensure commitment on the job by providing quality education. This is manifested through the following: effectively design lesson plans to meet learning needs, show competence in teaching subject and develop skill in the transmission of knowledge/information.
3. Promote and uphold healthy relationships with school staffs, parents and school administrators so as to create a conducive atmosphere that fosters learning. Teachers as a matter of fact must develop more time in public relation, parent counseling and behavioural therapy to fulfil the global societal needs.
4. Responsibility towards her profession by constantly updating herself through continuing education, research conferences, workshop. This gives room for competency in delivering the lessons and the business of teaching.
   According to Teachers Registration Council Nigeria (2013:12), teachers are expected to show the following:
   i. Professional standard: Teachers should seek to achieve the highest professional standards in all their works and uphold the honour and integrity of the profession.

ii. Professional commitment: Teachers should have an enduring absolute commitment to the profession aspiring to make a successful career within the system and taking pride in the profession.
iii. Efficiency: Teachers should render efficient and cost – effective professional service at all times.
iv. Evaluation of learners' performance: Teachers should evaluate periodically the learners' performance and render all professional assistance likely to enable learners to identify and excel in their skills.
v. Precepts: Teachers should be dedicated and faithful in all professional understanding being punctual, thorough, conscientious and dependable.
vi. Arbitration: Teachers should submit themselves to the summons of teacher's investigation panel/teacher's disciplinary, committee when the need arises.

Corruption in school and teachers' professional ethics

Corruption and corrupt practices are widely seen and practiced in schools today at all levels. As Buseri (2017) pointed out that corruption is the state of being decayed in character, attitude, action and or behaviour. That is a deteriorating lifestyle where one accepts what is not ordinarily convenient or conformable to the code of conduct. It is a display of indiscipline, dishonesty, lack of integrity and respect etc.

Teachers indiscipline lifestyle manifest in various ways which give room to other forms of corrupt practices in school. Buseri (2017:182) highlighted the following:

- Arriving very late to school/class regularly
- Skipping of classes/lessons under unacceptable guises consistently
- Teach or utilize only a fraction of the allocated period
- Fail/refuse to perform their official duties
  Failure or refusal to mark scripts promptly and guide pupils/students as a matter of habit
- Invite and impose (demand) extra charges from pupils/students for extension classes whereas the officially approved hours are underutilised
- Engaging in trading during class sessions.

This paper is not denying the fact that several factors may have triggered the above. Such factors include poor remuneration, delay in the payment of salaries/allowances, lack of incentive, politicisation of education, inadequate educational facilities, harsh learning environment and so on.

By and large, a display of corrupt practices as outlined will be obvious in students' academic performance. When there is 'improper' teaching, that is when teaching is haphazardly done or not done, students' performance would be very low which warrants in most cases malpractices of different degrees, reckless living, truancy, lateness, cultism and all kinds of misconduct among students:

In the bid to make up for what was not taught students would be looking for every way possible to pass while teachers who knew the vacuum they have left in the students would proffer solution by volunteering to write for or help them during examination, introduced illegal payment of examination fee solely for malpractice, engaging in illicit sexual act with female students especially etc. The parents on their own part would want to do everything possible to ensure their children/ward pass. Regrettably, this seems to be the norm in our educational system. It has

introduced loss of self confidence in the students. Sometimes even the brilliant ones are tempted to join the band wagon as if no one can pass examination without engaging in malpractice. This is the bane of our society presently, It is pertinent to point out that students lifestyle generally are affected. Remember that teachers are role models, as such students are greatly influenced by the lifestyle teachers' models which continue even after school. This is why Henry Adams said 'a teacher affects eternity, he can never tell where his influence stops'

As rightly stated earlier, there is no problem that does not have a solution and the solution to some problems are not far-fetched. Hence the need to reconsider the ethics of teaching profession by asking the following questions;

1. What is teaching?
2. What is learning?
3. What is effective teaching?
4. What are the components of effective teaching?
5. Who is a teacher?
6. What are the roles of a teacher?
7. What are the characteristics of an effective teacher?
8. What is the perception of pupils/students of a teacher?
9. What is the perception of the society towards a teacher?

The questions are what the teachers' professional ethics portrays. There is therefore need to re-educate teachers from the nursery to tertiary level, on the pillars on which the teaching profession stands. The author wishes to declare 'operation back to teachers' professional ethics'.

Conclusion

The alarming rate of corruption in the Nigeria society generally is worrisome, it touches every facet of life – the home, the school, politics, institutions such as health, religion, economic and so on. This manifest in giving and receiving of bribes, misappropriation of funds, regular late coming to work, truancy, examination malpractice and so on. Teachers at various levels have been found as victims of corruption practices which ranges from habitual late coming to school/classes, underutilization of time allocated for school hours, turning classroom to market, charging of extra money to do the work they are paid for, to examination malpractice. These anomalies can be curbed through a re-awareness, enlightenment and re-education of teachers' professional ethics which will pave way for a restoration of lost and cherished values of teaching professional things being equal.

Suggestions

1. Teachers should be aware that the job of teaching is not like any other profession, that their influence transcends the school environment affecting generations yet to be born.
2. Organisations and bodies in-charge of teaching like Nigeria Union of Teachers (NUT), Teachers Registration Council of Nigeria (TRCN) should rise up to the challenge through regular organisation of conferences and workshops.
3. Value education should be prominent in the curriculum of teacher education institutions.
4. Non-Governmental agencies and concerned citizens should project education, what is and what it ought to be in their programmes.

5. Government should make every effort to improve on teachers welfare, provide the needed learning facilities so as to make learning environment attractive and through her agencies engage in regular supervision of activities of the school.

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ASSESSMENT OF KNOWLEDGE AND PRACTICE OF STANDARD PRECAUTION AMONG HEALTH CARE WORKERS IN KUMBOTSO KANO STATE

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Abstract

The aim of the paper is to assess knowledge and practice of standard precaution among Health Care workers in Kumbotso local government area of Kano State. There were a total population of five hundred (500) health care worker's as at the time of this study (Record's Department, statistics Kumbotso Kano State). Therefore the sample size used for this study based on Taro Yamane (1967) was 223. Questionnaire was used as an instrument to collect data which was analysed to obtained results for this study. The questionnaire was titled:" Assessment of Knowledge and Practice of Standard Precautionary Measures Questionnaire (AKPSPMQ&OT)". The relevance of the items in the instrument was established for its content and construct validity, internal consistency and reliability of the instrument. The result of this study revealed that community health officers are the highest respondents that said Yes (31.1%) if standard precaution measures are effective in prevention of infectious disease and the result of Chi-square statistical analysis revealed that there is a significant difference ($p<0.05$) in the response of the participants. It is recommended that hospitals should be provided with PPE to reduce exposure of health workers to blood-borne pathogens and nosocomial infection.

Keywords: Health care workers, Knowledge, Precaution, Practice

Introduction

Developing countries, which account for the highest prevalence of HIV in the world, also record the highest rate of needle-stick injuries. Infection with HBV is 95% preventable with immunization but less than 20% of health care workers in some regions of the world have received the 3 doses needed for immunity (Ophori, 2014). Despite the availability of detailed guidelines, the knowledge and practice of standard precautions among many health care workers are not optimal. Even when the knowledge of standard precautions is high, poor practice has been recorded. In a study conducted in two tertiary hospitals in Nigeria in 2011/2012, though the overall median knowledge and attitude score was above 90%, the median practice score was only 50.8% (Ogoina, 2015).

In many resource-poor countries, most health care facilities do not provide adequate equipment and amenities for proper practice of standard precautions which adds a further constraint on the ability of health care workers (HCWs) to observe these practices. Other challenges preventing practice of standard precautions identified in studies included lack of regular training on infection control, busy work schedule and absence of workplace policy (Ogoina, 2015).

The practice of standard precautions reported in different studies showed varying levels among the different professional groups. Some have reported higher compliance among nurses than doctors (Cutter, 2014). Prevention remains the main control strategy against blood borne pathogens as there are no immunizations against most of them.

Purpose of the Study

The purpose of this study was to assess knowledge and practice of standard precaution among Health Care workers in Kumbotso local government area of Kano State. Therefore this paper sought to find out whether:

1. Health care workers use standard precaution measure in the prevention of infectious disease in relation to their professional rank.
2. Health care workers wear Personal Protective Equipment during emergency service only.
3. Health care workers use standard precaution to prevent infectious transmission.
4. Health care workers use disinfection to ensure destruction of all microbes and their spore.
5. Health care workers are uncomfortable wearing PPE
6. Health care workers only practice when one perceive danger

Research Questions

The following research questions are stated:

1. What is the effectiveness of standard precaution measure in the prevention of infectious disease in relation to their professional rank?
2. Do health care workers wear PPE during emergency service only?
3. Do health care workers use standard precaution to prevent infectious transmission?
4. Do health care workers use disinfection to ensure destruction of all microbes and their spore?
5. Do health care workers uncomfortable wearing PPE?

6. Do health care workers only practice when one perceive danger?

Methodology

The research design adopted for this study was the survey research design. According to Isangedihi (2012), the survey research design allows collation of data accurately and objectively to describe existing phenomena. It depends basically on questionnaires as means of data collection. The survey research design allows the researcher to make inferences about the population under study by selecting and studying the sample of the study. The population of the study consists of 500 health care workers in Kumbotso area of Kano state (Record's Department, Statistics Kumbotso area of Kano State). The sampling procedure used for this study was a random sampling technique. Here, the health care worker's used for the study were all the health workers in the study area. The Taro, Yamane (1967) method for sample calculation was used for the choice of the sample size. The value of 'n' above means that approximately 196 samples size were used in this study. The structured questionnaire was the instruments used for data collection. The questionnaire was titled:" Knowledge and Practice of Standard Precautionary Measures Questionnaire (KPSPMQ&OT)". The questionnaire was divided into four sections. A, B, and C. Section A contained items on personal data of the respondents. This covers questions 1-7. Section B contained information on knowledge of standard precaution. This covers questions 8-15. Section C contained information on attitude towards standard precaution. The relevance of the items in the instrument was established for its content and construct validity, internal consistency and reliability of the instrument. The instrument consists of a five point likert scale of strongly agreed, agreed, strongly disagreed, disagreed and undecided. Data generated from this research instrument were analyzed using frequency, percentages, means and standard deviation. Items in practice scale were analysed using mean. Items with mean score above 2.5 were considered as respondents' practice. The hypotheses were tested using the Fishers Exact Test as the data had more than 20% of its expected frequencies less than 5. Decisions were made.

Results

Research Question 1: What is the effectiveness of standard precaution measure in the prevention of infectious disease in relation to their professional rank?

Table 1: Participants responses on effectiveness of standard precaution measure in prevention of infectious disease in relation to their professional rank.

Professional	Responses	Frequency	% Percentage
CHO (Community health office)	Yes	61	31.1
	No	1	0.5
	Undecided	1	0.5
JCHO (Junior community Heath office)	Yes	11	5.6
	No	0	0
	Undecided	0	0
EHO (Environmental Health office)	Yes	10	5.1
	No	0	0
	Undecided	1	0.5
EHA (Environmental Health assistance)	Yes	27	13.7
	No	1	0.5

	Undecided	2	1.0
MLT (Medical lab Technician)	Yes	48	24.4
	No	1	0.5
	Undecided	0	0
Nursing	Yes	30	15.3
	No	2	1.0
	Undecided	0	0
Total		**196**	**100%**

The result of this study revealed that community health officers are the highest respondents that said Yes 61 (31.1%) to standard precaution measures are effective in prevention of infectious disease. While the highest rate of health professional that said "No" to the same question were Nursing professional 2 (1.0%). The result of Chi-square statistical analysis revealed that there is a significant difference ($p<0.05$) in the response of the participants regarding the effectiveness of standard precaution measure in prevention of infectious disease in relation to their professional rank.

Research Question 2: Do health care workers wear PPE during emergency service only?

Table 2: Response as to whether health care workers wear PPE during emergency service only

Variables	Frequency	% Percentage
Yes	187	95.4
No	5	2.6
Undecided	4	2.0
Total	**196**	**100%**

From table 2 above it was observed that the majority of health care workers representing 187 (95.4%) wear PPE during emergency only, 5 (2.6%) wear PPE not only during emergency, while 4 (2.0%) undecided.

Research Question 3: Do health care workers use standard precaution to prevent infectious transmission?

Table 3: Response as to whether health care workers use standard precaution to prevent infectious transmission

Variables	Frequency	Percentage
Yes	187	95.4
No	5	2.6
Undecided	4	2.0
Total	**196**	**100%**

From the above Table 3 majority 187 (95.4%) agreed that the standard precautions are measures designed to prevent infectious transmission whereas minority 5 (2.6%) thought otherwise.

Research Question 4: Do health care workers use disinfection to ensure destruction of all microbes and their spore?

Table 4: Response as to whether disinfection ensure destruction of all microbes and their spore

Variables	Frequency	% Percentage
Yes	112	57.1
No	67	34.2
Undecided	17	8.7
Total	**196**	**100%**

The study revealed that 112 (57.1%) agreed that disinfection ensure destruction of all microbes and their spore. 67 (34.2%) disagreed disinfection ensure destruction of all microbes and their spore while 8.7% undecided.

Research Question 5: Do health care workers uncomfortable wearing PPE?

Table 5: Response as to whether health care workers are uncomfortable wearing PPE

Variables	**Frequency**	**% Percentage**
Yes	68	34.7
No	113	57.7
Undecided	15	7.7
Total	**196**	**100%**

The study findings revealed that 34.7% agreed that they are uncomfortable wearing PPE. 113 (57.7%) disagreed while 15 (7.7%) undecided.

Research Question 6: Do health care workers only practice when one perceive danger

Table 6: Response as to whether standard precaution should only be practiced when one perceive danger

Variables	**Frequency**	**% Percentage**
Yes	57	29.1
No	116	59.2
Undecided	23	11.7
Total	**196**	**100%**

The study findings revealed that 57 (29.1%) agreed that standard precaution should only be practice when one perceives danger. 116 (59.2%) disagreed that standard precaution should only be practice when one perceives danger while 23 (11.7%) undecided.

Discussion of the Findings

The responses to questionnaire administered to Primary Health Care (PHC) workers in Kumbotso area of Kano State revealed that Knowledge and practice of standard precaution among health care workers in Kumbotso local government area of Kano State aids in reduction of infectious transmission. This implies that standard precautionary measures are primary strategies for effective control of nosocomial infections for the following reasons; Infectious patients may not be detected on routine history and medical assessment. This finding is in line with the view of Centre for Disease Control (CDC) (2010) who also stated that standard

precautions combine the major features of universal precautions. Centre for Disease Control (2010) observed that standard precautions apply to blood, body fluids, secretions and excretions, except sweat, regardless of whether it contains or does not contain visible blood. In a nutshell, standard precautions are work practices that require everyone to assume that all blood and body fluids are potential services of infection, independent of perceived risk. Such practices involve the use of safe work practices and protective barriers and safe disposal of soiled materials (Centre for Disease Control, 2010).

The finding of this study which revealed that standard precaution control measures helps in the prevention of infectious disease also agrees with the study conducted by Melo (2013), who reported that these practices are designed to protect and prevent Health care personnel (HCP) from spreading infections among patients. Standard Precautions include: (1) hand hygiene, (2) use of personal protective equipment (example, handgloves, gowns, masks etc), (3) safe injection practices, (4) safe handling of potentially contaminated equipment or surfaces in the patient environment, and (5) respiratory hygiene/cough etiquette. These precautions according to Pauline (2011) should be routinely practiced by all health care workers.

The research also ascertains that there is significant association between level of knowledge of health care worker towards standard precaution in relation to their designation in the study area. Furthermore, it also shows that there is significant association between level of knowledge of health care worker towards standard precaution in relation to their years of experience in all the health care centre within Kumbotso, Kano State. This implies that health care practitioners ought to be knowledgeable about standard precaution in order to protect themselves from acquiring infection in the health care settings. The finding under this section is in line with the study conducted by Wenzel (2011) to determine the level of knowledge of standard precautions among nurses in private clinics. However it is contrary with the findings of Sadoh (2016), who found in his study that health care workers do not have adequate knowledge of standard practice, attributed their findings to lack or poor level of training. It was therefore concluded that there is the need for institutional investment in nursing competency training for this purpose using different strategies particularly permanent and continuing education while this study agrees with the one done by Fergelson (2011).

Conclusion

The findings of the study revealed that there is high knowledge of standard precaution measures towards practicing of standard precaution among Health care workers in Kumbotso PHCC. In view of these findings, it is concluded that standard precautionary measure should be given adequate consideration by health care workers in Kumbotso PHCC so as to minimize chances of contacting infectious disease in the hospital at the cause of discharging their duty.

Recommendations

Based on the conclusion, it is therefore recommended that:

1. There is the need for institutional investment in nursing competency training particularly permanent and continuing education
2. Health care workers should be made to wear PPE during emergency service
3. Health care workers should be made to use disinfection to ensure destruction of all microbes and their spore
4. Health care workers should not only practice when they perceive danger

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EFFECT OF PRACTICAL AND THEORY LESSON METHODS ON PHYSICS STUDENTS' ACADEMIC PERFORMANCE IN DELTA STATE COLLEGE OF EDUCATION, AGBOR

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Abstract

The study investigated effect of practical and theory lesson methods on students' academic performance towards the learning of physics concepts, principles and applications to real life. The study employed pre-test and post-test experimental design using Pre-NCE students for four academic sessions. The group 1 students were exposed to theory lessons in addition to practical activities while group 2 students were prepared with the conventional theory lessons only. The data was analyzed using statistical tools of Analysis of Covariance. Testing of hypotheses was carried out at a significance level of 0.05 and a reliability index of 0.82. Findings revealed significant differences in performance between students taught theory lessons in conjunction with practical activities and those taught with conventional theory lessons only. Furthermore, there is no significant relationship between the performance of students taught with practical activities and those taught conventional theory only. It was recommended that physics teachers should incorporate practical activities into theory lessons in order to arouse students' interest in physics.

Keywords: Practical lessons, students' academic performance, Physics concept.

Introduction

The attainment of technological prowess recorded in most developed nations is primarily due to the acquired knowledge of principles of Physics. The economic growth of a nation can be accelerated with the fundamental knowledge of Physics as its applicability touches every facet of life. Physics can be best described as the fulcrum of sciences for technological advancement with the acquisition of relevant skills in solving problems thereby enhancing better living in the society (Sani, 2012). Physics as a subject requires enabling skills such as observation, classification, interpretation of interconnected concepts and theoretical schemes for mankind. At ordinary level, the overall grade is weighted on both theory and practical sections. However, it is worrisome that most teachers dwell more on the theoretical aspect of Physics either because of availability of textbooks or that they are bereft of the rudiments of practical activities. The abstract nature of Physics coupled with mathematical inclination has made students at secondary

school level to perceive the subject difficult as it entails study of the universe for human race (Omeodu, 2020).

Physics has been adjudged to be difficult which has negatively influenced the choice of the subject especially at secondary level (Semela, 2010; Pey-Tee & Subramaniam, 2013). This has led to the reduction in number of students offering Physics courses in higher institutions which is disquieting (Owolabi, 2009). It is also disturbing that amongst the few students that study Physics related courses, a large number have mindset for cramming of formula and definitions without understanding the principle and basics of Physics. Furthermore, those students who perceived difficulty in the subject lack the necessary skills to apply the theoretical knowledge acquired into solving prevailing problems. Despite the importance of Physics which undoubtedly gives prominence to nations' capacity building, its study also at tertiary level is laden with numerous challenges for both teachers and learners. According to Mekonnen (2014) that the number of students studying Physics seems to be the least when compared to other science subjects. It has also been observed that the number of students who choose to study Physics in College of Education, Agbor are few compared to other subjects in areas of Arts, social sciences and vocational. What could be responsible for the low enrolment in Physics in College of Education, Agbor is due to lack of exposure to practical activities at secondary school level which calls for concern (Aina & Adedo, 2013).

Generally, learning science involves scientific knowledge required to solve endemic problems ravaging the world as the interpreted results obtained through observations help in solving problems that will help in developing the nation technologically (Okoye, 2013). Practical Physics provides learners with the opportunity to observe and utilize laboratory equipment and thereby acquire basic skills that can either be collectively or individually used in solving problems that could militate against national development. Practical activities usually carried out in laboratories are essential to the study of Physics at both secondary and higher institutions of learning. Furthermore, Achimugu (2014) stated that learning of science involves practical classes which ultimately makes use of hands and minds. It is remarkable to say that despite teachers' competence, understanding and mastery of Physics concepts, set goals are best achieved if the use of instructional materials is maximally utilized (Babalola, & Ojobola, 2022, Antwi et al., 2021 & Sintayehu, 2014). Enhancing students' academic performance in Physics requires a holistic approach towards innovative teaching methodology by unveiling learners' difficulties (Agube, et al., 2021).

Academic achievements can be viewed as the extent to which a student achieves stipulated educational goals either within a very short or long period of time (Bala, 2014). However, it has been adjudged that it is not in all cases that poor performance could be attributed to teachers' qualification and method of teaching. Hinged on this, it becomes pertinent to mention that the determining factors towards teaching and learning of Physics such as technology used in the teaching process, class environment and other learning facilities could also be taken into consideration in evaluating students 'academic performance. The appropriate measurement of Physics students' academic performance at the end of each academic session is based on the number of administered tests, assignments that culminate into Continuous Assessment (C.A.) and examinations. The inclusion of practical activities in Physics with theoretical frame work should attract much concern with a view of eliciting students' interest which will ultimately herald better performance. According to Ali (2009) good academic performance of students in sciences is panacea for a country's economic development.

Statement of Problem

In most secondary schools, practical section of Physics is usually not separated from theory lessons as contained in schools' time table. Hence, majority of teachers at secondary school level focus on the practical section of Physics only for few weeks to the commencement of certificate examinations. At the stage of computation of students' results by these examining bodies, both theory and practical examinations are jointly weighted for final grades. It has become a major concern to education stakeholders and researchers on poor academic performances of students in Physics especially at secondary school level. The method adopted by a Physics teacher determines the level of understanding, attraction and interest shown by the students. The fundamental point of the study is therefore to investigate the extent to which teaching theory lessons alongside practical activities has impact on students' academic performance in Physics.

Purpose of the Study

The study investigated the effect of practical and theory lessons methods on Physics students' academic performance in Delta State College of Education, Agbor. Specifically, the study examined:

1. The difference in Physics students' academic performance when exposed to both practical activities in addition to theory lessons compared to only theory lessons.
2. The extent to which teaching theory lessons with practical activities affects understanding of Physics in College of Education.
3. Relationship between performance of students taught with theory in addition to practical activities and students taught theory only.

Hypotheses

Two hypotheses were formulated for the study.

HO_1: There is no significant difference between the post-test score of students taught with theory in addition to practical activities and pre-test score of students taught theory only.

HO_2: There is no significant difference between the pre-test score of students taught with theory only and pos-ttest score of students taught theory in addition to practical activities.

HO_3: There is no relationship between performance of students taught with theory in addition to practical activities and students taught theory only.

Research Methodology

The study adopted a quasi-experimental design of pretest and posttest using one control and experimental group for four consecutive academic sessions. The respondents were Pre-NCE students of the College of Education, Agbor studying Agricultural Science Education and Computer Science offering Mechanics and Properties of Matter (PHY 021).The Agricultural Science Education students were made as the experimental group (group 1) while the Computer Science students served as the control group (group 2).The decision was jointly made by co-researchers and were of the opinion that Agricultural Science Education students have little background knowledge in Physics. The two groups were given pretest which was before treatment and posttest after treatment.

Sampling

A total of 70 students in group 1 and 129 students in group 2 were involved in the academic sessions under investigation and were taught lessons in mechanics and properties of matter 1 (PHY O21). A probability sampling method involving Agricultural Science Education and Computer Science groups for the Pre-NCE program was adopted for the study. At the beginning of each session, tests were administered to the two groups to determine their background in Physics. The Agricultural Science students were taught in the college permanent site while the Computer Science students had the same lectures in the old site as there were no interferences of lectures and exchange of lecture note books by the two groups.

Instrument

For the study, Physics Continuous Assessment 1, Physics Continuous Assessment 2 and Physics Continuous Assessment 3 of 10% each and assignments weighting 10% were administered during the period of the lecture totaling 40%. Subsequently, final examination that totaled 60% was also administered to both groups at the end of the course for each session under investigation. The examination which consisted short answer questions of section A and section B made of essay questions was validated by co-researchers with a coefficient reliability of 0.82 before being administered to the students. At the end of every semester, the students were examined based on what they were taught and the results were subsequently collated at the end of each academic session which the researchers used for the data. The results were analyzed using mean and Analysis of Covariance (ANCOVA) to determine the group's performance. Furthermore, the performance of group 1 students taught with practical activities in addition to theory lessons were compared using Pearson's product to test for any correlation (Guilford and Fruchter,1978) in order to determine whether there exists any relationship in students' academic performance.

Results

HO_1: There is no significant difference between the post-test score of students taught with theory in addition to practical activities and pre-test score of students taught theory only.

Table 1: Summary of Analysis of Covariance (ANCOVA) of the post-test score of students taught with theory in addition to practical activities and pre-test score

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3676.349[a]	4	919.087	3.674	.007	.070
Intercept	18472.802	1	18472.802	73.846	.000	.276
Pre-test	1035.749	1	1035.749	4.140	.043	.021
Sessions	2635.687	3	878.562	3.512	.016	.052
Error	48529.688	194	250.153			
Total	**575279.497**	**199**				

a. R Squared = .070 (Adjusted R Squared = .051)

Table 1 shows the Analysis of Covariance (ANCOVA) as dependent variable Post-test. The result showed an F-value of 3.512 and with a p-value of .016 which is lower than alpha level of

.05. Hence rejection of the null hypothesis. Therefore, it implies that there is a significant difference in the performance of students exposed to practical activities in conjunction with theory lessons than those exposed to theory lessons only in physics.

HO_2: There is no significant difference between the pre-test score of students taught with theory only and post-test score of students taught theory in addition to practical activities.

Table 2: Summary of Analysis of Covariance (ANCOVA) pre-test score of students taught with theory only and post-test score of students taught theory in addition to practical activities.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2665.624[a]	4	666.406	3.516	.009	.068
Intercept	46551.230	1	46551.230	245.614	.000	.559
Posttest	253.127	1	253.127	1.336	.249	.007
Session	2453.424	3	817.808	4.315	.006	.063
Error	36768.853	194	189.530			
Total	**664116.871**	**199**				

a. R Squared = .068 (Adjusted R Squared = .048)

Table 2 shows the Analysis of Covariance (ANCOVA) as dependent variable pre-test of the post-test score of students taught with theory in addition to practical activities and post-test score of students taught theory only for all the sessions. The results showed a significant difference in performance of students taught theory in addition to practical activities and those taught in the conventional way of theory lessons, hence null hypothesis 2 was rejected.

HO_3: There is no correlation between performance of students taught with theory in addition to practical activities and students taught theory only.

Table 3: Pearson Product Moment Correlation of the relationship between performance of students taught with theory in addition to practical activities and students taught theory only.

Variables	N	Pearson (r)	Sig (p-value)
Practical	199		
		.073	.303
Theory	199		

$\alpha = .05$

Table 3 showed Pearson Product Moment Correlation between the strategies to be adopted to improve students' academic performance. It showed a correlation value (r) = .073 and a p-value of .303. Testing at an alpha level of .05, the p-value is greater than the alpha level. Therefore the

null hypothesis is accepted. This means that there is no significant relationship between the performance of students taught with practical activities and those taught theory only.

Discussion of Findings

The findings import that there is a significant difference in the performance of students taught in conjunction with practical activities and those taught theory only. This connotes that Physics students perform better when practical activities are embedded into the lesson. This supports the works of Lee & Sulaiman (2018) that practical work enhances performance in Physics. The work of Olutola, Daramola & Bamidele, (2016) that practical activities had significant effect in students' academic performance on secondary school students which is also in agreement with the findings of this work. Furthermore, the works of Twahirwa1 & Twizeyimana (2020) which posit that practical activities greatly enhance learners' performance in Physics justifies our work. The result also corroborates the work of Abdi (2014) that the experimental group taught with practical activities understood the topics better than the control group taught without using instruments. Also Musasi, Ocholla & Sakwa (2016) opinion that students taught with concentrated practical activities performed better than those taught using traditional methods of teaching also validates our work. Furthermore the works of Ojediran, Oludipe, and Ehindero affirm that the use of instruments in the laboratory enhances acquisition of skills that can lead to improvement in students' performance in Physics in the senior secondary schools.

The finding also showed that there is no significant relationship between the performance of students taught with practical activities and those taught theory alone which ought to rightly nullifies the hypothesis. This submission corroborates with the works of Hussain, Anwar, and Majoka (2011) that students exposed to laboratory activities perform better and understands concepts of Physics easily.

Conclusion

Consequent upon findings, it is concluded that learning of Physics concepts is better accomplished when theory lessons are taught alongside practical activities rather than teaching only theory aspect of Physics. Group 1 students performed better that group 2 as they enjoyed theory lessons in addition to the practical activities made available to them. The results analysed support the fact that practical skills and theoretical knowledge are both required for the improvement of academic performance of students in Physics.

Recommendations

The following recommendations were made:

1 Physics teachers need to utilize instructional materials during theory lessons in order to promote learning.
2. The Institutional heads are to release fund to equip laboratories with materials in order to accomplish effective teaching and learning of Physics.
3. Students need be encouraged to develop interest in Physics order to enable them acquire manipulative skills for them to handle materials in the laboratory.

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AN APPRAISAL OF THE ROLE OF LEADERSHIP AND EDUCATION IN CURBING INSECURITY IN NIGERIA

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Abstract

This paper is envisioned to appraise the role of leadership and education in curbing insecurity in Nigerian society. Nigeria is currently experiencing numerous security challenges ranging from banditry, abduction and terrorism in virtually many locations in the country. These challenges require action because if left unresolved it can put the nation in apprehension. It is the desire to resolve these insecurity challenges that this paper came into existence. The paper examined causes of insecurity in Nigeria to include but not limited to corruption; social inequality; ethnicity; poverty; loss of value system and insurgency; bad leadership, falling standard of education and poor judicial system. The concepts of leadership and education were examined using conceptual analysis and in addition, the role of leadership and education in curbing insecurity in Nigeria were also appraised. The paper argued that with good leadership and quality education, the challenges of insecurity can be fixed. It was recommended that Leadership should be just and fair, and also endeavor to provide quality education for all. Also, functional and workable education should also be provided. The paper concluded that with competent leadership and quality education, the challenges of insecurity in the country can be resolved to a large extent.

Keywords: Appraisal, Leadership, Education, Curbing, Insecurity, Nigeria

Introduction

Nigeria is currently stressed with numerous forms of insecurity from armed robbery to kidnapping, banditry and terrorism. A situation which affects the lives and general wellbeing of the citizens in the society. This reoccurring phenomenon if left unattended to, is capable of destabilizing the peace of the nation (Akinyetun, 2021). The threat posed by insecurity has dealt a significant setback to efforts to promoting peace and cohesion in the country as noted by Williams (2015) that insecurity is a word that is very common on the lips of most Nigerians and hence, for the good of the nation, allowing insecurity to thrive will have some negative consequences on the peace and progress of the country. This hints that insecurity is an issue of concern to many Nigerians because it affects the nation's security and peaceful coexistence. Leadership plays a crucial role in ensuring peace and security of a nation, but deficiency in leadership gives rise to immense youth unemployment which could have massive implications for the security of the nation (Okolie and Igbini, 2020). This implies that failure in leadership has implications for the security of a country. In support of the preceding discourse, Yagboyaju and Akinola (2019) stated that political leadership in Nigeria have been engrossed by egocentrism and other primordial considerations, rather than giving priority to the masses which has led to

failure in the areas of security and provision of visionary leadership. This is no doubt pointing to the implications of poor leadership on security.

Just like leadership, education also plays significant role in curbing insecurity. Attesting to the role of education in curbing insecurity, Omoroje, Egbule and Emuebie (2020) upheld that quality education helps in reducing the incidences of insecurity in the society. The bone of contention is whether or not the quality of leadership and education currently obtainable can help reduce incidences of insecurity in the country or not? It is in view of the prior discourse that this paper is set out to critically analyse the role of education and leadership in curbing insecurity in Nigeria. In an attempt to do that, the paper shall examine some of the causes of insecurity in Nigeria, concept of leadership, education and insecurity using conceptual analysis thereafter, the role of leadership and education in curbing insecurity in Nigeria will be examined before recommendations are proffered.

What is leadership?

Leadership is basically not about the leader, but about the people. Supporting the foregoing, Plato in Scott (2019) maintained that leaders do not tell people to follow them, but they rather persuade them to follow them. It is about how much the leader love and care for the people. Arguing further, Powell cited in Dando (2017) asserted that leadership is all about the people and not about plans or strategies. It is all about motivating people to get a job done. In the context of this paper therefore, leadership can be described as the act of providing direction for others and show them how to get done what ought to be done. In other words, leadership is the ability of an individual to influence, motivate and enable others get a job done. Consequently, what the individual inspires others to do determines whether or not the leadership is good or bad.

Conceptualizing Education

Education has many definitions. For instance, while Aristotle defines education as the creation of sound mind in a sound body, Gandhi sees education as that which allows one to discriminate between what is right or wrong and good or bad. Education in the context of this paper can be described as that which allows an individual to manage his/her life, and survive problems and crisis. In other words, education is that which guides a person to do the right thing. It can also be described as the process of transforming an individual for the best. Therefore, whenever we talk of education in this article, we are referring to an awareness that can help the individual become a responsible citizen and behave responsibly in the society.

Insecurity as a Concept

Insecurity has been defined by different school of thoughts based on the way they perceived it. In the stand point of William (2015) for instance, insecurity is a situation in which one is exposed to danger or harm. Hence, it can be inferred from the point of view of William that insecurity connotes being vulnerable to danger. For example, if a community is susceptible to attack, such community can be described as being insecure. From the perspective of Jibrin (2021), insecurity is simply a state of being unprotected from hazard that can harm human life. This means insecurity is something that exposes one to danger and uncertainty.

On their part, Achumba, Ighomereho and Akpor-Robaro (2013) view insecurity as the absence of protection or safety. Consequently, it can be argued from the foregoing perspective that

insecurity is simply a deficiency in security and defense. When people are not adequately protected and secured, they would be exposed to danger. This normally happens where the security of people's lives is not given the necessary attention it merits. Agreeing with the foregoing submission, Jibrin (2021) added that insecurity usually occur when law enforcement agents are not well trained, enlightened, remunerated and motivated to do their job. This hints that insecurity can occur when people fail to meet their basic necessities of life. What are these basic necessities of life? These could include food, water, shelter and education.

Causes of Insecurity in Nigeria

For one to be able to outline the causes of insecurity, a reflection on the following questions will be of immense guide. What is the root cause of the current rising insecurity in Nigeria? Who are the people behind the lingering insecurity in the country? What is their motivation? Can the problem of insecurity be resolved without addressing the root causes? Can insecurity be fixed without addressing the economic and educational challenges? Can the current insecurity be blamed on leadership failure? There are several factors that breeds insecurity in the country among which include poor leadership, unemployment, poverty and corruption (Zubairu,2020). Many people are pushed into crime because they do not have a reliable source of income and better living standard. It is important to understand that Nigeria would have been better than what it is today had the challenges of insecurity been resolved.

Nweze cited in Zubairu (2020) has outlined many factors responsible for insecurity in Nigeria which include, but not limited to the following: corruption; marginalization; social inequality; ethnicity; poverty and greed; loss of value system and religious intolerance. Other causes include foreign infiltration, insurgency, bad leadership, youth unemployment, porosity of the border, falling standard of education; poor judiciary system, manipulation of electoral processes by political parties, lack of trust on security agents and lack of transparency. This shows that insecurity is caused by quite a lot of factors and not just one factor and what this implies is that unless solutions to these factors are worked out, the problem will remain stagnant.

Role of leadership in curbing insecurity in Nigeria

One of the major causes of insecurity in Nigeria is bad leadership and this has a lot of implications for security of the nation for the reason that it gives rise to unemployment, hardship and poverty which has engulf the nation into multiple security challenges that can hinder peaceful coexistence and societal transformation. Remarking on bad leadership, Christopher and Julius (2014) averred that Nigeria's growing security challenges can be linked to it's inefficient leadership which has promote insecurity of the nation. Therefore, for the peace and security of the nation, good leadership must prevail and leaders must understand their responsibilities, duties, and obligations. In addition, they must also carefully plan and prepare for leadership and those leadership tasks and responsibilities if they must contribute in fixing the growing security challenges confronting the nation. This means that with correct leadership, the challenges of insecurity can become a thing of the past. Christopher and Julius (2014) opined that leadership is supposedly a tool of effective positive organization, visionary projections, information, education and good policy implementation unfortunately, it is utilized by many in Nigeria as an instrument for self-glorification, imposition, victimization and oppression of others.

The peace, joy and happiness a leader grants to the people he is leading while in power is of immense importance because leadership considers humanity first. Meaningful leadership is always intended towards making life better for the people. Advancing argument in support of this assertion, Gbandi and Amissah (2022) say that good leadership must strive to resolve the challenges of insecurity. What this means is that worthwhile leadership is necessary for curtailing security challenges. Certainly, with correct leadership, an atmosphere of peace and harmony is created and security of lives is provided. On the other hand, evil leadership promotes insecurity in the society making life miserable for the people.

Political leadership in Nigeria have been engrossed by egocentrism and other primordial considerations as opined by Anazodo, Igboke-Ibeto and Nkah (2015) that various regimes have been deeply engrossed in excessive acts of corruption and bad leadership. This has led to failure in the areas of security and provision of visionary leadership. In order to curb the problem of insecurity today, poor leadership, unemployment, poor quality education must be tackled decisively (Aleyomi, 2018). With good leadership, issues of unemployment, corruption and egocentrism can be reduced through job creation and entrepreneurship.

Good leadership requires equity and justice and by this, it implies that everyone must be given their entitlements without prejudice. Correspondingly, good and quality leadership guarantees good governance and good governance arouses peace, unity and security. Accordingly, through good and effective leadership, economic hardship, corruption, banditry and insurgency can be fixed. On the one hand, bad leadership can lead to economic adversity, corruption, kidnapping, banditry and of course insurgency because in bad leadership, fairness and justice cannot be guaranteed (Foster, 2022).

Role of Education in Curbing Insecurity in Nigeria

Generally, in any country where there is high level of out of school children, the consequences are always grave because of its implications for peace, security and societal progress. Currently, statistical evidence as shown by UNESCO (2023) shows that Nigeria, Pakistan and India have the highest number of out of school children in the world. According to UNICEF (2023), the number of out of school children in Nigeria has increased from 10.5 million to about 20 million in 2022. This points to the fact that Nigeria has not done enough to tackle the menace of out of school children which has devastating consequences for the peace security of the nation as affirmed by Abdullahi (2020) that out of school children are more likely to be recruited to join banditry and participate in violent crimes that can pose serious security threat to the nation.

From the foregoing, it is not out of place to say that out of school children can contribute to Nigeria's growing security gloom because most of them are lacking the necessary education that can transform them into rational beings. Currently, in Nigeria there are groups that hold the believe that western education is evil and should not be propagated. Correspondingly, cattle rustling and abductions have been prevalent in some parts of the country in addition to other security challenges earlier raised. It can be inferred from the foregoing that lack of education is the basis for virtually most of the problems discussed. How can education be used as an instrument for resolving these problems?

As earlier discussed, most of the people that engage in criminalities are uneducated and out of school hence, education is responsible for creating awareness and transforming them for the

better. For example, in situation where an individual is unable to acquire formal education, vocational education can stand in and save the situation because a person that is very skillful in carpentry work and tailoring may not have time to be dragged into any criminal activity. Therefore, with the right education (quality education) there is going to be less participation of the uneducated in crimes because peoples mind can be de-radicalized from participating in crimes that can lead to massive insecurity using education as a tool.

Education and leadership are related because an educated leader will always endeavour to take wise decision and set the pace for peaceful coexistence in every society and at all levels of an organization. This peaceful coexistence will help in curbing any challenges that may result to violent conflicts which might lead to insecurity. In the same manner, educated leaders poses the knowledge, skills and disposition necessary for improving the peace and progress of the society since they are expose to knowledge of how to improve better life of their citizens. Certainly, with better life, many citizens may not have time to partake in violent crimes or any form of crisis that will encourage insecurity in the society because they may be contented with the quality of live they are living. This is pointing to the power of education in curbing insecurity.

Therefore, the Nigerian Government must redouble its efforts to transform education at all levels, for the betterment of the security, development and peaceful coexistence. If education is properly harnessed, terrorism and other violent crimes such as abductions would be eradicated. It becomes paramount to mention at this point that education, if adequately utilized can help curb the growing insecurity in the country and augment sustainable peace (Douglas, 2022). Therefore, it is important to point out that failure to provide the citizens with quality education that is desirable can motivate them to participate in violent crimes. This is signifying that when education is in shambles, the tendency is that such an education might not help in creating awareness as it should. The foregoing is pronouncing the need to tackle education squarely so as to liberate the gullible citizens from oblivion capable of ruining their lives. Insecurity could also occur due to lack of political, social, moral and religious education. The more people lack this education, the more they are likely to engage in practices that can breed insecurity since education teaches good morals and civic responsibilities consequently, if this is distorted, it could have upsetting implications for societal peace and security. Why are we talking about education? Education is very paramount in Nigeria because most educated citizens are less likely to encourage or participate in violent crimes than the uneducated population. in the country.

While technology might be useful in combating insecurity in Nigeria, people need education to be able to utilize technology because of its sophisticated nature. Arguing in support of the foregoing, Oludare, Omolara, Umar and Kemi (2006) suggest that the use of technology to combat insecurity is important and requires quality education because no matter how swift technology is deployed to fight insecurity, if the security personnel are not well educated or trained on how to utilize advanced weapons effectively and efficiently, little or no success will be observed.

Conclusion

Nigeria is blessed with diverse ethnic groups and different religions ranging from Islam to Christianity and African Traditional religion. Leaders are chosen from the society and not from another planet and hence, the better the quality of education in the society, the better the leadership and the better the society. This means that with the right leadership and functional

education, many people could be motivated to make contributions for a safer Nigeria. The paper concluded that with competent leadership and quality education, the challenges of insecurity in the country can be resolved to some extent.

Recommendations

1. For any leader to succeed, mastering the arts of good leadership is imperative. Therefore, leaders should exhibit good leadership qualities and be well educated and sound. Leadership must also ensure justice and fairness prevail in everything. Egocentrism and other forms of sentiment should be discouraged. Leadership training should focus on worthwhile accomplishment. If leaders are well educated, they have the tendency to exhibit good leadership that can put the nation on the path to success.
2. Issues relating to corruption in education and leadership should be addressed since it has implications for the security of the country. For instance, if money meant for education and defenses are embezzled by bad leaders it will of no doubt have consequences on the security of the nation. Therefore, anti-corruption agencies should redouble their efforts in the fight against corruption. Similarly, citizens particularly community heads should be given orientation on how to resolve security challenges.
3. Government should strive to provide quality education at all levels of schooling as this can help in addressing challenges of insecurity. In addition, functional and workable education should be provided. What this demonstrates is that lip service should not be paid to educational matters instead, practical education should be provided for the betterment of the individuals and the larger society.

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REWARD SYSTEM AS A PREDICTOR OF SECONDARY SCHOOL TEACHERS' TASK ACCOMPLISHMENT IN CROSS RIVER STATE, NIGERIA.

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Abstract

The study examined reward system as a predictor of secondary school teachers' task accomplishment in Calabar Educational Zone of Cross River State. An ex post facto design was adopted in carrying out the study. One hypothesis guided the study. The sample size comprised four hundred teachers drawn from 43 out of 81 public secondary schools in the educational zone using cluster and stratified sampling technique. Reward System Questionnaire (RSQ) and Teachers' Task Questionnaire (TTQ) were the instruments with reliability coefficient of 0.78 and 0.81 respectively used for data collection. 443 copies of RSQ (teachers) and 1772 copies of TTQ were administered to the respondent by the researchers with the help of research assistants.(for students) Multiple regression statistical analysis was used for data collection. Result obtained showed that reward system predicts teachers' task accomplishment. Based on the finding, it was recommended among others that training opportunities should be made a priority by government as this will help them compete with their counterparts globally.

Keywords: Reward system, Task accomplishment, Teachers, Promotion, Recognition

Introduction

Teachers are the hub of the educational process while the child is the centre of education system. In fact, teachers are indispensable in the education process. The heart of any successful learning programme is well-informed teachers. Teachers as light in the educational world are expected to have all it takes to brighten and nurture the vibrant lives of individual learners with useful knowledge, practical skills and proper value orientation. Teachers' education, their number, training and devotion to duty, their efficiency, effectiveness and capability are essential for the entire educational system. Good educational policies have no meaning unless there are good and dedicated teachers. Voting enough funds and adequate materials may be available, unless the teachers are motivated and adequately catered for, teaching-learning will not be effective (Amalu & Njoku, 2014).

An organization's success is largely contingent on the effective task accomplishment of employees. It therefore implies that teachers' task accomplishment depends largely on the reward system provided by their employer at work place. Teachers are expected to teach students, evaluate them, maintain discipline, counsel and advisee, motivate students to learn and help them mature into responsible adults. To facilitate the accomplishment of educational goals by students, the effective teacher establishes an environment, which is conducive to learning, uses appropriate instructional and interpersonal skills to produce educated students. So, they cannot perform and function creditably without adequate reward inputs from their employer (Okpebru, 2016).

Reward system is one of the strategies employed by organizations for attracting and retaining employees. It influences employees' behaviour and attitude towards their job, if the rewards satisfy their needs and help them to succeed in their personal goals. Anku-Tsede & Kutin (2013) stated that reward system is a means by which employees are actively engaged towards the accomplishment of the mission and vision of the organization. Therefore the system of reward that is effectively administered can result in quality performance, while poorly administered reward system may lead to unproductive performance and low morale. Rewards are often intrinsic and extrinsic. Extrinsic rewards are tangible rewards and these are externals to the work or task performed by the workers. Extrinsic rewards are often in terms of salary/pay, incentives, bonuses, promotion, recognition, job security, gratuities etc. Intrinsic rewards is feeling of pleasure and satisfaction for completion of a task (Gungor, 2011).There are also two basic varieties of rewards; financial and non-financial and both are often utilized positively to reinforce performance behaviour of employee. Financial rewards means pay for performance such as performance bonus, commission, pay raises, paid time off, and gifts etc. While non-financial rewards are social recognition, appreciation, acknowledgement, training, flexible work hour etc. With the help of a reward system, enterprises can appeal, retain and motivate workers (Gabriel; Cheshin; Moran & Van Kleef , 2016).

Recognition is a public honour given to an employee in an organization in appreciation for accomplishing a specific task in a distinctive way. Promotion entails the movement of an employee from one job level to another which entails more responsibilities and higher job titles. Remuneration in a workplace is the basic salary made payable by employer to employee for services rendered to the organization (Amalu & Uche 2014). The engagement of employees in life enrichment programme acquired through skills that will aid them in adapting to changes which in turn improves their performance and thereby meeting standards for the overall interest of the organization is regarded as training opportunities. Fringe benefits are incentives prearranged for employees apart from their wages which intrinsic values for work. If all these are carefully provided as reiterated by Okpebru, (2016) may motivate teachers to perform optimally.

Of importance to this study is the relationship between reward system and teachers' task accomplishment. Salah (2016) carried a study to examine the influence of reward types (extrinsic, intrinsic, social) on employees performance. 308 workers which constituted 60% of the total target of 513 people working for Unified Mining Companies (UMC) located in the Southern part of Jordan were used for the study. The result showed that there is a significant relationship between reward types and employee performance. In their study to examine effective reward management as a tool for improving employees' performance in selected Zenith bank branches in Anambra State, Muogbo and Jacob (2018) used a total of 180 respondents as sample. The finding from Pearson correlation analysis indicated that there is positive relationship between intrinsic, extrinsic rewards and employees performance. A study conducted by Adekunle (2018) to investigate reward system an academic staff job involvement in Osun State tertiary educational institution using 305 academic staff in stated relationship exist between financial, non-financial rewards and job involvement of academic staff. Adetunji; Abari and Mohammed (2020) investigated the relationship between reward system, teachers' attitude to work and their productivity in public sector secondary school in Ogun West Senatorial district Nigeria. A total of 1500 participants from the 30 sampled schools from a population of 86 schools were used. The result showed that reward system has to do with teachers' attitude to work and that there is no significant relationship between teachers' attitude to work and teachers' productivity. Amalu and Uche (2014) study to investigate stress arising from motivation and

professional effectiveness of secondary school teachers in Cross River State using 600 teachers and 2400 students indicated that stress from (recognition, promotion, professional development) significantly influence professional effectiveness of secondary school teachers.

From the reviewed literature, it is obvious that reward system correlates with task accomplishment of workers. Therefore, it is crucial that this present study be carried out since reward is a vital tool for organizational growth and which in turn can renew the overall mission of any organization especially secondary schools when actively engaged.

Statement of the Problem

Teacher is in a profession that requires high intelligence, dedication, concentration and commitment. He has to assess the students, teach them, supervise their activities, discipline them and keep records. From observation, accusing fingers have been pointed at the path of teachers for not doing their work effectively and this ineffectiveness has been linked to the poor performance of students in external examinations. This situation has become worrisome and of great concern to not just the government but educational planners, policy makers, parents and students. Worried over the increasing trend of phenomenon, government, science allowance and rural allowance are paid to deserving teachers, renovations of schools have taken place in schools (Abang, Eteng & Amalu 2021). Parents employed the services of part time teachers to teach their children and wards. Seminars, workshops and conferences have been organized for teachers by both the state and local governments and some Non-Governmental Organizations (NGO) on the need for teachers' performance effectiveness and students' performance, but these efforts yielded little or no effect on the matter. Hence, this study seeks to examine the reward system as a predictor secondary school teachers' task performance in Cross River State, Nigeria.

Purpose of the Study

The purpose of the study was to examine the correlation between reward system and teachers' task accomplishment in Calabar Education Zone. Specifically, the objective of the study was to: determine:

1. Determine combined predictive impact of recognition, promotion, remuneration, training opportunities on teachers' task accomplishment.

Hypothesis

The hypothesis below was formulated to guide the study.

1. Reward system does not significantly predict secondary school teachers' task accomplishment.

Methodology

The study adopted ex-post facto and correlation design. Ex-post facto was used since the indices under study had previously existed before the researcher thought of carrying out the study. In other words there is no manipulation of the independent variables to produce an effect on the dependent variables. The design was deemed appropriate because it aimed at finding out the relationship between variables of study. The population of two thousand, one hundred and twelve(2112) teachers in eighty one(81)

public secondary schools in Calabar Education Zone of Cross River State, Nigeria. This is presented in

Table 1: Breakdown of the population of the study by local government area

LGA	No of schools	No of teachers	No of students
Akpamkpa	18	226	5,659
Akpabuyo	7	128	1.699
Bakassi	3	33	680
Biase	15	193	4,775
Calabar Municipal	17	924	13,426
Calabar south	8	421	8,008
Odukpani	13	187	3,787
Total	**81**	**2112**	**38,034**

Source: *Dept of Planning Research and Statistics, Cross River State Education Board 2022*

A cluster and stratified random sampling technique were adopted for the study. Each of the seven local government areas in research served as a cluster. To enable the research have a clear perspective of the study, 50% of the school in each of the seven selected LGAs were used for the study and this amounted to a total of 43 schools. 21% of teachers were then randomly selected for the study from the selected 43 secondary schools which gave rise to four hundred and forty three (443) teachers out of two thousand, one hundred and twelve (2112) teachers in the seven LGAS. However four (4) students were randomly selected to assess a teacher to ensure objectivity. Total number of one thousand, seven hundred and seventy two (1,772) students assessed 443 teachers. This is indicated in Table 2.

Table 2: Breakdown of sample of the study by local government area

LGA	No of schools	No of teachers	No of students
Akpamkpa	9	47	188
Akpabuyo	4	27	108
Bakassi	2	7	28
Biase	8	41	164
Calabar Municipal	9	194	776
Calabar south	4	88	352
Odukpani	7	39	156
Total	43	443	1,772

Source: *Field work survey, 2021*

Reward System Questionnaire (RSQ) and Teachers Task Accomplishment Questionnaire (TTAQ) were the self-developed instruments used to obtain information for the study. RSQ was made of thirty (30) items measured in a modified 4-point rating scale. Section A consists of teachers' demographic information such as age, sex, marital status. Section B (Part1) has sub variables of the reward system was measured using six items. Each item entailed 4 answer options of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly disagree (SD). Section B (Part11) TTAQ consists of thirty (30) items measured in a modified 4-point response scale designed to elicit information from students' on teachers' task accomplishment in terms of assessment of students, supervision of students' activities, classroom teaching, classroom discipline, record keeping.

The ranges of responses to items were Strongly Agree (SA), Agree (A), Strongly disagree (SD), disagree (D) Face validity was certified by two expert in Measurement and Evaluation in the Department of Educational Foundations University of Calabar, ambiguous items were eliminated and replaced with valid ones and final approval was given for the retention of the instruments as being valid. By Cronbach Alpha reliability method was used to determine the reliability estimate of the instruments. Fifty teachers and hundred students who were not part of the population but have characteristics similar to the respondents that were later used for the actual study were used to determine the reliability. The reliability estimates for RSQ and TTAQ were 0.79 and 0.81 respectively. With the permission of the principals of the various schools the questionnaires were administered by the researchers and .three assistants to the respondents. Explicit clarification was given to the respondents on how to complete the questionnaires. After the exercise, only four hundred and twenty one (421) copies of all the questionnaires were retrieved. Information collated for the research was coded and analyzed with applicable statistical tools. Multiple regression analysis was used to analyze the null hypothesis.

Results

The hypothesis state that reward system does not significantly predict teachers' task accomplishment in terms of assessment of students, classroom teaching, supervision of students, activities, classroom discipline and record keeping. Multiple regression analysis was used in testing the hypothesis. The result of the exploration is presented in Table 3

Table 3: Multiple regression analysis of reward system variables as predictors of secondary schools teachers' task accomplishment

Source of variation	SS	Df	MS	F	Sig.
Regression	636.244	5	127.249	147.174	.000
Residual	358.815	415	.865		
Total	995.059	420			
	Unstandardized Coefficients B	Std. Erros	Standardized Coefficient Beta	T	Sig.
(Constant)	5.713	.463		12.338	.000
Recognition of teachers	.245	.063	.304	3.508	.001
Promotion of teachers	.203	.076	.251	2.672	.008

Remuneration of teachers	.235	.076	.283	3.019	.002
Training opportunities for teachers	.205	.054	.236	3.019	.003
Fringe benefits for teachers	.201	.080	.206	2.198	.034
Dependent Variable: Teachers' Task accomplishment					
R	.800				
R square	.639				
Adjusted R square	.653				
Std. Error of the Estimate	.430				

Significant p< .05; df = 5 & 415; critical F = 2.23

Result of Table 3 shows that calculated F-ratio is 147.174 with significant value of .000. The critical F-ratio is 2.23 is obtained at degree of freedom 5 and 415 under .05 significant level. The calculated F-ratio is greater than critical F-ratio and obtained significance value less than .05level used in the study. These results indicate that the five independent variables jointly and significantly predict the dependent variable, therefore the null hypothesis is rejected. It means that recognition of teachers, promotion of teachers, remuneration of teachers, training opportunities for teachers and fringe benefit for teachers jointly and significantly predict teachers' task accomplishment. The multiple R which is the correlation coefficient between the five independent and dependent variables is .80 shows high degree of association between the variables. The coefficient of determination R is seen to be. 64 and thus depicts a high power of the independent variables in predicting the dependent variable, indicating 64 percent of the alteration in teachers task accomplishment is jointly described by the five independent variables.

The comparative influence of each of the independent variables which indicates the degree of each predictor contribution to the dissimilarity in the dependent variable is shown in the coefficients and t-values. At .05 level of significance, the five predictors, recognition of teachers, promotion of teachers, remuneration of teachers, training opportunities for teachers and fringe benefits for teachers are each found to have significant contribution to prediction of the dependent variable. The standardized coefficient and t-values are as follows: recognition of teachers .304, t=3.508(P<.05), promotion of teachers .251, t=2.67(P<.05); remuneration of teachers, .283 t, 3.093(P<.05); training opportunities for teachers, 236, t=3019(p<.05), fringe benefits for teachers, .206, t=2.198(p<.05). The high the absolute value of beta and t-values, the more important and significant the variable is in predicting teacher task accomplishment. However, the five independent variables are found to be very important and significant in predicting the teachers' task accomplishment, having significant t-valus with contributions that range 20 to 30 percent from each of the variable.

Discussion of Findings

The result of the finding shows a significant predictive relationship between reward system and task accomplishment. The finding is not surprising because most organizations view rewards as a means of motivating certain behaviour in employees, specifically, rewards are intended to motivate employees to perform effectively and efficiently towards achieving organizational goals. The rationale for the use of rewards is to motivate or induce certain behaviour among employees which are viewed as beneficial for enhanced performance while inhibiting other behaviours which they perceived as detrimental to organizational growth and performance. In support of this, it then implies that teachers' task accomplishment depends largely on the reward

system provided by their employer at work place. In support of this assertion, Wasiu and Adebajo (2014) pointed out that workers place great value on the different rewards given to them by their employers. Hence, when these rewards are not given, workers tend to express their displeasure through poor performance and non-commitment to their job. This finding is in consonance with the findings of Salah 2016; Muogbo & Jacobs, 2018; Gabriel et al 2016 who stated in their separate studies that rewards motivation of employees through rewards is one of the significant factors for all firms because it enhances the performance of the employee and the performance of the firm.

Conclusion

The finding concluded that reward system significantly predicted teachers' task accomplishment .Therefore the school system should promote reward system (financial and non-financial in order to motivate teachers achieve their goals and promote optimal fulfilment in work force.

Recommendations

Based on the findings, the following recommendations are made:

1. Teachers' professional development should be made a priority to enable them to be better and be able to compete with other teachers globally.
2. Government should reconsider or review promotion measure, salary increase, recognition patterns as this may ensure that students are taught properly and also avoid brain drain syndrome.
3. Government should encourage the teachers and win their loyalty by including other fringe benefits such as hospital bills in the allowances.

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INFLUENCE OF MARKETING INNOVATION, RE-BRANDING AND COPYRIGHT LAW ON REDUCTION OF PIRACY IN THE BOOK PUBLISHING INDUSTRY IN NIGERIA

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Abstract

This paper determined the influences of marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing induction in Nigeria. Cross sectional research design was used for the study. The population and sample size of the study was 252 registered book publishers under the Nigerian Publishers Association (NPA). Questionnaire was used for data collection. The demographic data and research questions were analyzed using frequency, percentages, mean and standard deviation. The null hypotheses were tested using Partial Least

Squares Structural Equation Modeling (PLS-SEM). The results revealed significant influence of copyright law on reduction of piracy and clear difference in influences of the marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing induction in Nigeria. The study concluded that the copyright law must be enforced in order to significantly reduce piracy in the book industry. The use of marketing innovation, re-branding and copyright law by the book publishing industry in Nigeria had different influences on reduction of piracy in Nigeria. It is recommended among others that book publishers should focus more on the enforcement of copyright law since it is the most important variable that reduces piracy, followed by marketing innovation and finally, re-branding.

Key words: Marketing, Marketing Innovation, Re-branding, Copyright law, Book piracy

Introduction

Marketing deals with recognizing and understanding consumers' needs and wants, and then structuring ways to meet these needs. Thanh, Ha, Dung, Thang and Ngoc (2020) defined marketing as the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large. Onu (2011) noted that marketing comprises activities related to the product itself, the pricing, the distribution, communication or promotion, post sales matters, marketing research and sales forecasting.

Marketing innovation is part of an organization's marketing activities in creating, communicating and delivering value and in managing customer relationships. Thanh, et al (2020) noted that marketing innovation is a type of non-technological innovation that requires firms to make significant changes in their current marketing mix strategies for the improvement of competitive advantages. Marketing innovation is aimed specifically at attracting and retaining customers with existing products and services through innovative methods in pricing and promotion.

Re-branding involves change not only in the visual identity of the organization but it also leads to real change within the organization. Wang'ondu (2016) maintained that the aim of re-branding is to improve the company's relationship with its customers. Oluigbo (2010) described re-branding strategies as part of repositioning without destroying existing brand loyalty. Aaker (2016) noted that re-branding can be as a result of mergers and acquisitions, where by the company then focuses on a new image and vision. In book publishing industry, most publishers rebrand their book in order to beat the pirates at their own game thereby reducing piracy and also to gain competitive market advantage.

Copyright is a legal backing that bestows ownership on the creator of literary work. Onoyeyan (2018) defined copyright as a legal right that protects the owner of an intellectual property from being exploited. The law protects indiscriminate copying and distribution of an author's work without the permission of the author (Ibid). Necula and Mircea (2016) observed that copyright law has directly played an important role in the promotion of innovative processes and indirectly in the process of economic growth.

Book piracy is an attempt by a person or group of persons to infringe on the intellectual property rights of another person. Nkiko (2014) posited that those who engage in this type of activity eat

from the sweat of other people who must have invested their intellect, time and resources. Piracy is the unauthorized reproduction of copyright works, like films, books, music, phonograms, drawings, photographs, broadcasts and computer soft-wares. Igesha (2016) noted that Book Piracy has become almost the norm in Africa especially in Kenya where copies are sold at near give-away prices through a network of street vendors.

The negative effects of piracy made the Nigerian government to establish certain agencies to aid in curbing piracy. Such agencies include the Nigerian Copyright Commission (NCC), the National Film and Video Censors Board which, in conjunction with the Nigerian Police, Nigerian Customs and Economic and Financial Crimes Commission (EFCC), carryout raids on pirates and their syndicates. Nwogu (2015) noted that despite the provisions of the law and the raids by these agencies, book piracy still abound in Nigeria.

Objectives

The following are the objectives of the study

1. determine the influence of copyright law on reduction of piracy in the book publishing industry in Nigeria.
2. determine the difference in influences of marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing industry in Nigeria.

Research Questions

The following are the research questions of this study

1. What is the influence of copyright law on reduction of piracy in the book publishing industry in Nigeria?
2. What is the difference among influences of marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing industry in Nigeria?

Hypotheses

The following are the hypotheses of this study

1. Copyright law has no significant influence on reduction of piracy in the book publishing industry in Nigeria.
2. There is no significant difference among the influences of marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing industry in Nigeria.

Methodology

This study adopts the Cross-Sectional Research Design. The population of this study was two hundred and fifty-two (252) registered book publishers in Nigeria, who registered with the Nigerian Publishers' Association (NPA). The census sampling procedure was used in select all the 252 registered book publishers in Nigeria. Reduction of Piracy Questionnaire Instrument (RPQI) was used for data collection. Analytical tools used included mean, standard deviation and PLS-SEM.

Results and Discussion

The study administered 252 copies of the questionnaire to publishers in Nigeria. 227 copies were returned, which represents 90 percent of the total copies distributed. However, out of the total number of the returned copies, only 218 copies of the questionnaire representing 88 percent of the total copies distributed were found usable for analysis, whereas 5 copies were unengaged and 4 others were outliers and were excluded from the analysis. In line with the suggestion of Sekaran & Bougie (2016) who argued that a 30% rate of return is sufficient for a cross-sectional study, this study with 218 copies of the questionnaire representing 86 percent was used for data analysis. Table 1 shows the details.

Table 1: Response Rate

Questionnaire	Frequency	Rate (%)
Distributed questionnaires	252	100
Questionnaires returned	227	90
Questionnaires not returned	25	10
Questionnaires returned and excluded	9	4
Usable questionnaires	218	86

Source: Field Work, 2022

Demographic Variables of Respondents

In this section, the frequency distribution and percentage of respondents are presented based on their demographic variables. The demographic variables examined in this study includes; gender of the respondents, their educational qualification, the years of their respective firms, experiences of piracy in the business and marketing strategies employed in their business. Therefore, these frequencies as well as percentages of the respondents based on the aforementioned variables are presented in Table 2.

Table 2 Demographic Variables of Respondents (n=218)

Demographic Variables	Frequency	Percentage
Gender		
Male	168	77
Female	50	23
Number of Years in Practice	**Frequency**	**Percentage**
Less than 5 years	31	14
6 to 10 years	65	30
11 to 15 years	12	5
15 years above	111	51
Educational Qualification	**Frequency**	**Percentage**
SSCE	10	5
Diploma	23	11
Degree/HND	96	44
Masters	66	30
Others	23	10
Have you ever experienced Piracy	**Frequency**	**Percentage**
YES	218	100
NO	0	0

Marketing Innovation Strategies employed			
Word of mouth	19	9	
Social Media Marketing	42	19	
Customer Retention Marketing	21	10	
Entering new Market	15	7	
All of the above	121	55	
Others			
Re- branding Strategies employed			
Brand Refresh or Product Modification	22	10	
Brand Merger	12	6	
Full Rebranding	32	15	
Brand positioning	29	13	
All of the above	123	56	
Others			
Awareness of Copyright law in Existence			
YES	218	100	100
NO	0	0	100
Copyright law Enforcement			
YES	32	15	15
NO	186	85	100
Services of Nigerian Copyright Commission (NCC)			
Good	55	25	25
Fair	63	29	54
Poor	100	46	100

Source: Field Work, 2022

As presented in table 2 above, regarding the gender distribution, majority of the respondents participated in this study are male constituting 168, which is equivalent to 77 percent of the total responses usable for the analysis of this research, whereas 50 participants representing 23 percent of the total respondents are female. This shows that more than half of the publishers are male.

Pertaining the years in operation, 31 respondents representing 14 percent responded that their company are less than five years in operation, 65 respondents representing 30 percent answered that their firm's exist between 5 to 10 years, 12 respondents representing 5 percent responded that their firm's exist between 11 to 15 years and lastly, 111 respondents representing 51 percent answered that their firms exist for more than 15 years at the point of the data collection. This implies that most of the responding publishing companies have been in existence for long and can adequately respond to our questionnaire.

Concerning the educational qualifications of the respondents, 10 respondent representing 5 percent have secondary school certificates, 23 people which is equivalent to 11 percent of the respondents have diploma, 96 respondent representing 44 percent of the respondents have either first degree or higher national diploma (HND), 66 respondents representing 30 percent of the total valid responses have masters qualifications, and lastly 23 people representing 10 percent of the total valid respondents belong to others category. This pointed out clearly that the majority of

publishers in Nigeria have first degree and above which is not surprising because of the industry they belong and hence, their ability to respond adequately to the questionnaire.

With respect to whether the respondents have experienced piracy in the past, all the 218 respondents representing 100 percent responded that they have experienced piracy in their publishing activity. This clearly indicates that piracy is a common phenomenon in the publishing industry which has affected all participants in the industry.

In terms of the marketing innovation strategies employed by Nigerian publishers, 19 respondents representing 9 percent used word of mouth, 42 respondents representing 19 percent used social media marketing, 21 respondents representing 10 percent employed customer retention marketing, 15 respondents representing 7 percent adopted strategies of entering new markets and lastly, 121 respondents representing 55 percent employ all the marketing innovation strategies. This implies that all our respondents employed at least one marketing innovation strategies while more than half employ all the marketing innovation strategies.

Concerning re-branding strategies employed by the Nigerian publishers, 22 respondents representing 10 percent used Brand refresh or product modification strategy, 12 respondents representing 6 percent used brand merger, 32 respondents representing 15 percent employ full rebranding, 29 respondents representing 13 percent adopted strategies of Brand positioning and lastly, 123 respondents representing 56 percent employ all the re-branding strategies. This indicates that all our respondents employ at least one re-branding strategies while more than half employ all the re-branding strategies.

Regarding the publishers level of awareness of the Nigerian Copyright law, all the respondents representing 100 percent responded in the affirmative. This implies that all the Nigerian publishers are knowledgeable of the existing Nigerian law that regulates Copyright. On the issue of enforcement of the copyright law, 32 percent respondents representing 15 percent believed that the Nigerian law is effective while 186 respondents representing 85 percent believed that the Nigerian Copyright law enforcement is not effective. Finally, on the services rendered by the Nigerian Copyright Commission(NCC), 55 respondents representing 25 percent believed that the NCC are doing well in protecting the Nigerian publishers, while 63 respondents representing 25 percent believed that the NCC are doing fairly well while 100 respondents representing 46 percent believed that the NCC are doing poor in regulating the industry. This implies that the NCC is not doing up to expectation in regulating the industry at large and protecting the Nigerian publishers against piracy.

Results

Research Question One: What is the influence of copyright law on reduction of piracy in the book publishing industry in Nigeria?

The analysis of data used to answer research question one is presented in Table 3.

Table 3: Mean and standard deviation of influence of copyright law on reduction of piracy in the book publishing industry in Nigeria

Variable	N	$\bar{x}$	SD.
Re-branding	218	3.30	0.91

Reduction of Piracy	218	3.52	0.88

Source: Field Work, 2022

The results of Table 3 showed the influence of copyright law on reduction of piracy in the book publishing industry in Nigeria**.** The analysis revealed mean scores of 3.30 with standard deviations of 0.91 and a mean score of 3.52 and a standard deviation of 0.88 for reduction of piracy. However, the mean from the analysis was greater than the cut-off mean of 3.00. This implied that copyright law influenced reduction of piracy in the book publishing industry in Nigeria within the study period**.**

Research Question Two: What is the difference among influences of marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing industry in Nigeria?

The analysis of data used to answer research question one is presented in Table 4

Table 4: Mean and standard deviation of the difference among influences of marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing industry in Nigeria

Variables	N	Mean	Std. Deviation
MI	218	3.69	0.93
RB	218	3.33	0.90
CL	218	3.30	0.91
RP	218	3.52	0.88

Source: Field Work, 2022

Table 4 showed the difference among influences of Marketing Innovation (MI), Re-branding (RB) and Copyright Law (CL) on Reduction in Piracy (RP) in the book publishing industry in Nigeria**.** The analysis revealed mean scores of 3.69, 3.33, 3.30 and 3.52 respectively **with** standard deviations of 0.93, 0.90, 0.91 and 0.88 respectively. However, the mean scores from the analysis were greater than the cut-off mean of 3.00. This implied that **t**here were differences in influences of marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing industry in Nigeria. Copyright law had the least mean score of 3.30, followed by re-branding whose mean score is 3.33, while marketing innovation had the highest mean score of 3.69.

Hypotheses Testing

Hypothesis One: Copyright law has no significant influence on reduction of piracy in the book publishing industry in Nigeria.

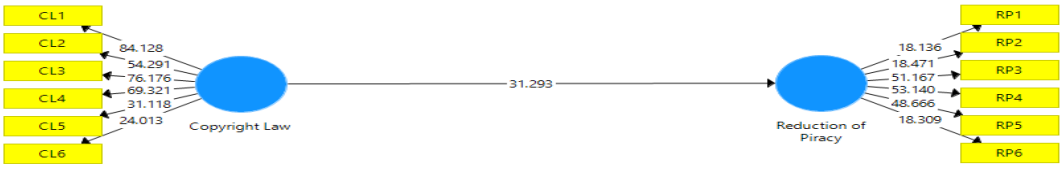

Figure 1: **Hypothesis** one

Table 5 Hypothesis One

Relationship	Beta Values	Standard Deviation	T Statistics	P Values
Copyright Law -> Reduction of Piracy	0.80	0.03	31.29	0.00

Source: Field Work, 2022

From Figure 1 and Table 5, it can be observed that Copyright Law had significant influence on reduction of piracy in the book publishing industry in Nigeria (B=0.80; P<0.05) at 5% level of significance. This implies that a one unit change in Copyright law will lead to 0.80 changes on reduction of piracy in the book publishing industry in Nigeria. Thus, the first hypothesis is rejected.

Hypothesis Two: There is no significant difference among the influences of marketing innovation, re-branding and copyright law on reduction of piracy in the book publishing industry in Nigeria.

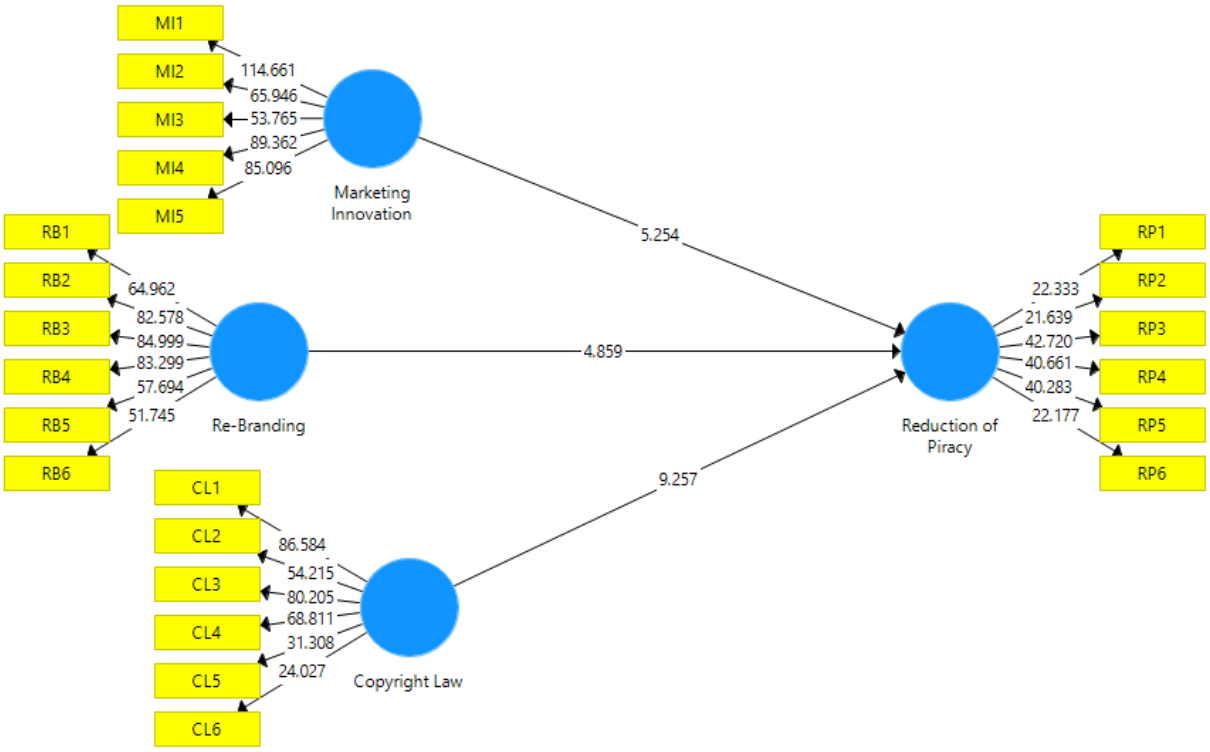

Figure 2: **Hypothesis** Two

Table 6 : Hypotheses Two

Relationship	Beta Values	Standard Deviation	T Statistics	P Values

Copyright Law -> Reduction of Piracy	0.52	0.06	9.26	0.00
Marketing Innovation -> Reduction of Piracy	0.28	0.05	5.25	0.00
Re-Branding -> Reduction of Piracy	0.23	0.05	4.86	0.00

Source: Field Work, 2022

As presented in Figure 2 and Table 6, the statistical analysis showed that all the study variables have significant influence on reduction of piracy in the book publishing industry in Nigeria. Specifically, Marketing innovation had significant influence on reduction of piracy (β=0.28, $p<0.05$), Re-Branding also has positive and significant influence on reduction of piracy (β=0.23, $p<0.05$) and copyright law also positively and significantly influenced reduction of piracy (β=0.52, $p<0.05$). This implies that in order to reduce piracy in Nigeria, Copyright law must be enforced; publishers must engage in marketing innovation and re-branding strategies. Hence, the second hypothesis is also rejected.

Based on the result, there is a significant influence of copyright law on reduction of piracy. This can be observed from beta coefficient of 0.80, t-value of 31.29 and p-value of 0.00 which is significant at 5%. This implies that for every one percent increase (1%) in copyright law, there will be reduction of piracy by 0.80. This implies that when copyright law are formulated and enforced, piracy reduces significantly. This finding is line with the discovery of some researchers such as Anyaegbu, Umejiaku and Masigwe (2016) who recommended that the copyright laws on penalties for infringement of our copyright need to be reviewed with a view to providing stiffer penalties so as to deter pirates from their nefarious activities. Also, Igesha (2016) recommended that police needs to be imparted with proper training in copyright fields and copyright industry associations/copyright societies should launch an extensive campaign in order to discourage the activities of piracy. On the contrary, Odu and Bassey (2015) who discovered people are conversant with copyright issues and the consequences of copyright violations but reduced cost of books in the country can go a long way in reducing piracy in the book publishing industry in Nigeria.

Finally, the result also shows a clear difference in the influence of the independent variables on the dependent variable. While copyright law has the highest influence on reduction of piracy with an effect size of 0.46, followed by marketing innovation with a medium effect size on the endogenous construct (*i.e.,* Reduction of piracy) and then Re-Branding has a small effect on reduction of piracy with an f^2 value of 0.13. It can therefore be concluded that the use of marketing innovation, re-branding and copyright law by the book publishing industry in Nigeria have different influences on reduction of piracy in Nigeria. This implies that the formulation and implementation of copyright law is the most important variable that reduces piracy among other strategies in the book publishing industry in Nigeria. This is followed by marketing innovation and finally, re-branding strategies. This discovery is similar to Ameh (2014) who revealed that there are deficiencies in enforcement mechanism of institutional framework but recommended improvement in the legal regime, enforcing the existing laws and increasing laws so as achieve the aim of reducing piracy in Nigeria.

Conclusion

Following the findings which revealed that copyright law had significant influence on reduction of piracy in the book publishing industry in Nigeria, this study concludes that the use of

marketing innovation, re-branding and copyright law by the book publishing industry in Nigeria had different influences on reduction of piracy.

Recommendations

This study therefore recommends among others that;

1. Book publishers should focus more on the formulation and implementation of more copyright law to reduce piracy.
2. Book publishers should focus more on the of enforcement copyright law since it is the most important variable, followed by marketing innovation and finally, re-branding strategies in the book publishing industry in Nigeria.

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EFFECT OF CONSTRUCTIVE-SIMULATION TEACHING STRATEGY ON ACADEMIC PERFORMANCE, RETENTION AND ANXIETY IN CHEMICAL BOND CONCEPT AMONG SECONDARY SCHOOL CHEMISTRY STUDENTS IN KATSINA STATE, NIGERIA

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Abstract

The study examined the Effect of Constructive-Simulation Teaching Strategy on Academic Performance, Retention and Anxiety in Chemical Bond Concept among Secondary School Chemistry Students in Katsina State, Nigeria. The population of the study comprised of 14,602 Chemistry students from twenty-three public secondary schools in Katsina Zonal Education Quality Assurance. The study adopted Quasi-experimental and control group design. Two schools were selected based on cluster and intact classes were used in each school with a sample size of 113 students. Six objectives, and six research hypotheses were developed. Two validated instruments namely Chemistry Performance Test (CPT) and Chemistry Anxiety Questionnaire (CAQ) were used by the researchers for data collection. The reliability coefficient of the CPT was obtained using Pearson Product Moment Correlation Coefficient which was 0.76 and CAQ was obtained using Cronbach alpha which was 0.96 after correlation. The major findings revealed that there was a significant difference in the mean academic performance, retention and anxiety level between experimental and control group in favour of experimental group. The study recommended among others that there is need for training and retraining of Chemistry teachers by Teachers Training Institutions, Government and Professional Bodies.

Key Words: Constructive-simulation, retention and anxiety, chemical bond concept

Introduction

Science explains the natural existence of man and his activities. Science could be seen as problem solving in order to improve the living standard of man. There are different definitions of science by different schools of thought. Owolabi, (2015) defines science as an integrated part of human activities. It is seen as a dynamic human activity concerned with manipulating spherical world. It is seen as "knowledge covering general truths and laws, obtained and tested through scientific methods as concerned laws with the physical world". Science can be seen as the bedrock of national development. A nation that is not scientifically advanced is termed a backward nation. Science is used by humans to solve daily problems and control the environment. The usefulness of science cannot be under-rated. There are many areas of life that science has contributed so much on, such as in medicine, geophysics, hydrology, agriculture, communication, technology, education, transportation, healthcare to mention a few. Agriculture has improved greatly through the introduction of high yield improved agricultural seeds. Science has led to breakthrough in medical care. Diagnostic machine for checking different ailments and diseases are now controlled and diseases cured through science. The usefulness of science to humanity cannot be over emphasized.

Constructive simulation can be referred to as a process of instruction that spurs learners to use experiences to imitate real things, abstracts, state of affairs, characters or processes as closely as possible in producing knowledge. Constructive simulation relies on some guided discovery where the teacher avoids most direct instruction and attempts to guide the students through questions and activities, to discover, discuss, appreciate and verbalize the new knowledge (Walker, 2018). It implies that constructive simulation is dependent on learning as a guided discovery. In a constructive simulation classroom environment, students are encouraged to make free expressions, collaboration and exchange ideas with their peers. In constructive simulation classroom, the students engage in problem-solving provided before them promptly. Homelosilver, (2016) supports the notion that in the process of utilizing hints, students strive to transform experiences into information meaningful which can lead them to achieve the desired goal. Jong (2015) noted that constructive oriented methods (which constructive simulation is one of them) are active pedagogies that are learner-centered.

Academic Performance as a variable in students' learning has been a matter of concerned in the present-day research. Busari (2015) defines academic performance as the level of achievement in the subject as exhibited by an individual. According to Ogundokun, and Adeyemo (2016) academic performance is the exhibition of knowledge attain or skills developed by students in the school subject usually designed by test scores or by marks assigned by teachers which can be low or high. Poopola (2015) ascertained that, academic performance is a function of a various factors such as method of teaching, teachers' qualifications, child's home background, school environment, attitude, interest among others. Ogundukun, and Adeyemo (2016) added that, academic performance is related to the decline in the availability of teaching resources in the school. According to Pruett (2016) academic performance is the level of achievement attain via the combination of inputs from students' motivation and conduct. Similarly, Adediwura and Tayo (2017) asserted that, performance is generally referred to how well a student is accomplishing his or her tasks and studies, but there are quite number of factors that determine the level and quality of students' performance. Louis (2012) also stressed that, performance is the ability of students to obtain high grades and standard test scores in school courses, especially courses that are part of the core curriculum. Academic performance is defined as the measure of

what a person has accomplished after exposure to educational programmed (Harry & Newcomb, 2011).

Retention is the ability to store what has been learnt and recall what has been stored in the memory. According to Bichi, (2012) retention is the ability to retain and later remember information or knowledge gained after learning in to memory. The nature of the materials to be coded contributes to the level of retention. Teaching methodologies contribute to quality and level of retention in terms of meaningful, concreteness and image evolving characteristic (Adeniyi, 2017). Retention level in relation to age has been investigated by several researchers. Studies on retention and instruction strategy have attracted the attention of many researchers.

Anxiety and anxiety related disorders are one of the most common mental reasons for seeing medical professionals today (Hayes and Strosahl, 2014). Gerow (2012) and Strosahl (2014) also added that, this is why statistics indicate that about quarter of a country's population have exhibited symptoms of anxiety disorders. Adelodun (2018) looked at anxiety as a state of stress and tension, bordering on uneasiness and instability of the mind. Stone (2016) asserted that emotional difficulties caused by school generated anxiety are detrimental to students learning.

Gender in this study refers to male and female students. The effect of gender on the academic performance of students has now been attracting attention from researchers and psychologists. There is however, no consensus among scholars on the effect of gender on students' performance in schools.

Statement of the problem

Chemistry is one of the basic and core science subjects which is designed to prepare students with the knowledge and skills of relevant scientific concepts and processes. It also serves as a base for scientific and technological knowledge that will enable the learner to fit into the scientifically and technologically progressive society. A good number of students that offer science and science related courses such as Medicine, Pharmacy, Engineering, Medical Laboratory sciences among others in higher institutions are expected to pass Chemistry at credit level. However, the result from record analysis of West African Examination Council (WAEC, 2010-2019) and research findings have Shawn that students' academic performance in Chemistry has been poor and this posed serious challenge to the educational stakeholders. Chemistry is very important for technological development and WAEC Chief Examiners report (2017) shows persistent failure among students in SSCE that is the authors decided to bridge the gap by working on the Effect of Constructive-Simulation Teaching Strategy on Academic Performance, Retention and Anxiety in Chemical Bond Concept among Secondary School Chemistry Students in Katsina State, Nigeria

Objective of the study

The aim of this study is to determine the effect of constructive simulation teaching model on Students' academic performance, retention and anxiety in Chemistry among senior secondary schools in Katsina state Nigeria. The specific objectives of the study are to:
1. Determine the effect of constructive simulation teaching strategy on students' academic performance in chemistry among senior secondary students in Katsina State Nigeria.

2. Find out the effect of constructive simulation teaching strategy on students retention ability in Chemistry among senior secondary schools in Katsina State Nigeria.
3. Find out the effect of constructive simulation teaching strategy on students anxiety level in Chemistry among senior secondary schools in Katsina State Nigeria.
4. Find out the effect of academic performance of male and female students in Chemistry taught using constructive simulation teaching strategy and those taught using lecture method.
5. Find out the effect of retention ability of male and female students in Chemistry taught using constructive simulation teaching strategy and those taught using lecture method.
6. Find out the difference between the anxiety level of male and female students in Chemistry taught using constructive simulation strategy and those taught using lecture method.

Research Hypotheses

The following hypotheses were raised and tested at 0.05 level of significance;

Ho_1 There is no significant difference in the mean academic performance scores of Chemistry students' taught Chemistry using constructive simulation teaching strategy and those taught using lecture**:** method.

Ho_2: There is no significant difference in the mean retention ability scores of Chemistry students' taught chemistry using constructive simulation teaching strategy and those taught using lecture method.

Ho_3: There is no significant difference in the mean anxiety level of Chemistry students' taught Chemistry using constructive simulation teaching strategy and those taught using lecture method.

Ho_4: There is no significant difference in the mean academic performance scores of male and female students taught Chemistry using constructive simulation teaching strategy and those taught using lecture method.

Ho_5: There is no significant difference in the mean retention ability scores of male and female Chemistry students taught using constructive simulation teaching strategy and those taught using lecture method.

Ho_6: There is no significant difference in the mean anxiety level of male and female Chemistry students taught using constructive simulation teaching strategy and those taught using lecture method.

Methodology

The researchers adopted quasi-experimental and control group design to examine the Effect of Constructive-Simulation Teaching Strategy on Academic Performance, Retention and Anxiety in Chemical Bond Concept among Secondary School Chemistry Students in Katsina State, Nigeria. There are two groups; experimental and control groups. Experimental group were exposed to experimental treatment (constructive simulation teaching Strategy), while control group were exposed to lecture method. The population for the study comprised the entire senior secondary school students offering Chemistry in Katsina Zonal Education Quality Assurance; whose total number is fourteen thousand six hundred and two (14,602).Eight thousand six hundred and forty-eight (8,648) students were males while the remaining five thousand nine hundred and fifty-four (5,954) were females.

Two schools were selected based on cluster and intact classes were used in each school with a sample size of 113 students. Six objectives, and six research hypotheses were developed. Two validated instruments namely Chemistry Performance Test (CPT) and Chemistry Anxiety Questionnaire (CAQ) were used by the researchers for data collection. The reliability coefficient of the CPT was obtained using Pearson Product Moment Correlation Coefficient which was 0.76 and CAQ was obtained using Cronbach alpha which was 0.96 after correlation. Null hypotheses were tested at $p<0.05$ level of significance using t-test independent sample.

Data Analysis and Discussion of findings

Testing the null hypothesis

HO_1. There is no significant difference in the mean academic performance scores of Chemistry students' taught Chemistry using constructive simulation teaching strategy and those taught using lecture method.

Table 1: t-test Analysis of Academic Performance Score between Experimental Group and Control Group

Groups	N	Mean	Std. Dev.	Df	t value	P value	Remark
Experimental	53	25.55	4.80	111	16.44	.01	Significant
Control	60	12.55	3.10				

From the Table 1, the difference in the mean academic performance between those taught Chemistry using constructive simulation teaching strategy and those taught using lecture method, among senior secondary schools in Katsina state Nigeria, was ($t = 16.44$, $df = 111$, and $P = .01$). Since the p-value (.01) is less than the alpha value (.05), the null hypothesis is hereby rejected and the alternate hypothesis was adopted. So, the researchers concluded that there is a significant difference in the mean academic performance between those taught Chemistry using constructive simulation teaching strategy and those taught using lecture method, among senior secondary schools in Katsina state Nigeria, in favour of students in the experimental group, who were taught Chemistry using constructive simulation teaching model. In line with this (Walker, 2018) posits that constructive simulation relies on some guided discovery where the teacher avoids most direct instruction and attempts to guide the students through questions and activities, to discover, discuss, appreciate and verbalize the new knowledge.

HO_2. There is no significant difference in the mean academic performance scores of Chemistry students' taught Chemistry using constructive simulation teaching strategy and those taught using lecture**:** method.

Table 2: t-test Analysis of Retention Ability between Experimental and Control Group

Groups	N	Mean	Std. Dev.	Df	t value	P value	Remark
Experimental	53	26.07	4.47	111	17.86	.01	Significa

							nt
Control	60	12.11	3.33				

From the Table 2, the difference in the mean retention ability between those taught Chemistry using constructive simulation teaching strategy and those taught using lecture method, (t = 17.86, df = 111, and P = .010). Now since the p-value (.010) is less than the alpha value (.05), the null hypothesis is hereby rejected and the alternate hypothesis was adopted. So, the researchers concluded that there is a significant difference in the mean retention ability between those taught Chemistry using constructive simulation teaching strategy and those taught using lecture method in favour of students in the Experimental group, who were taught Chemistry using constructive simulation teaching strategy. In line with the above Homelosilver, (2016) posits that in a constructive simulation classroom environment, students are encouraged to make free expressions, collaboration and exchange ideas with their peers. In constructive simulation classroom, the students engage in problem-solving provided before them promptly.

HO_3. There is no significant difference in the mean academic anxiety level of Chemistry students' taught Chemistry using constructive simulation teaching strategy and those taught using lecture**:** method.

Table 3: t-test Analysis of Anxiety Level between Experimental and Control Group

Groups	N	Mean	Std. Dev.	Df	t value	P value	Remark
Experimental	53	46.90	3.84	111	19.67	.01	Significa nt
Control	60	33.01	3.17				

From the Table 3, the difference in the mean anxiety level between those taught Chemistry using constructive simulation teaching strategy and those taught using lecture method, among senior secondary schools in Katsina state Nigeria was (t = 19.67, df = 111, and P = .010). Now since the p-value (.010) is less than the alpha value (.05), the null hypothesis is hereby rejected and the alternate hypothesis was adopted. So, the researchers concluded that there is a significant difference in the mean anxiety level between those taught Chemistry using constructive simulation teaching strategy and those taught using lecture method. Students in the Experimental group, who were taught Chemistry using constructive simulation teaching strategy recorded less anxiety level than those in the control group, this is because the higher the mean score, the less anxiety level. This why Stone (2016) asserted or posited that emotional difficulties caused by school generated anxiety are detrimental to students learning.

HO_4. There is no significant difference in the mean academic performance scores of male and female students taught Chemistry using constructive simulation teaching strategy and those taught using lecture method.

Table 4: t-test Analysis of Academic Performance Score between Male and Female Students

Groups	N	Mean	Std. Dev.	df	t value	P value	Remark
Male	30	25.80	5.33	51	.42	.66	Not Significant
Female	23	25.13	3.92				

From the Table 4, the difference in the mean academic performance between male and female students taught Chemistry using constructive simulation teaching model, among senior secondary schools in Katsina state Nigeria was (t = .420, df = 51, and P = .66). Now since the p-value (.66) is greater than the alpha value (.05), the null hypothesis is hereby retained. Hence, the researcher concluded that there is no significant difference in the mean academic performance between male and female students taught Chemistry using constructive simulation teaching model, among senior secondary schools in Katsina state Nigeria. This in line with Adediwura and Tayo (2017) asserted that, performance is generally referred to how well a student is accomplishing his or her tasks and studies, but there are quite number of factors that determine the level and quality of students' performance.

HO_5. There is no significant difference in the mean retention ability scores of male and female students taught Chemistry using constructive simulation teaching strategy and those taught using lecture method.

Table 5: t-test Analysis of Retention Ability between Male and Female Students

Groups	N	Mean	Std. Dev.	df	t value	P value	Remark
Male	30	25.44	4.95	51	1. 16	.25	Not Significant
Female	23	27.13	3.44				

From the table 5, the difference in the mean retention ability between male and female students taught Chemistry using constructive simulation teaching strategy, among senior secondary schools in Katsina state Nigeria was (t = 1.16, df = 51, and P = .25). Now since the p-value (.25) is greater than the alpha value (.05), the null hypothesis is hereby retained. So, the researcher concluded that there is no significant difference in the mean retention ability between male and female students taught Chemistry using constructive simulation teaching strategy, among senior secondary schools in Katsina state Nigeria. According to Bichi, (2012) retention is the ability to retain and later remember information or knowledge gained after learning in to memory. The nature of the materials to be coded contributes to the level of retention.

HO_6. There is no significant difference in the mean anxiety level of male and female students taught Chemistry using constructive simulation teaching strategy and those taught using lecture method.

Table 6: t-test Analysis of Anxiety Level between Male and Female Students

Groups	N	Mean	Std. Dev.	df	t value	P value	Remark
Male	30	48.00	3.88	51	2.48.018		Significant
Female	23	45.06	3.10				

From the Table 6, the difference in the mean anxiety level between male and female students taught Chemistry using constructive simulation teaching strategy, among senior secondary schools in Katsina state Nigeria was (t = 2.48, df = 51, and P = .018). Now since the p-value (.018) is less than the alpha value (.05), the null hypothesis is hereby rejected and the alternate hypothesis is hereby adopted. So, the researcher concluded that there is a significant difference in the mean anxiety level between male and female students taught Chemistry using constructive simulation teaching strategy, among senior secondary schools in Katsina state Nigeria. The male students in the Experimental group, who were taught Chemistry using constructive simulation teaching strategy recorded less anxiety level than their female counterpart, this is because the higher the mean score, the less anxiety levels. Adeniyi, (2017) posits that teaching methodologies contribute to quality and level of retention in terms of meaningful, concreteness and image evolving characteristic.

Discussions of the Findings

From the results above, it was clear that there was a significant difference in the mean academic performance and retention between those taught Chemistry using constructive simulation teaching strategy and those taught using lecture method, among senior secondary schools in Katsina State, Nigeria. This was in favor of students in the Experimental group, who were taught Chemistry using constructive simulation teaching strategy.

Again, from the finding, it was discovered that there was no significant difference in the mean academic performance and retention between male and female students taught Chemistry using constructive simulation teaching strategy, among senior secondary schools in Katsina state Nigeria. This implies that both male and female students taught using constructive simulation teaching strategy performed at almost the same pace.

It was found from this study that there was a significant difference in the mean anxiety level between male and female students taught Chemistry using constructive simulation teaching strategy, among senior secondary schools in Katsina state Nigeria. The implication of this finding is that male students in the Experimental group, who were taught Chemistry using constructive simulation teaching strategy recorded less anxiety level than their female counterpart. That is based on this finding, simulation teaching technique is gender biased in terms of reducing anxiety level, in favour of male students

Recommendations

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

1. Since constructive simulation teaching strategy enhanced academic performance, it should be emphasized in the curriculum of Chemistry teaching / learning process;
2. More practical teaching should be enforced;
3. Government should provide adequate practical facilities for teachers;
4. Chemistry teachers should always be trained and retrained;

5. Chemistry orientation, workshops and seminars should always be organized for chemistry teachers in particular and science teachers in general; and

6. Constructive simulation teaching strategy should be integrated into teaching chemistry.

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AN EXAMINATION OF JSS III STUDENTS' KNOWLEDGE OF PROFESSIONAL CAREER AWARENESS IN TUDUN MATAWALLE GOVERNMENT SECONDARY SCHOOLS KATSINA STATE

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Abstract

This study is an Examination of JSS111 Students' Knowledge of Professional Career Awareness in Tudun Matawalle Government Secondary Schools Katsina State. The population of the study was on 260 students studying in the junior secondary schools Tudun Matawalle in Katsina city. A students' professional career awareness test with thirty questions was used to collect the data. Spearman-Brown correlation coefficient method was used to determine the relationship between the variables. The study's tool was created by the researcher. To determine the students' awareness of professional careers, the researcher created the "Professional Career Awareness Test." The test consisted of 30 questions of an objective nature. The Cronbach's Alpha index and the split-half Spearman-Brown coefficient method was used to determine the reliability. The principals of the secondary schools chosen for the study were first approached for permission. In the context of a typical classroom setting, the researcher personally visited the schools and administered the necessary instructions as well as the professional career awareness test to the students. The data collection in each class was completed in a single period. Correlation was calculated using SPSS. The reliability was calculated using the Cronbach's Alpha index and the split-half Spearman-Brown coefficient. This analysis was carried out using the SPSS package. This study reveals that there is a significant correlation between students' professional career awareness, academic achievement, gender and parents' educational status. This shows that the government should readdress the issue of career awareness in secondary schools so that students will be guided on career selection and a proper academic success.

Keywords: Professional Career Awareness, Academic Achievement, Parents Educational Status, Students Gender

Introduction

The completion of Junior Secondary School Certificate examination by students marks a significant beginning for decision making because they must make a significant career decision with the assistance of the school, their parents or guidance. Both parents and students appear perplexed in their decisions regarding their children's career development. As a result, the student must plan his or her career. He should concentrate on selecting the appropriate subject combinations so as to find the appropriate job, and succeeding in that job. The JSCE is the first significant turning point for students in the Nigerian educational system (Idowu, Ifedayo, & Idowu, 2020). The students' future careers were all but decided during this time (Ogbuanya & Ede, 2017; Okolie et al., 2020). Because students must choose a specific educational path and because of the implications for their future employment opportunities, they should also look into careers and think about what they want to do in the future (Adegun & Aremu, 2013). This is, in some ways, what is meant by career awareness. When they reach a critical stage in their academic careers, junior secondary students must decide what their goal is, what they want to be, and what the requirements are for that. Where do they look for those credentials? They must be aware of all of these variables (Falco & Steen, 2018). Numerous students' careers have been ruined as a result of their lack of awareness (Miles & Naidoo, 2017; Rajab, 2021; Wong & Yuen, 2019). The researcher has observed such phenomena. The idea of the students' career prospects aroused the researcher's interest because they typically come from low-backward areas, uneducated families, and poor economic circumstances. These students lack advantages that could help them advance in their careers. Because junior secondary school is the first step in their career, the current study investigated the professional career awareness of students at this lower level.

Research Objectives

1. To examine professional career awareness of the junior secondary school students related to academic achievement.
2. To investigate professional career awareness of the junior secondary school students related to their parents' educational status.
3. To examine professional career awareness of the junior secondary school students related to gender.

Research Questions

1. What is the level of the professional career awareness of the junior secondary school students in Katsina state Nigeria?
2. What is the impact of parent's educational status on the professional career awareness of the junior secondary school students in Katsina state Nigeria?
3. What is the impact of gender on the professional career awareness of the junior secondary school students in Katsina state Nigeria?

Hypotheses of the Research

Ho1: There is no significant relationship between the students' professional career awareness and students' academic achievement.

Ho2: There is no significant relationship between the students' professional career awareness and parental educational status.

Ho3: There is no significant relationship between student's gender and professional career awareness in the junior secondary school.

Research Methodology

The present study was on 30 students studying in the junior secondary schools from the secondary schools of Tudun Matawalle Katsina city. Students were selected from the total three schools, students studying during the 2022/2023 academic year. The study's tool was created by the researcher. To determine the students' awareness of professional careers, the researcher created the "Professional Career Awareness Test." The test consisted of 30 questions of an objective nature. The Cronbach's Alpha index and the split-half Spearman-Brown coefficient method was used to determine the reliability.

The principals of the secondary schools chosen for the study were first approached for permission. In the context of a typical classroom setting, the researcher personally visited the schools and administered the necessary instructions as well as the professional career awareness test to the students. The data collection in each class was completed in a single period.

Correlation was calculated using SPSS. The reliability was calculated using the Cronbach's Alpha index and the split-half Spearman-Brown coefficient. This analysis was carried out using the SPSS package. To test the relationships between junior secondary school students' academic achievement, gender, parental education status, and professional career awareness.

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1. Relationship Between Students' Career Awareness and Academic Performance

	N	Sig. (2-tailed)	Pearson Correlation
Student Career Awareness	**30**		
1		**-500**	
.005			
Students' Academic performance	**30**		
1		**.005**	

***Correlation is significant at 0.01 level (2-tailed)**

The description of Spearman Rho Coefficient (rs), in Guilford's (1973)

Rule of Thumb: the relationship between variables is stated below

< .2 Negligible

.2 - .4	Low
.4 - .7	Moderate
.7 - .9	High
> .9	**very high**

Therefore, based on the description of Spearman Rho Coefficient Rule of Thumb, the correlation between the two splits of the students' professional career awareness and students' academic achievement test was 0.005, which indicates that the relationship is moderate, it shows that the students had moderate Professional career awareness and a moderate academic achievement. Therefore, the first hypothesis is rejected that there is no significant relationship between the students' professional career awareness and their academic achievement. It also implies that that the knowledge of professional career that lies ahead by the student affect how well they perform in their chosen courses

Table 2. Relationship between students' professional career awareness and gender

Correlations			Students Professional Career Awareness	Male Students	Female Students
Spearman's rho	Students Professional Career Awareness	Correlation Coefficient	1.000	-.500**	.127
		Sig. (2-tailed)	.	.005	.504
		N	30	30	30
	Male Students	Correlation Coefficient	-.500**	1.000	.012
		Sig. (2-tailed)	.005	.	.949
		N	30	30	30
	Female Students	Correlation Coefficient	.127	.012	1.000
		Sig. (2-tailed)	.504	.949	.
		N	30	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Therefore, based on the description of Spearman Rho Coefficient Rule of Thumb, the correlation between the three splits of the students' professional career awareness, male students' academic

achievement and female students' academic achievement test was 0.94, which indicates that the relationship is very high. This shows that the hypothesis is rejected indicating that there is a very high significant relationship between the students' Professional career awareness and gender. Looking at the table we can say that the female students were having more sense of awareness and achievement compared to the female students in the study area.

Table 3. Relationship between students' professional career awareness and parents' educational status

Correlations			Students Professional Career Awareness	Parents Educational Status
Spearman's rho	Students Professional Career Awareness	Correlation Coefficient	1.000	.500**
		Sig. (2-tailed)	.	.005
		N	30	30
	Parents Educational Status	Correlation Coefficient	.500**	1.000
		Sig. (2-tailed)	.005	.
		N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Therefore, based on the description of Spearman Rho Coefficient Rule of Thumb, the correlation between the students' professional career awareness, and parents' educational status test was 0.005, which indicates that the relationship is moderate. This shows that the hypothesis is rejected indicating that there is a moderate significant relationship between the students' Professional career awareness and parents' educational status.

Conclusion

The study's findings conclude that junior secondary school students had a moderate knowledge of professional careers that lies ahead of them. This is supported by a research conducted by Falco & Steen,(2018) which stated that the awareness of the career that subject chosen offers could impact on the seriousness of the students. The junior secondary school level is crucial for students' professional careers. Career direction is determined by the courses that is chosen in the schools. Furthermore, it could be concluded that students' professional career awareness has a relationship with students' gender because it was discovered by the study that the female gender has more awareness of the career ahead of them compared to their male counterpart. Finally, the study observed a high relationship between student's career awareness and their parent educational status. It was established that students' from highly educated homes enjoyed the support and guidance of their parent in choosing subjects because of the career they would want to engage in.

Recommendation

Based on the above findings and conclusion, the study makes the following recommendations:

1. Programs for professional career guidance and times set aside just for professional guidance should be available in schools.
2. Teachers interested in providing professional guidance be chosen and trained for such purpose.
3. In order to help students become aware of their interests and skills, the government and schools should both make an effort to create counselling centres in each secondary school.
4. Expert guidance should be made available and time created for the pursoe of career guidance in each secondary school.

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EFFECTS OF GUIDED AND UNGUIDED DISCOVERY STRATEGIES ON ATTITUDE AND ACADEMIC PERFORMANCE IN BIOLOGY AMONG SENIOR SECONDARY SCHOOL STUDENTS IN KATSINA STATE, NIGERIA

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Abstract

This study investigated the effect of guided and unguided discovery strategies on attitude and academic performance in genetic among senior secondary schools' students in Katsina State, Nigeria. Two statements of objectives, two research questions and two null hypotheses was formulated to guide the study. Quasi-experimental research design was used for the study. The population of the study consisted of 7768 (5008 male and 2760 female) SSII Biology students. Stratified sampling was used to select three schools out of 24 co-educational schools in MZEQA. A sample of (158) senior secondary school students consisting of 84 males and 74 female Biology students were selected and used for the study. Two validated instruments were used for data collection namely Genetic Performance Test GPT with reliability coefficient of r=0.82 and Students Attitudes to Genetics Questionnaire SAGQ with reliability coefficient of r=0.76 respectively. Mean and Standard deviation were used to answer research questions, Analysis of Variance (ANOVA) Kruskal Wallis were used to analysed the null hypotheses at 0.05 level of significance. The findings of the study revealed that students taught genetic concepts using guided and unguided discovery strategies performed better than those taught genetic concepts using conventional method. And, the findings also indicated that guided and unguided discovery strategies promote positive attitude than conventional method. It was recommended among others that; Biology teachers should expose students either guided or unguided discovery strategy to improve students' attitude and academic performance in genetic at senior secondary school.

Keyword: Discovery strategy, Guided discovery, Unguided discovery, Attitude

Introduction

Science education is very important to the development of any nation (Omosewo. 2011). That is why every nation must take it very serious in all institution of learning. Many of the developed world were able to achieve so much in science and technology because of science education. The Federal Government of Nigeria in particular emphasized the teaching of science and technology in all level of education in the country as stipulated in the national policy on education. The nation policy on education also adopted in the teaching of basic science such as physics, chemistry and biology.

Biology education is very important to any growing economy like Nigeria. Many graduate of Biology education are self-employed and employers of labor. Many own schools for themselves where people work and earn their living, while some are in fish business. Biology is a science

subject taught in Nigerian secondary schools and it is one of the core science subject. It comprises of content of microscopic organisms in the biosphere and all living thing in general. Okso and Tartiyus (2005) defined biology as the study of living things which include plants and animals and .it is also a subject that ranges from microscopic organisms in biosphere, including the earth surface. Sarigin (2010) defined biology as one of the science subject that is offered at Senior Secondary School Certificate Examination in Nigerian. It can be said that the fundamental characteristics and importance of biology today make it to be a standard subject of instruction at all level of Education for several careers such as Medicine, Agriculture, Pharmacy etc. Biology contains several branches, among which are botany, zoology, reproduction, ecology, genetics etc.Genetics being integral part of Biology syllabus constitute the last aspect of senior secondary school curriculum beside evolution and ecology. Consequently, the teacher finds it difficult to teach the students genetics concepts appropriately due to its abstract in nature. Tis contributed to the poor attitude and performance of students in SSCE as observed by WAEC and NECO Chief Examiners

Attitude is a tendency to behave in a particular way. which could be a favorable or unfavorable evaluative reaction toward something or someone, exhibited in one beliefs, feeling or intended behaviors (Myers, 2012). Psychologists defined attitude as a learned tendency to evaluate things in a certain way. Kendra (2010). An attitude is an evaluation of an attitude object ranging from extremely negative to extremely positive. Wood (2010). Attitude can also be defined as a mental or natural state of readiness organized through experience, influencing dynamically or directly the individual's response to all objects and situation with which it related. Deeksha (2019). Some others have said that attitude is a learned or more or less organised tendency to respond in a persistent manner usually negatively or positively with reference to some situation, ideas, object or class of such objects. Attitude determine the person orientation toward his social and physical environment including himself, because of a particular attitude toward a specific stimulus, motives arc aroused, and action is mobilized to approach or avoid the stimulus (Deeksha, 2019). The erefore positive attitude encourages students to perform well in a very complex concept like genetics (McLeod, 2018).

Academic performance refers to performance outcome in intellectual domain taught at school, college, university (Bilgin, 2012). As an indicator of intellectual education, academic performance is the most important prerequisite for individual and society prosperity (Bell, 2013). Adeyemi (2008) stated that academic performance is the result of academic instruction and learning, accomplishment of an aim, academic performance is regarded as the standard of students acquiring of knowledge of study or acquisition of certain skills at the end of educational instruction. However, the factors that influence student's academic performance in genetic at senior secondary school are not conclusively known and could be multivariate in nature, they include: student's attitude, interest, study habit etc. (Okoto, 2014). This is the reason why this study consider attitude as one of the variable of a study.

Discovery strategy is an instructional strategy that is useful in teaching science, because it is an activity designed in such a way that students perform certain mental processes in an attempt to find a lasting solution to a problem (Grauer, 2016). According to Egwu (2005), discovery strategy can be of two types; Guided and Unguided Discovery strategies. Guided Discovery strategy is that method of teaching which consist of an instructional mode which can be inductive or deductive in nature. Guided Discovery according to Otobo (2012) is a psychological construct that is based on the need to provide relevant motivation for students to participate in the generalization of new ideas related to the subject of instruction. In guided discovery some

general principles are given, and the learner is required to use the principles in order to discover the solution to a specific problem. In this the learner have no experience or relevant background on the principles given, knowledge is not established and there is need to save time. Thus, guided discovery is the only alternative. Unguided Discovery strategy is an instructional strategy, in it a teacher will provide the students with a very general area of study and a student prepare final products. Albert (2014) the students are free to use whichever resources they want use in order to research the area in question. The teacher become other resources that the students choose to use as a guide to other resources and any new skill required. In this method the students are working at their own pace and don't want interruption.

Statement of the Problem

Genetic is an aspect of natural science (Biology), which involves transmission of characters from parents to offspring. It also deals with the study of gene, variation and hereditary in organisms. Learning such natural science is not just require for mastery of knowledge contents in the form of fact, concept or principles alone, but also a process and practice. Despite the important of Biology subject and its popularity among Nigerian students the academic performance at senior secondary school level has been poor. However, the WAEC Chief Examiner's Reports (2018 – 2022) revealed that the percentage failure in Biology is higher than fifty percent. Specifically, the students' performance in Biology from 2018 – 2022 was not impressive, over 50% of students had D7 - F9 in the year indicated. This is an indication of poor performance in the subject among Biology students.

The situation appears to still remain till date. The observed failure rate according to Usman (2010) is mostly attributed to improper exposure to laboratory activities, lack of problem solving ability, poor science background at junior secondary school and negative attitude of students toward the subject. Hassan (2013) stated that part of the problems leading to this failure rate in genetics to include poor method of teaching. This is supported by the assertion of Nsofor and Ala (2013) who attributed the deterioration in students' performance in genetic to ineffective strategies of teaching Biology. Edward (2019) found that problem-solving approach when applied to classroom instruction can significantly improve the understanding and performance in mathematics and can also promote a favorable attitude toward the subject. This study will use guided and unguided Discovery Strategies to determine its effect on students' attitude and academic performance in Biology among senior secondary schools in Katsina State, Nigeria.

Objectives of the Study

The major objective of this study is to examine the effects of guided and unguided discovery strategies on students 'attitude and academic performance in Biology among senior secondary schools in Katsina State. and the specific objectives are to:

1. Find out the effects of guided and unguided discovery strategies on academic performance of Biology students in genetic concepts

2. Identify the effect of guided and unguided discovery strategies on Attitude of Biology students in genetic concepts

Research Questions

Based on the specific objectives, the following are the research questions that this study intends to answer:

1. What is the difference in the mean performance scores of students taught genetics concepts using guided and unguided discovery strategies and those taught using Lecture Method

2. What are the differences in the mean attitude scores of students taught genetic concepts using guided and unguided discovery strategies and those taught genetics using Lecture Method?

Research Hypotheses

The following null hypotheses are formulated for testing at $p< 0.05$ level of significance

Ho_1. There is no significant difference in the mean performance scores of students taught genetic concepts using guided and unguided discovery strategies and those taught using Lecture Method.

Ho_2. There is no significant difference in the mean attitude scores of students taught genetic concepts using guided and unguided discovery strategies and those taught using Lecture Method.

Research Methodology

Quasi-experimental and control group design involving pre-test and post-test, control were used in this study. The study involved three groups of two experimental and one control groups. The experimental group one was taught genetic concepts using guided discovery strategy. And the experimental group two were taught the same concept using unguided discovery strategy. While control group taught the same genetic concepts using Lecture Method of teaching. Initially a pre-test was administered to students to determine the equivalence of the groups, that is experimental group one and experimental group two and control group on their attitude and academic performance. The experimental group one exposed to guided discovery strategy and the experimental group two was exposed to unguided discovery strategy respectively. While control group exposed to conventional method of teaching within the period of four weeks, by the end of the treatment, a post-test was administered to all groups to determine whether the use of guided and unguided discovery strategies will enhance student's attitude toward genetic and academic performance in Biology. This design was used in this study because the researcher used intact classes because the sample schools selected has more than two arms and researcher decided to select SSIIA from each school because they are offering biology as a core subject

The population comprises the entire senior secondary schools two (SSII) Biology students of secondary schools in Katsina State. The study was carried out in Malumfashi Zonal Education of Katsina State. The Zone consists of three Local Government Areas namely: Kafur Kankara and Malumfashi. The study also was delimited to Malumfashi, Kafur and Kankara Local Government Areas. The reason for choosing the areas was based on the fact that student's performance in Biology in the areas was poor, and the researcher is familiar with the locations of all the schools in the areas, which give opportunity for researcher to monitor and supervise the experiment properly. However, a sample population of 158 senior secondary school two (SSII) Biology students from three co-educational secondary schools was selected in Malumfashi

Education Zone. There are 24 public co-educational schools in Malumfashi zone, the SSII two students in various schools in the zone are 7768. (5008 are male 2760 are female).

Out of twenty-four co-educational secondary schools in Malumfashi Zonal Education Quality Assurance. Three schools were selected using stratified sampling technique in Malumfashi, Kafur and Kankara Local Government Areas. The reason for choosing co-educational schools was because gender is one of the variables under study. One intact class of Biology students of SSII was purposively selected from each school sampled, making a total of three intact classes of SSII Biology students from three co-educational schools. SSIIA class were selected from each school because they are offering Biology as one of the core subjects.

Two instruments were used in this study for data collection which are: Genetics Performance Test (GPT) and Students Attitudes to Genetic Questionnaire (SAGQ) which was adopted from (Mahmud, 2017).

Genetics Performance Test GPT and Students Attitudes to Genetics Questionnaire SAGQ were validated by three experts with minimum qualifications of PhD. Pilot testing was conducted on SSII Biology students of Government Day Senior Secondary School Dan-rimi Malumfashi Local Government Area of Katsina State, which is within the study Area, but was excluded during sampling of the population. The reliability coefficient of Genetics Performance Test GPT and Students Attitudes to Genetics Questionnaire SAGQ were found to be $r = 0.82$ and $r = 0.76$ respectively, which indicated that reliability of the Instruments were suitable and can be used for data collection in this study.

The data were collected after marking the scripts of students in academic performance and attitudes toward genetics for experimental and control groups. The collected data from pre-test and post-test were analyzed using Mean, Standard Deviation, Analysis of Variance (ANOVA) and Kruskal Wallis statistical tools to answer each stated research questions and tested formulated null hypotheses. Mean and Standard Deviation were used to answer research question 1 to 4, and ANOVA and Kruskal Wallis to test formulated null hypotheses 1 to 4, at alpha value 0.05 level of significant.

Results

RQ1 what is the difference in the mean performance scores of Biology students taught genetic concepts using guided and unguided discovery strategies compared to their counterparts taught the same concepts using Lecture Method of teaching?

Table 1: Posttest Mean Scores and Standard Deviation of Biology Students taught Genetic Concepts using Guided and Unguided Discovery Strategies and those taught using Lecture Method

Groups	N	mean	S D	M D
EG1(Guided Discovery)	52	35.34	0.57	
EG2 (Unguided Discovery)	51	32.42	0.57	2.92
EG1 (Guided Discovery)	52	35.34	0.57	
CG (Conventional Method)	55	28.75	0.55	6.59
EG2 (Unguided Discovery)	51	32.42	0.57	
CG (Conventional Method)	55	28.75	0.55	3.67

The Table 1 indicated the performance mean scores of Biology students taught genetic using guided and unguided discovery strategies and those taught genetic using Lecture Method. The mean calculated to be 35.34, 32.42 and 28.75 respectively. The performance mean scores of guided discovery strategy was highest while that of the Lecture Method was the lowest. The mean difference between guided and unguided discovery strategies was 2.92; between guided and conventional method was 6.59 and between unguided and Lecture Method was 3.67. To show which strategy is the best can be seen in their mean scores. From the table 4.1 Guided discovery strategy has the mean score of 35.34 which is the highest while unguided discovery strategy has mean score of 32.42. This shows that Guided discovery strategy is the best as indicated in the result of this study.

RQ2 What is the difference in the mean attitude scores of senior secondary school SSII Biology students toward genetic concepts when exposed to guided and unguided discovery strategies and those exposed to Lecture Method?

Table 2: Mean Rank of Attitudes of Students exposed to Guided and Unguided Discovery Strategies and Lecture Method in Genetic.

Groups	N	Mean Rank	Sum of Mean Rank	Mean Rank Difference
EG1	52	122.16	6352.32	
EG2	51	78.66	4011.66	43.5
EG1	52	122.16	6352.32	
CG	55	39.95	2197.25	82.21
EG2	51	78.66	4011.66	
CG	55	39.95	2197.25	38.71

In Table 2 the result revealed that the mean Rank of SSII Biology students' attitude exposed to guided discovery strategy was 122.16 and sum of the rank was 6352.32; for those exposed to unguided discovery strategy has a mean Rank of 78.66 with the sum of the rank 4011.66. While those in control group recorded the mean Rank of 39.95 and the sum of the rank 2917.25. The mean rank difference between guided and unguided discovery strategies was 43.5; between guided and Lecture Method was 82.21 and between unguided and Lecture Method was 38.71. This shows that Biology students exposed to guided discovery strategy has higher attitude change than those exposed to unguided discovery strategy, while those in the control group (Lecture Method) has a very little attitude change toward genetic concepts.

Testing Null Hypotheses

Ho1: There is no significant difference in the mean performance scores of students taught genetic using guided and unguided discovery strategies and those taught genetic using Lecture Method of teaching.

Table 3 ANOVA Result of Posttest Mean Scores of Biology Students on Academic Performance of Guided and Unguided Discovery Strategies and Lecture Method in Genetic.

Variable	Sum of square	Df	Mean Square	F	P	Remark
Between group	1278.087	2	639.043	38.12	0.00	*Sig
Within group	2547.823	152	16.762			

*Significant at p <0.05

In Table 3, the result of the ANOVA statistical analysis shows that there is significant difference in the academic performance mean scores of students in EG1, EG2 and CG. The p-value recorded was 0.00 which is less than 0.05 level of significance set for the study. Therefore, the null hypothesis is rejected, and this implies that there was significant difference in the mean performance scores two experimental groups and control group. To find out where the difference lies between three groups scheffe's post Hoc test was conducted and presented in the table 4.

Table 4 Result of Scheffe's post Hoc test between students in experimental and control groups.

Groups	Mean Difference	SD	Sig	Remark
EG1 (Guided)	-2.99	0.807	0.01	*Sig
CG (Conventional)	3.90	0.796	0.00	*Sig
EG2 (Unguided)	2.99	0.807	0.01	*Sig
CG (Conventional)	6.89	0.796	0.00	*Sig
EG1 (Guided)	-6.89	0.792	0.00	*Sig
EG2 (Unguided)	-3.90	0.796	0.00	*Sig

P< 0.05 Level of significance.

Result from Table 4 shows that there is significant difference in the academic performance mean scores between students in the experimental group 1 and control group with p=0.001 which is less than 0.05. However, significant difference was found between experimental group 2 and control group with p- value of 0.001 which is less than 0.05. Similarly, significant difference was existed between experimental group 1 and experimental group 2 with p-value of 0.00 which indicated the significant difference because p-value observed is less than $p < 0.05$. It can be concluded that both guided and unguided discovery strategies were effective in improving the performance of Biology students in genetic concepts when compared to Lecture Method of teaching, but guided discovery strategy was more effective in improving Biology students' academic performance than unguided discovery strategy.

HO2: There is no significant difference in the mean attitude scores of students taught genetic using guided and unguided discovery strategies and those taught using Lecture Method.

Table 5 Non-parametric test of Kruskal Wallis Test of Guided and Unguided Discovery Strategies and Lecture Method.

Variables	N	Mean Rank	Df	Chi-square	P	Remark
EG1	52	122.16				
EG2	51	78.66	2	86.513	0.00	*Sig
CG	55	39.95				

*Significant at P < 0.05

The result from Table 5 indicated chi-square value p= 0.00 at Df=2 and Hoc test of 86.513. The obtained p=0.00 which is less than p < 0.05 in favor of experimental groups. This shows that the difference was significant. The null hypothesis which stated that there is no significant difference is therefore rejected. Post Hoc test of students' attitude in genetic was conducted to find out where the difference lies between three groups.

Table 6: Post Hoc test of Attitude of Students to Genetics exposed to Guided and Unguided Discovery Strategies and Lecture Method.

Variables	N	Mean Rank	Sig	Remark
EG1	52	122.16		
CG	55	39.95		
0.00	*Sig			
EG2	51	78.66		
CG	55	39.95		
0.00	*Sig			
EG1	52	122.16		
EG2	55	78.66		
0.00	*Sig			

Significant at P < 0.05

The result from Table 6 revealed that for EG1 and CG the p-value recorded was 0.00 which is less than p < 0.05 meaning that there is significant difference between attitude of Biology students toward genetic those in EG1 and those in CG and this established that there is significant difference in the attitude of students toward genetic between those taught genetic using guided discovery strategy and those taught genetic using Lecture Method in favour of EG1. Also, those from EG2 and CG the result revealed that the p-value recorded was 0.00 which is less than p < 0.05 meaning that there is significant difference in the attitude of Biology students toward genetic after treatment. This is also indicated that significant difference existed in the attitude of Biology students toward genetic between those exposed to unguided discovery strategy and those exposed to Lecture Method of teaching in favor of EG2

Similarly, the p-value recorded from EG1 and EG2 was 0.00 which is less than $p < 0.05$, showing that there is significant difference in the attitude of Biology students toward genetic between those exposed to guided discovery strategy and those exposed to unguided discovery strategy and this also indicated that guided discovery strategy is the best strategy that help to change Biology students' attitude positively toward genetic despite the fact that both strategies were best in enhancing attitude of Biology students toward learning of genetic at senior secondary schools.

Discussion of the findings

This study revealed that guided and unguided discovery strategies has significant effect on students' academic performance. In Table 3 the result of testing null hypothesis one shows that there was significant difference in the academic performance mean scores among Biology students taught genetic using guided and unguided discovery strategies and those taught using Lecture Method. The two experimental groups (that's guided and unguided) performed significantly better than the control group (Lecture Method). It implies that using guided and unguided discovery strategies have significant effect on academic performance in genetic concepts among Biology senior secondary school students. Both strategies (guided and unguided) are activity-oriented method and help to improve students' academic performance in Biology. The findings agreed with previous on the effect of activity-oriented method for instance Aniaku, 2012) Guided and Unguided Discovery strategies improve students' academic performance in senior secondary schools. Mahmud (2018) revealed that Discovery Strategy both guided and unguided improve students' academic performance in genetic concepts. The result also disagreed with the findings of Musa (2010) were his result indicated gender difference. This finding also agreed with Deproux (2007) found out that the discovery strategies (Guided and Unguided) is also more effective in enhancing the academic performance of students when taught some Biological concepts. The result of this study also indicated that there is significant difference in the academic performance mean scores between students in the experimental group 1 and 2. It can be concluded that both guided and unguided discovery strategies are effective in improving the academic performance of students in genetic concepts compared to control group, but guided discovery strategy was more effective than unguided discovery strategy.

The second finding of this study is that both guided and unguided discovery strategies has significant effect on Biology students' attitude toward genetic concepts that is guided, and unguided discovery strategies enhance students' positive attitude toward learning of genetic. The finding also agreed with the findings of Salman and Ayinla (2012) which revealed that students taught using discovery strategies have higher attitude toward learning mathematics than those taught using Lecture Method. The study also is in disagreement with Shuaibu (2017) findings which showed that there were no significant difference between the attitude change toward genetic concepts of convergent and divergent students taught genetic using activity oriented method. The findings of Ugwok (2020) revealed the effectiveness of discovery strategies on students' academic performance and their attitude toward a particular concept. The reseacher concluded that the guided and unguided discovery strategies imparted higher on students' attitude toward genetic concepts than the Lecture Method of teaching.

Conclusion

From the findings of the study the students were taught genetic concepts using guided and unguided discovery strategies have high positive attitude change and academic performance excellence in genetic at senior secondary schools. Those students exposed to guided discovery strategy did better than those exposed to unguided discovery strategy which may be due to guidance of the teacher students were help to observe and were engaged in certain activities of the concept by themselves. Both strategies allow students to carry out activities on their own. There was significant difference between experimental groups 1 and 2 over the control. The findings further suggested that the guided and unguided discovery strategies led to better performance and positive attitude toward learning of genetic concepts in experimental groups 1 and 2 both groups performed better than the control group.

Recommendations

Based on the findings of the study, the following recommendation are made which are:

1. Biology teachers should expose their students to both guided and unguided
2. discovery strategies so as to improve students' attitude and performance. The two strategies should be incorporated into the main strategies of teaching and learning of genetic concepts among senior secondary school students.
3. For positive attitudinal change of students, genetic concepts should be taught using guided or unguided discovery strategies.

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IMPACT OF INSTRUCTIONAL MATERIALS USAGE ON STUDENTS' ACADEMIC PERFORMANCE AND RETENTION IN BIOLOGY AMONGSECONDARY SCHOOLS, KATSINA STATE, NIGERIA

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ABSTRACT

The study investigated the Impact of Instructional Materials Usage on Students' Academic Performance and Retention in Biology among Secondary Schools, Katsina State, Nigeria. The study postulated Three research objectives with there corresponding research questions and null hypotheses. The study adopted a quasi-experimental research design involving pretest post-test and post post-test. The targeted population for the study was 12,853 Senior Secondary two (SSII) students. A cluster sampling technique was used to sampled three (3) schools, two intact classes of 82 students were used in the study as experimental and control group. Biology Performance Test (BPT) was the Instrument used for the collection of data, the instrument was also validated and obtained a reliability coefficient of 0.79 .Mean and Standard Deviation was used to answer the research questions and t-test statistical tool was used to test the null hypotheses at $p<0.05$ level of significance. The findings of the study reveals that there is significant difference in the mean performance scores of students taught Biology concept using instructional materials (EG) and those taught without instructional materials (CG). The study concluded that utilization of instructional material improves students' academic performance, also enhances students' retention ability. The study recommended that Teachers should utilized instructional materials because it enhances students academic performance as well as improve students retention abilities.

Keyword: Usage instructional Materials preforms retentions

INTRODUCTION

Modern Science is the firm base upon which modern advances in technology depends. Many breakthroughs that man has recorded in the quest to improve his life were achieved through the knowledge of science. It therefore becomes pertinent that science be well taught at all level of education. At the senior secondary level, science has been departmentalized in to Biology, Chemistry and Physics. Biology is the study of different forms of living organisms, their structures, functions, growth, distributions and taxonomy occupies a unique position in the secondary school science curriculum (Sarigin,2016). It serves as a pre-requisite to the study of other lucrative and challenging professions like; medicine, nursing, agriculture, pharmacology, among others. The vital role of the study of this discipline in the economy, industrial and public life of the learners and humanity in general cannot be overstressed (Ibe & Ukpai 2013). Biology is a fascinating study that ranges from microscopic cellular molecules to the biosphere, encompassing the earths' surface and its living organisms (Sarigin, 2016).

In Nigeria, the objectives of teaching biology as contained in the National Policy on Education (FRN, 2013) include among others, to equip learners with meaningful and relevant knowledge of biology, adequate laboratory and field skills. It is only through usage of biology instructional materials that these objectives can be achieved (Pratoomtory,2014). Biology has a very high enrolment of students in the external examination body. It is a core subject that is mandatory in all secondary schools in Nigeria.

The importance of Biology is so much that it needs to be taught with instructional materials to arouse students' interest. Tabotndip (2014) lamented that abstract teaching goes on today where

teachers do not use apparatus and students are not using textbooks. Visual imaginary e.g. models,, pictures, charts etc has become the most powerful means of communication in the society today. (Ajayi 2014). It is necessary therefore to introduce the usage of materials in teaching and illustration of biology concepts for a meaningful study to take place. It is on this background that the study is focused on finding out the Impact of instructional materials usage on academic performance and retention in biology among SS 2 Biology Students.

Instructional materials have been observed as a powerful strategy to bring about effective teaching and learning. Okori (2015), refers to instructional materials as object or devices that help the teacher to make learning meaningful to the learners, instructional materials which are educational inputs, are up vital important to the teaching of any subjects in the school curriculum. Available literature shows that much of biology teaching is carried out through chalk/board with little or no emphasis on the use of instructional materials. Literature has confirmed that usage of instructional materials enhance students' academic performance in various subjects (Salawu, 2018, Adeyanju,2011). Utilization of instructional materials is the process of managing and organizing resources for teaching and learning (Idris, 2012).Utilization of Instructional materials here include any tools, objects or devices that biology teacher use to make learning more interesting and memorable. Studies have shown that the usage of instructional materials improve performance (George, 2012 and Nwagbo, 2016). According to Okori(2015) instructional materials usage during teaching inculcates in the students the spirit of careful observation and understanding, retention ability, respective thinking and creativity in the learners, One of the major problem passing the teaching and learning of science (biology) is connected with the management of available resources (Ogunleye, 2013) management of instructional facilities requires the biology teacher himself be resourceful.

Student performance is an important educational variable that expresses the success or failure of a teaching and learning process. Students' performance is also referred to as academic achievement by Adrediwuro and Tayo (2017). Academic performance is the outcome of education the extent to which a students, teacher or institution has achieved their educational goals. Student performance in biology cannot be traced to a single factor but by multiplicity of factors such as environment, student attitude, teaching techniques, school facilities, teacher qualification. Based on this background, this study therefore intends to investigate the Impact of Instructional Materials usage on academic performance and retention in Biology among Secondary School (2) in Katsina Zonal Education Quality Assurance.

Retention is the ability to store what has been learnt and recall what has been stored in the memory. According to Bichi (2012) Retention is the ability to retain and later remember information or knowledge gained after learning in to memory.. Instructional materials contribute to quality and level of retention in terms of meaningful, concreteness and image evolving characteristic (Adeniyi 2017).. Akale and Usman (2013) and Eniayeji (2015) opined, that carefully selected and skillful use of teaching materials make facts and information better retained and learning more meaningful. It is on these findings that this study is focused. The study tends to consider gender factor in terms of biology performance and retention. Gender issue has been the concern of all classes and groups of people all over the world especially researchers and educators. The issue of gender is considered and treated based on certain facts such as social and cultural beliefs, etc. Studies have confirmed the inferiority of females in science enrolments and performance. (Agholor, 2015). This study tends to access the Impact of instructional materials usage on academic performances and retention among SS2 Biology students in Katsina Zonal Education Quality Assurance of Katsina State.

Cognitive theory is based on the work of swiss developmental psychologist Piaget 1956. Piaget's theory of cognitive development proposes that humans cannot be "given" information, which they immediately understand, and use. Instead, humans must "construct" their own knowledge. One important generalization of Piagetian theory is role of the teacher. In a Piagetian classroom an important teacher role is to provide a rich environment for the spontaneous exploration of the child. A classroom filled with interesting things to explore encourages students to become active constructors of their own knowledge (their own schemas) through experiences that encourage assimilation and accommodation.

Statement of the Problem

Over the years, the performance of students in Biology in Nigeria secondary schools has been very poor. The WAEC Chief Examiner Report of 2017 - 2022 indicated poor performance of students in biology. The students' poor performance in biology could be attributed to so many factors such as poor classroom management, use of gender biased lack of usage instructional materials, lack of adequate laboratory activities, poor teaching methods and lack of competent biology teacher. Biology as a science subject needs a virile instructional materials that can take care of learning styles of the students In other to overcome the problems of poor performance and, retention by students in biology, some researchers have suggested the use of diverse instructional materials, which may help to enhance students' performance in biology. This study seeks to use an instructional materials, which could be able to address students poor performance. The use of instructional materials like Models, Charts and life bones could be a solution to the problem of poor performance of students in biology. This is because Models, Charts and live bones are instructional materials that could take care of the differences in the way students learn; improve students' performance and enhance students' ability to retain the learn concepts because it engages students actively during the learning process and gives students the opportunity to construct their own knowledge. The problem of this study therefore, is to find out if the usage of Models, Charts could enhance the performance, and retention abilities of students . The study also sort to see if the use of models and charts could help the streamline the gender differences in students' performance in Biology

Objectives of the Study

The general objective of the study was to determine the impact of instructional materials usage on student's academic performance and retention in skeleton system among secondary school students.

The specific objectives for the study were to find out the impact of:

1. Instructional Materials Usage on the academic performance of students in skeleton system.
2 Instructional Materials Usage on the retention ability of students in skeleton system
3 Instructional Materials Usage on Academic Performance of the male and female students in Experimental Group..

Research Questions

The following questions are set for answering:

1. What is the difference in mean academic performance scores of students in experimental and control group?

2. What is the difference in mean academic performance scores of retention ability in the experimental and control group?
3. What is the difference in mean academic performance scores of male and female students in experimental group?
4.

Null Hypotheses

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

$H0_1$: There is no significant difference in the mean scores of academic performance of students taught biology concepts using instructional materials and those taught without instructional materials.

$H0_2$:There is no significant difference in the mean scores of retention of Biology students taught skeleton system using instructional materials and those taught same concepts without instructional material

$H0_3$: There is no significant difference in the mean academic performance of male and female Biology students taught Biology concept with instructional materials.

RESEARCH METHODOLOGY

The study is Quasi experimental in nature involving pre-test, post-test and post posttest on two equivalent groups designated as experimental and control group. The two groups were post tested and post-post tested for performance and retention respectively. The target population consists of all the Twelve thousand eight hundred and fifty-three students (12,853) factored into six thousand and seventy-nine (6079) females and six thousand seven hundred and seventy-four (6774) male students, The population cut across three Local Government Area namely: Katsina, Kaita and Jibia Local Government Area.

A cluster sampling technique was adopted and 82 students in the two intact classes were sample from the two different Government Senior Secondary Schools in Katsina Zonal Quality Assurance, Katsina State. Fourty two 42 students formed the experimental group while 40 students formed the control group. The experimental groups was taught skeleton system concept with the use of charts and models while the control groups on the other hand was taught the same concept without using instructional materials.

The instrument used for this study is performance test designed on skeleton system concept known as Biology Performance Test (BPT).

The instrument was subjected to scrutiny Two Senior Lecturers from Science and vocational Education at Umar Musa Yar'adua University Katsina,

A pilot study was conducted using the designed instrument in order to establish its reliability as well as the internal consistency index of the instrument. The reliability coefficient of Biology Performance Test BPT was determined using test-retest method of estimating reliability. The result was found to be 0.79, correlation coefficient. Maen and standard deviation was used to answer the research questions while t-test was the statistical instrument used to test the null hypotheses.

Data Presentation and Result

What is the difference in the mean scores of academic performance of biology students taught Skeleton System concept using instructional materials and those taught without using instructional materials?

Table 1: Mean and Standard Deviation of Students Taught Using Instructional Materials and those Taught Without it

Group:	N	Mean	S.D	MD	SEM
Experimental	42	85.69	6.51	16.34	1.00
Control	40	69.35	5..14		0.81

Table 1,showsthat the mean scores of the experimental group taught using instructional materials was 85.69 and a standard deviation of 6.51 while the mean scores for the control group was 69.35 and a standard deviation of 5.14 whom were taught without instructional materials. This shows that the experimental group had mean scores higher than the control group. This means that utilization of instructional materials greatly enhances students' academic performance in teaching and learning of skeleton system concept.

Research Question 2: What is the difference in the mean scores of Biology students' retention ability taught Skeleton System concept with the use of instructional materials and that of their counterpart taught same concept without using instructional materials?

Table 2. Mean and Standard Deviation Scores of Experimental and Control Group in Post Post-test.

Group:	N	Mean	SD	MD	SEM
Experimental	42	86.21	5.94	16.16	0.91
Control	40	70.05	5.90		0.93

Table 2; Shows that the mean scores of the experimental group was 86.21 and a standard deviation of 5.94 while the mean scores for the control group was 70.05 and a standard deviation of 5.90. This proof that the experimental group taught skeleton system with instructional materials retained the concept better than the control group whom were taught without instructional materials.

Research Question 3: What is the difference in the mean scores of retention between male and female biology students taught Skeleton System concept using instructional material.

Table 3: Mean and Standard Deviations Score of Male and Female Students in the Experimental Group.

Gender	N	Mean	S.D	MD	SEM
Male	24	86.29	6.36	0.18	1.29
Female	18	86.11	5.53		1.30

Table 3, Shows that the mean scores of the experimental group was 86.29and a standard deviation of 6.36 while the mean scores for the control group was 86.11 and a standard deviation of 5.53.it can be seen that the mean score of male students in the experimental group is the same to that of the female of the experimental group. This means the female students performed equally the same with their male counterpart in the experimental group.

Hypotheses Testing

Null Hypothesis I: There is no significant difference between the mean academic performance scores of students taught biology concepts using instructional materials and those taught without instructional materials in Katsina Zonal Education Quality Assurance in KatsinaState.
To test $H0_1$ the post test data of experimental and control groups were subjected to t-test statistical tool. Summary of the analysis is shown in Table 4.1.

Table 4: t-test Analysis of the Post Test Mean Scores of the Experimental and Control Groups
At significance of $P \leq 0.05$

Group:	N	Mean	S.D	SEM	Df	t	P.	MD	Remarks
Experimental	42	85.69	6.51	1.00					
					80	359	0.00	16.34	Significant
Control	40	69.35	5.14	0.81					

Table 4. above shows the t-test analysis of performance of experimental group and control group in biology concept. The table above shows that the p-value obtain is 0.00 at the degree of freedom of 80. Since p-value is less than the alpha value of 0.05 ($p< 0.05$). This means that there is significance difference between the mean performance scores of student taught with instructional materials and those taught without instructional materials. The hypothesis is therefore rejected

Null Hypothesis 2: There is no significant difference in the mean academic performance retention scores of Biology students taught using instructional materials and those taught without using instructional materials in Katsina Zonal Education Quality Assurance in Katsina State?

The Post-post test data generated via BPT were subjected to t-test statistics. Summary of the analysis are presented in Table 5.

Table 5: t–test Analysis of Post-post Test Mean Scores of Experimental and Control Groups.

Group:	N	Mean	SD	SEM	DF	t	P	MD	Remark
Experimental	42	86.21	5.94	0.91					
					80	12.32	0.00	16.16	Significant
Control	40	70.05	5.90	0.93					

Significant at $p \leq 0.05$ level

Table 5: The tables shows that the p-value is 0.00 at degree of freedom df=80. Since the p-value=0.00<0.05, This means that there is significant difference in the mean academic performance retention scores of students taught with instructional materials and those taught without instructional materials in favour of the experimental group, thus the null hypothesis is rejected.

Null Hypothesis 3: There is no significant difference in the mean academic performance retention scores of male and female students taught Biology concept with instructional materials. To test this null hypothesis, the Post posttest scores of the experimental group were sorted out according to gender and subjected to t-test analysis. Summary of the analysis is presented in

Table 6.

Table 6: t-test Analysis Post posttest Mean Scores of Male and Female Students in the Experimental Group Taught Using Instructional Materials.

Significant at≤0.05 level

Gender:	N	Mean	S.D	SEM	Df	t	P.	MD	Remarks
Male	24	86.29	6.36	1.29					
					40	0.096	0.92	0.18	Significant
Female	18	86.11	5.53	1.30					

Table 6. Shows that the calculated p-value is 0.92is greater than the α-value of 0.05atdf=40. This means there is no significant difference in the mean scores of male and female students in the experimental group. These indicate that both male and female perform significantly, this indicate that utilization of instructional material in teaching and learning of biology concept is gender friendly. Therefore the null hypothesis is retained.

Discussion of Findings

This study investigate the Impact of Instructional material usage on student's Academic performance and retention of biology concepts among Senior Secondary School (SS2) in Katsina State. The results obtained are discussed in the following paragraphs: -

The findings of this study reveals that there is significant difference between the mean academic performance scores of students taught using instructional materials in the experimental group and students taught without instructional materials, in favor of the experimental group. This means that Usage of instructional materials in the teaching of biology concepts increased students' academic performance in the subject. These findings are in conformity with that of Okonkwo (2016) Bisiriyu (2016) Ihejiamezi and Ochui (2016). which stated that knowledge gains were found to be significant with the experimental group who were taught using instructional materials higher than their counterpart in the control group who were taught same concept without any instructional materials. There are many reports about the importance of instructional materials in the teaching of Biology in Secondary School. Ethiosu (2008) mentioned seven basic roles of using instructional materials which includes extension of human experience, provision of meaningful information, stimulation of interest, grouping of students' interest, overcoming physical limitation, stimulating problem solving and providing diagnostic and remedial tools for teachers in teaching.

Another findings of this study revealed that there is significant difference between mean performance score in retention ability of students who were taught using instructional materials and those taught without instructional materials in the teaching and learning of Biology concepts. The findings indicate that students in the experimental group had significantly higher retention ability than those in the control group who were taught without using instructional materials. It was observed that the use of instructional materials in teaching and learning increases students' retention ability. This finding is similar to the findings of Ozoemezinem (2015), Olga (2015), who revealed that there is statistically significant difference in favor of experimental group on retention ability of students. They held the view that instructional materials has positive effect on students as it helps them to understand the concept more easily and memorable. This indicates that utilization of instructional material enhances student's retention.

The finding of this study also reveals that there is no significant difference in the academic performances of the male and female students taught using instructional materials in the experimental group. The observation from the test confirms the fact that both male and female students receive the same impact when exposed to the usage of instructional materials in the teaching and learning of Biology. These finding agree with that of Bisiriyu (2016), Yusuf and Afolabi (2010) who find no significant difference in the academic performance of male and female students in the experimental group. The result of this study confirms that usage of instructional materials is gender friendly. The findings of this study disagree with that of joseph (2000), Abdul-Kareem, (2006) where it was reported that girls are intellectually inferior to boys in Science and Mathematics, and gender effect was not statistically significant. The findings however agree with the report of Ifamuyiwa (2003) where it was observed that male participation in Science was higher but that the male and female performances were basically the same in terms of academic performance.

Conclusion

From the findings of the study it is clear that the use of instructional materials in the teaching of biology at Senior Secondary Schools has significant effect on the student's academic performances and their retention ability. It is therefore concluded that the use of instructional materials significantly improves students' academic performances and retention among Biology students in Katsina State. The following conclusions were drawn from the findings of the study: -

The use of instructional materials in teaching Skeleton system concept increases student's performance. Usage of instructional materials in teaching strategies enhances student's learning and retention abilities. Students taught using instructional materials perform better than their counterparts who were taught without the use of instructional materials. The use of instructional materials has no significant difference in the ability of both male and female students.

Recommendations

Based on the findings emanating from this study, the following recommendations are suggested: -

1. Students should concentrate in the usage of instructional materials during their learning activities because utilization of instructional material make discovered facts glued firmly to the memory of the students.

2. Teachers should ensure proper utilization of instruction materials in teaching biology concepts, since it enable permanent transfer of learning to take place.
3. The Katsina State Government through the Ministry of Education should organized seminar, workshop, symposia and conference to equipped biology teachers with skills of using instructional materials, because it makes them to be confidence in using the instructional materials when teaching.

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AN EVALUATION OF THE AVAILABILITY OF BASIC TECHNOLOGY AND BASIC SCIENCE TEACHERS FOR THE IMPLEMENTATION OF UNIVERSAL BASIC EDUCATION (U.B.E) PROGRAMME IN JUNIOR SECONDARY SCHOOLS IN BIU AND HAWUL LOCAL GOVERNMENT AREA, BORNO STATE, NIGERIA.

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ABSTRACT

The study investigated the availability of Basic Technology and Basic Science Teachers for the implementation of Universal Basic Education (UBE) Programme in Junior Secondary Schools in Biu and Hawul local government area of Borno State. The purpose of the study are to find out the availability of teachers teaching Basic Technology and Basic Science subjects in the study area; and to determine the level of training given to the Basic Technology and Basic Science teachers in the study area. The sample for the study consisted of two hundred and twenty (220) teachers. Simple percentage was used to analyses the data obtained from the respondents. The results showed that 76.3% of Basic Technology and Basic Science teachers were male, while 23.6% were female; and 60% of Basic Technology and Basic Science teachers were untrained to teach the subjects only 40% of Basic Technology and Basic Science were trained to teach the subjects. Based on the findings, the following recommendations were made: that Government should motivate female teachers of science subjects; government should reintroduce science allowances; government should organize workshops, seminars and conferences on innovative teaching methods, and in-service training should be granted to Basic Technology and Basic Science teachers to upgrade their knowledge.

Keywords: Availability, Basic Science, Technology, Universal Basic Education

Introduction

Availability of teachers is a potent factor in the implementation of the Universal Basic Education (UBE) programme thus the National Policy on Education (NPE), (2013) stated that, "teacher education shall continue to be given major emphasis in all educational planning and development, since no education system can rise above the quality of its teachers". However, teacher education today seems to be going through rough times in terms of manpower deficiency, teachers are not going for in-service training and conferences to update their knowledge in the new teaching techniques and methodologies.

It should be noted that in science and technology education as opposed to liberal education, teacher preparation in quantity and quality are crucial and critical factors on curriculum implementation because of the very skill that must be taught. Therefore, it is imperative for teachers availability to successfully implement the skill clusters under the Universal Basic Education (UBE) programme and junior secondary schools for the nation's scientific technological, and economic development. The need to meet teacher quantity and quality for Nigeria's education in science and technology was rightly highlighted by the National Policy of Education (FGN, 2013) which stressed that, the importance of teacher education in the nation's education planning and development shall include:

- To produce highly motivated, conscientious and efficient classroom teachers for all levels of our education system.
- To encourage further spirit of inquiring and creativity for teachers.
- To help teachers to fit into the social life of the community and the society at large and to enhance their commitment to national goals.

The implication of the foregoing was captured by Wakili (2015), cited in Okebukola (2007) argued that any teacher that will teach effectively and efficiently must;

a. Be well prepared during his/her pre-service days.

b. Possess high morale.
c. Have very good knowledge of the subject matter.
d. Be highly motivated.
e. Possess adequate skills/competence required for teaching.
f. Be highly committed to teaching.

Oni and Dokubo (2014) stressed that, no meaningful development world over today is divorced from scientific and technological advancement. The nations of the world today are divided into developed and under-developed depending on the nation's level of advancement in science and the application of technological skills in developmental studies. It is no gain saying that science and technology is the bedrock of national development if its teachers are not prepared. However in Nigeria, most of the junior secondary schools arefilled with half-baked or untrained technology and science teachers. This is clearly evident in most secondary schools where most teachers are without scientific background or orientation are placed at the helm of affairs in the implementation of science and technological education policies. The government finds it difficult to release the required fund for most science oriented projects. Johnson (2010), stressed that there is an urgent need to remove obsolete theoretical learning experiences from our school curriculum and replace them with current learning experiences that have achievable application so that we can move faster than before to progress through science and technology.
It is against this background that this research study posed to evaluate the availability of basic technology and basic science teachers in the implementation of universal basic education (UBE) programme in the study area.

Purpose of the Study

Specifically, the study intended to:

1. Find out the availability of teachers teaching Basic Technology and Basic Science subjects in Biu and Hawul local government areas
2. Determine the level of training given to Basic Technology and Basic Science teachers in Biu and Hawul local government areas

Research Questions

To guide the study, the following research questions are raised:

1. To what extent are the Basic Technology teachers and Basic Science teachers available in Biu and Hawul local government areas?
2. To what level are the Basic Technology teachers and Basic Science teachers trained to teach the subject in Biu and Hawul local government areas?

Methodology

Survey research design was used for this research study. Specifically the reason being that, Awotunde, U Ugodulunwa and Ozoji (2002) stated that, a survey research is a situation where data are collected at a particular time from a sample for the purpose of finding out problems in educational phenomenon.

This research study sought opinion of the respondents on the level of availability and training given to the teachers in Basic Technology and Basic Science teachers.
The population of the study consisted of all Basic Technology and Basic Science teachers in the two local government areas. The sample for the study consisted of two hundred and twenty (220) teachers who are currently teaching Basic Technology and Basic Science subjects in the junior secondary schools in the study area. The study used proportionate stratified simple random sampling technique to draw-out the samples for the study. Proportionate stratified simple random sampling was used to ensure that private and public junior secondary schools are represented proportionately in the study. Also, the researchers ensured that male and female teachers in the two subject areas are also captured in the study which satisfied the criteria of using stratification in drawing out the samples for the study.

This research study used structured questionnaire items "tagged" teachers questionnaire on the availability of basic technology and basic science teachers (TQABTBST). Section A:ilicit information on biodata of the respondents and section B sought information on availability of Basic Technology and Basic Science teachers in the area of study. The respondents tick ( ) the options that best suit their opinion. Using adapted 4-point likert scale of: Highly Available (HA), Available (A), Not Available (NA) and Highly Not Available (HNA).

The researchers used wait-and-take procedure in administering the questionnaire items to the respondents with the help of research assistant. In each of the participating school, the completed questionnaire forms were dully collected for analysis.
The researchers used simple percentage to analyse the data obtained from the respondents. The data obtained were based on each statement made on the availability and trained basic technology and basic science teachers currently teaching in the junior secondary schools in the study area.

Results

Table 1: Analysis on Availability of Basic Technology and Basic Science Teachers in the Study Area.

LGA	S/NO	Subject	Sample	Male	Female	Total(%)
Biu	I	Basic T.T	65	50 (76.9%)	15 (23.1%)	100
	II	Basic S.T	65	50 (76.9%)	15 (23.1%)	100
Hawul	I	Basic T.T	45	34 (75.5%)	11 (24.4%)	100
	II	Basic S.T	45	34 (75.5%)	11 (24.4%)	100
Total			**220**	**168 (76.3%)**	**52 (23.6%)**	**100**

Table (1) above shows that 76.9% of basic technology teachers in Biu were male and 23.1% were female. Also, 76.9% of basic science teachers were male and 23.1% were female too. This showed that there are many male basic technology and basic science teachers in Biu local government area than their female counterpart in the two subject areas.

In Hawul 75.5% of basic technology teachers were male and 24.4% were females, While 75.5% of basic science teachers were male and 24.4% were female too. This showed that there are many male basic technology and basic science teachers in Hawul local government area than their female counterparts. Therefore, there are 76.3% of male Basic Technology Teachers and Basic Science Teachers. While, 23.6% of Basic Technology Teachers and Basic Science Teachers in the study area were female.

Table 2: Analysis on trained Basic technology And Basic Science Teachers in the Study Area

LGA	S/NO	Subject	Sample	Trained	Untrained	Total(%)
Biu	I	Basic T.T	65	28 (43.1%)	37 (56.9%)	100
	II	Basic S.T	65	26 (40.0%)	39 (60.0%)	100
Hawul	I	Basic T.T	45	18 (40.0%)	27 (60.0%)	100
	II	Basic S.T	45	16 (35.5%)	29 (64.4%)	100
Total			**220**	**88 (40%)**	**132 (60%)**	**100**

Table (2) above shows that 43.1% of Basic Technology teachers were trained, while 56.9% of the teachers were untrained and 40% of Basic science teacher were trained, and 60% were trained teachers. This showed that there are more untrained teachers in Basic technology and Basic Science teachers than the trained teachers in Biu local government area.

In Hawul 40% of Basic Technology teachers were trained, 60% of the Basic Technology were untrained, while 35.5% of Basic Science teachers were trained, and 64.4% were untrained teachers. This showed that there are more untrained teachers in Basic Technology and Basic Science teachers than trained teachers in Hawul local government area. Therefore, there are 40% of trained Basic Technology teachers and Bascis science teachers, while 60% were untrained Basic technology and Basic Science teachers in the study area.

Discussion of Findings

The analysis in table 1 on the availability of Basic Technology teachers and Basic Science teachers in terms of gender showed that there are many males Basic Technology and Basic Science teachers than their female counterpart in the two local government areas of the study. This finding agreed with the findings of Biwai, Dauda and Zanna (2015) who carried out a study on gender difference in Chemistry teachers and found out that male teachers were more than their female counterparts. The finding also confirmed with the finding of Biwai, Hamza and Lasisi (2020) who found out that there were more males physics teachers than their female counterparts in the subject. This shows that male teachers are more inclined to study science subjects than the female teachers.

The analysis in table 2 on trained basic technology and Basic Science teachers shows that there are more untrained teachers in the study area than the trained teachers. This findings

agreed with the findings of Mshelia and Ibrahim (2018) who carried out a study on availability of Agricultural Science, Fine and Applied Art and Home Economic Teachers. The study found out that in all the subjects most of the teachers are untrained in their area. Only few were trained. Therefore, from the researchers personal experience, most of these teachers that were claimed to be available apart from being inadequate were untrained in the subject areas of Basic Technology and Basic Science subjects. The schools are in most cases in need of adequate female and qualified teachers who are trained to teach the subjects that would motivate students to have science background at the junior secondary school level of our education for sustainable development in Nigeria.

Conclusion

The study was designed to determine the availability of basic technology and basic science teachers for implementing the Universal Basic Education Programme for Sustainable Development in Nigeria. It has been observed that Basic Technology and Basic Science are potent factors for sustainable development. The finding of the study showed that most of Basic Technology and Basic Science teachers are not adequate, only few of the basic technology and basic scienceteachers were trained and were teaching the subjects as at the time of the study.

Recommendation

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

1. The government should motivate female teachers of Science and Technology subjects by giving them special allowances.
2. The government should reintroduce science and workshop allowances for teachers in the subject areas.
3. The government should organize workshops, seminars and conference on innovate teaching methods to keep the teachers abreast.
4. In service training should be granted to basic technology and basic science teachers to up-date their knowledge in the modern teaching techniques.

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