

**RELATIONSHIP BETWEEN SCHOOL CLIMATES AND  
ACADEMIC ADJUSTMENT OF STUDENTS IN SECONDARY  
SCHOOLS IN ENUGU STATE**

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**Abstract**

*The study investigated the relationship between school climate and students' academic adjustment in secondary schools in Enugu State. Three research questions and three null hypotheses guided the study. The study employed correlational research design. The sample of this study comprised of 733 SSII students drawn from the population of the study using multi stage sampling techniques. The study was carried out using SSII students in public secondary schools in Enugu State. Two instruments were used for data collection of the study namely questionnaire titled Secondary School Students School Climate Questionnaire (SSSSCQ) and Secondary School Students Academic Adjustment Questionnaire (SSSAAQ). Cronbach Alpha formula was used to test the reliability of the instruments and they yielded reliability indexes of 0.98 and 0.78 respectively. The data for this study were collected through personal administration of the instruments by the researcher and with the help of six research assistants. In other to answer the research questions, this study employed means and standard deviation while Pearson Moment Correlation Coefficients was used to test the hypotheses at 0.05 level of significance. The results of the study showed that there was significant relationship between school climate and academic adjustment. There is no significant relationship between gender and academic adjustment. There is significant relationship between school location and academic adjustment of students in Enugu state. In line with the findings of the study, the educational implications of the findings were highlighted and the recommendations were equally proffered.*

## **Background**

School climate is the quality and characteristics of school life, both social and physical aspects of the school, which can positively promote behaviour, school achievement, and the social and emotional development of students. School Climate is based on patterns of students', parents', and school personnel's experience of school life and reflects norms, goals, values, interpersonal interactions, teaching and learning practices and organizational structures. The climate of the school refers to the psychological disposition among other various components of the school. School climate is what constitutes the schools atmosphere based on the interactions and perceptions of the stakeholders in the school environment (Norton, 2008). Some of these perceptions according to Lunenburg and LaRusso, Romer and Selman (2007) can be conveyed as open, lively, friendly, casual, formal, unwelcoming, rigid, or closed. School climate is the atmosphere, tone or a feeling that prevails in a particular school. It is brought about by the interaction between the principal and teachers, among teachers and students.

Also school as a social system compels the principal, teachers and students to interrelate at administrative level in the area of planning, decision making problem solving and control. They also interact through personnel matters which are part of normal school routine. This means that school climate results from interaction of the school members- principal, teachers, students, staff and other stake holders (Oyetunji, 2006). According to Anita (2008) school climate is perceived attributes of an organization and its sub system as reflected in the way an organization deals with its members, groups and issues. This means that climate is the internal quality that is unique and peculiar to a school. It also implies that schools and colleges can be identified with specific climate and interaction pattern that influence the behaviour and relationship of both staff and students of the school. School climate can either impact positively or negatively on the student's academic adjustment.

The term adjustment in this study refers to the degree of capacity by which an individual student tries to cope with inner tensions, needs, conflicts, frustration and is simultaneously able to bring coordination between his inner demands and those imposed by the school environment. It is often used as a synonym for accommodation and adaptation. Adjustment, in psychology, refers to the behavioural process by which humans and other animals maintain equilibrium

among their various needs or between their needs and the obstacles of their environments adjustment (Searle and Ward, 2012). It is used to emphasize the individual struggle to get along or survive in his or her social and physical environment. In this process, the individual also makes efforts to maintain harmonious relationship with the learning environment. The issue of adjustment is of great importance to all individual especially to the students who should be helped in developing good adjustment besides the intellectual progress.

A successful academic adjustment of students will enable them complete their studies. Present society is a dynamic; hence the needs of human beings are increasing tremendously which needs to be fulfilled. Everybody in the society is in the race of competition. This poses the serious threat to the adjustment of the individuals particularly to the adolescents/ secondary school students. The problem of adjustment is a crucial problem of the modern world. This problem is a matter of such pervasive concerns that books, articles, magazines, scientific journals etc. dealing with adjustment problems are appearing more repeatedly (Winga, Agak and Ayere, 2011). Adjustment, in psychology, is the behavioural process by which one maintains equilibrium among various needs or between needs and the obstacles of environments. A sequence of adjustment begins when a need is felt and ends when it is satisfied. In general, the adjustment process involves four parts: (1) a need or motive in the form of a strong persistent stimulus, (2) the thwarting or non-fulfilment of this need, (3) varied activity, or exploratory behaviour accompanied by problem solving, and (4) some response that removes or at least reduces the initiating stimulus and completes the adjustment (Kumaraswamy, 2013).

A well-adjusted student is one who does not get affected adversely by the interactions such as conflicts, emotions etc., and whose personality development goes through a healthy course of socialization (Sangeeta and Chirag, 2012). Academic involves a variety of demands differing in kind and degree and requiring lot of coping responses or adaptations. It is not only academics with which the students are concerned; they are equally affected by the social and emotional changes. According to Sharma (2012), the definition of academic adjustment reflects on how much an individual achieves through it and its effect on his/her personal growth.

In terms of how adjusted the individual is in academics, depends on the individual student's capability of getting grades and eventually achieving the goals

and objectives of his/her academic pursuits. Despite the importance of a school education for increased earnings, meaningful employment, and subsequent quality-of life, nearly one in four secondary students leave school before completing their secondary school education (Ganai and Muhammad, 2013). Based on this, it can be seen that the totality of school environment (school climate) could serve as a source of adjustment for the individual students. The adjustment of students in school could differ due to gender differences.

Gender refers to the socially culturally constructed characteristics and roles, which are ascribed to males and females in any society. Gender is a major factor that influences the adaptation of students to academics (Okeke, 2008). Gender is determined by attributes such as tasks, functions and roles of women and men in the society rather than the biological characteristic of women and men. However, gender gap is one of the variables in the educational system that tends to influence the academic adjustment of students owing to some societal stereotypes (Yau and Cheng, 2014). As gender roles in the society are being rapidly redefined, female students today are showing outstanding academic prowess and pursuing higher education. Research on gender differences in school adjustment has portrayed that girls are better adjusted as compared to boys. One such study was by Wang, Chen, Sorrentino and Szeto (2008) found that girls had higher scores on academic adjustment, than boys. Another study by Prakash and Coplan (2007) found out that boys adjust better than girls in academics. Kiuru, Nurmi, Aunola, Salmela – Aro (2009) found out that girls' cliques resembled each other more in satisfaction with their educational choice and school engagement when compared with boys. These findings showed that there are gender differences in school adjustment. Hence this study sorts to find out the gender if differences are based on the academic adjustment of secondary school students in Enugu State. Also the locations of school could also be a factor in students' academic adjustment owing to shortfalls or adequate supplies of school facilities.

Location is the place or point that something is situated. Location comprises of rural and urban areas. School location refers to the community in which the school is located, such as village hamlet or rural area with fewer than 3000 people), a small town (3000 to about 15,000 people), a town (15,000 to about 100, 000 people). BektaG (2008) explained school location as specific geographical site of the school and it contains building where the school equipment

is kept for educational use. A school cannot usually change its location, yet location conceivably may have consequences for how well students learn at the school. The investigations of a rural gap in academic adjustment have been explored in studies conducted by researcher and showed that locations of schools have great impact on academic adjustment of students. From the forgoing, research has shown that a lot of maladaptive behaviours abound in schools. Students violate school rules; absconding from school, perpetual struggle with authority, substance abuse, incessant cheating, habitual smoking and drinking, fighting, destruction of school properties, drug addiction and in extreme cases drop out of school. The general review shows that many authors concentrated on academic achievement and performance while only a handful dealt on academic adjustment therefore this study tries to fill this gap.

### **Statement of Problem**

The retention of students in secondary school has been the concern of school administrators and parents at large. Many students drop out of school before completing their secondary school education to learn trade and others go into so many kinds of apprenticeship, which was not their initial plan at enrolment. This scenario has raised the attention of stake holders in education and many researchers has sort for solutions to these problems, some attribute it to social, emotional and academic adjustment while others have shown that this could be as a result of the students inability to cope with the academic situations in school owing to some school factors. Based on these therefore, this study sorts to find out the relationship between school climate and student's academic adjustment of students in Enugu State?'

### **Research Questions**

The following research questions guided the study.

1. What is the relationship between school climate and academic adjustment of students in Enugu state?
2. What is the relationship between gender and academic adjustment of secondary schools in Enugu state?
3. What is the relationship between school location and academic adjustment of secondary schools in Enugu state?

### **Hypotheses**

The following null hypotheses were formulated to guide the study and were tested at 0.05 level of significance

*HO<sub>1</sub>*: There is no significant relationship between school climate and academic adjustment of students in secondary schools in Enugu State.

*HO<sub>2</sub>*: there is no significant relationship between gender and academic adjustment of secondary schools in Enugu state.

*HO<sub>3</sub>*: there is no significant relationship between school location and academic adjustment of secondary schools in Enugu state.

### **Research Method:**

This study adopted a correlational survey design. This study was carried out in secondary schools in Enugu State. The sample for the study comprised 733 SS 11 students drawn from the population of the study using multistage sampling technique. Two instruments were used for data collection in this study, namely questionnaire titled Secondary School Students School Climate Questionnaire (SSSSCQ) and Secondary School Students Academic Adjustment Questionnaire (SSSAAQ). The instruments consisted of part A and B. Part A is on the demographic information of the respondents while part B comprised the item statements. The section B has response option of Strongly Agree (SA) Agree (A) Disagree (D) Strongly Disagree (SD) with assigned weights of 4, 3, 2 and 1 respectively for positive questions and the reverse (1, 2, 3 and 4) for negative questions. The SSSSCQ is a 20 item questionnaire which was developed by the researchers to elicit information from the respondents on their take about the nature of school climate that exist in their school. And AAQSSS is a 30 items questionnaire used to get information on students' academic adjustment in school. In order to ensure the reliability of the instrument, a trial test was carried out in Ebonyi state using 20 students from three different schools located at Abakaliki the state capital, which is close to Enugu State and share similar characteristics.

In order to determine the internal consistency of the instruments Cronbach Alpha formula was used. The instruments SSSSCQ and SSSAAQ yielded internal consistency reliability indexes of 0.98 and 0.78 respectively. The data for this study were collected through personal administration of the instruments by the researchers and with the help of six research assistants. The research assistants were

made up of teachers that are teaching in different schools in Enugu state. The instructions that were given to them centered on how to locate the respondents and on how to administer and retrieve the questionnaire from the respondents. In other to answer the research questions, this study employed mean and standard deviation while Pearson Moment Correlation coefficients was used to test the hypotheses at 0.05 level of significance.

## Results

Research question 1: What is the relationship between school climate and academic adjustment of students in Enugu state?

*H<sub>01</sub>*: There is no significant relationship between school climate and academic adjustment of students in secondary schools in Enugu State.

**Table 1: Pearson correlation (r) rating of relationship between school climate and academic adjustment of secondary school students in Enugu State (N=733).**

Items	$\bar{X}$	SD		School Climate	Academic Adjustment
School Climate	2.70	.48	Pearson Correlation	1	.962**
	Sig.	(2-tailed)		.000	
	N			733	733
Academic Adjustment	2.68	.49	Pearson Correlation	.962**	1
	Sig.	(2-tailed)		.000	
	N			733	733

Data in table 1 on the relationship between school climate and academic adjustment of students showed that school climate had mean rating of 2.70 while academic adjustment had mean rating of 2.68. This showed that both school climate and academic adjustment had high mean rating above the mean cut off point of 2.50. Relationship between school climate and academic adjustment indicated high correlation for school climate and academic adjustment with Pearson correlation index of .962. This showed that there is high relationship between school climate

and academic adjustment. Also, data on table 1 showed that Pearson correlation for school climate and academic adjustment indicated significant relationship between school climate and academic adjustment,  $r(1, n=733) = .962, p < .000$ . The null hypothesis was rejected. Indicating that there was significant relationship between school climate and academic adjustment.

Research Question 2: What is the relationship between gender and academic adjustment of secondary schools in Enugu state?

$H_{O2}$ : there is no significant relationship between gender and academic adjustment of secondary schools in Enugu state.

**Table 2: Pearson correlation (r) rating of relationship between gender and academic adjustment**

Gender		Academic Adjustment				
	$\bar{X}$	SD				
Male	2.68	.46	N	Pearson Correlation	1	.000
Female	2.68	.52		Sig. (2-tailed)	.998	
					733	733
			Academic Adjustment			
				Pearson Correlation	.000	1
				Sig. (2-tailed)	.998	
			N		733	733

Data in table 2 on the relationship between gender and academic adjustment of students showed that male students had mean rating of 2.68 while their female counterparts had mean rating of 2.68. This showed that male and female students do not differ in their mean rating on academic adjustment. Also, the result indicated low correlation for gender and academic adjustment with Pearson correlation index of .000. This showed that there is no relationship between gender and academic adjustment. The Pearson correlation for gender and academic adjustment indicated no relationship between gender and academic adjustment,  $r(1, n=733) = .000$ ,



$p < .998$ . The null hypothesis was rejected. Indicating that there is no significant relationship between gender and academic adjustment

Research Question 3: What is the relationship between location and academic adjustment of students in secondary schools in Enugu state?

$H_{O3}$ : there is no significant relationship between school location and academic adjustment of students in secondary schools in Enugu state.

**Table 3: Pearson correlation (r) rating of relationship between location and academic adjustment of secondary school students in Enugu state**

Location		Academic Adjustment	
Location		Pearson correlation	1
		Sig. (2-tailed)	-.030
Urban	2.68	.46	
Rural	2.68	.52	N
			733
Academic adjustment		Pearson correlation	-.030
		Sig. (2-tailed)	.420
		N	733

Data in table 3 on the relationship between location and academic adjustment of students showed that students in urban areas had mean rating of 2.68 while their rural counterparts had mean rating of 1.38. There is also a negative correlation for location and academic adjustment with Pearson correlation index of  $-.030$ . Also, table 3 showed that Pearson correlation for location and academic adjustment indicated a significant relationship between location and academic adjustment,  $r(1, n=733) = -.030, p < .420$ . The null hypothesis was rejected. Indicating that there is significant relationship between peer relations and academic adjustment.

### **Summary of Findings**

1. There was significant relationship between school climate and academic adjustment.
2. There is statistically significant relationship between school climate and academic adjustment of students in Enugu State.
3. there is no significant relationship between gender and academic adjustment

### **Relationship between school climate and academic adjustment of students in Enugu State**

Result of the study showed that there is high relationship between school climate and academic adjustment and the test of hypothesis also showed that there was significant relationship between school climate and academic adjustment. This shows that when there is positive school climate, it can culminate to high academic adjustment because school climate is a multi-dimensional environment that influence many individuals including students, parents, school personnel and community. It is also the relatively enduring quality of the internal environment of the school that is experienced by the members who include students, teachers, administrators, secretaries, consultants and custodians that leads to proper academic adjustment. These influence their students' behaviour, and can be described in terms of the values, norms especially concerned with those institutional patterns and behavioural practices that enhance or impede students' academics. Other factors in school climate that could enhance students' academic adjustment includes the environmental factors such as the physical building, classroom, materials used for instruction, academic performance, feeling of safety, school size, feeling of trust and respect for teachers and students. The result of this study could be as a result of some social aspect of the school climate that deals with the appearance, comfort and orderliness of the school facilities, the opportunities students have for their participation in the school programme. It could also be as a result of the peer norms that are prevalent in the school and the nature of the administrative staff-student cohesion and support systems. The finding of this study is in line with Jia, Way, Ling, and Hughes (2009), Gareau, Monrad, DiStefano, May, Price, Ishikawa and Mindrila (2009), Ojelabi (2009), Kyalo and Chumba (2011), Adeogun and Olisaemeka (2011), Osa-Edo and Iyamu (2012), Androutsou and Anastasiou (2014) and Babatunde, and Olanrewaju (2014) who in their

respective studies found out that there was high relationship between school climate and students' academic achievement and adjustment. Therefore it showed that school climate has positive influence on students' academics.

### **Relationship between gender and academic adjustment of secondary schools in Enugu State**

Result of the study showed that there is no relationship between gender and academic adjustment. Also the test of hypothesis showed that there is no significant relationship between gender and academic adjustment. The finding of the study could be traced to the fact that adjustment is an individual's general adaptation to his environment and the demands of life such as the way he/she relates to other people. Academic adjustment deals specifically with modification or service that gives students equal opportunity to benefit from the educational process, which is how things are normally done to ensure that students benefit and adapt to school academic pursuits. This may have given both male and female students equal chances of benefiting from the academic activities of the schools. The finding of this study is in line with Farmer, Irvin, Thompson, Hutchins and Leung (2006) and Enochs and Roland (2006), who found out that there exist no significant difference in the academic adjustment in their respective studies. The study contradicts the findings of Yau and Cheng (2012), Basu (2012) & Velmurugan, K. and Balakrishnan (2011) who found out that gender has significant influence on learners' school adjustment.

### **Relationship between school location and academic adjustment of secondary schools in Enugu state**

Result of the study showed that there was negative relationship between location and academic adjustment. The test of hypothesis also showed that there was significant relationship between school climate and academic adjustment. This result could be due to the fact that the school location which is classified into urban and rural schools may have affected the academic adjustment of the student due to the presence or absence of school learning facilities and the provision of qualified and devoted teachers and school administrators. This may have affected the level of adjustment of both rural and urban students, with one group performing better than the other. This finding is in line with the findings of Singh (2006) and

Velmurugan and Balakrishnan (2011). Also, the finding of this study contradicts the finding of Ishak, Jdaitawi, Ibrahim and Mustafa (2011) who found out that there is no significant relationship in academic adjustment of urban and rural students.

### **Conclusion**

There is high relationship between school climate and academic adjustment/there was significant relationship between school climate and academic adjustment. There is no significant relationship between gender and academic adjustment. There is significant relationship between peer relations and academic adjustment.

### **Educational Implications of the Findings of the Study**

The findings of this study have implication for secondary school administrators and students. The study shows that there were significant relationship among school climate and academic adjustment. Also the result of the study showed that Gender was not a significant factor in the academic adjustment of students and lastly school location was found to have a significant influence in students' academic adjustment.

The implication of this finding for secondary school administrators is that when the school climate is conducive enough for students' academic endeavour, they tend to adjust very well to school system thereby minimizing the high rate of school dropout and other delinquencies among students at the secondary school level. Therefore the school administrator should endeavour to ensure that proper school climates are prevalent in school. Also school administrators should endeavour to create enabling environment for students to relate with their colleagues through such activities like sport, dance competition, debate and other extra-curricular activities. Also they should ensure that both schools in rural and urban areas are provided with enabling environment for proper academic adjustment.

The class teachers in secondary schools should be conducting comprehensive education programs for students to meet their needs and solving the problems they may face. Moreover, providing them with information and skills that increase their adjustment with the academic life could give them an increased and positive participation in class activities. The study also showed that both male and

female students adjust positively and equally to academics in secondary schools in Enugu state, therefore schools should sustain the nature of their school climate that enhances the students' academic adjustment.

### **Recommendations**

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

1. Government and stake holders of secondary school education should organize regular in-service training for teachers and school administrators on how to create convenient school climate and to also create enabling environment for positive academic adjustment among students in secondary schools.
2. Government should ensure that basic materials needed for teaching are provided for schools to ensure proper academic adjustment among student.
3. Institutions, colleges of education and universities should ensure that they equip student-teachers adequately with knowledge needed for effective classroom management.
4. Government and other stakeholders in secondary school education should ensure adequate provision of school facilities for schools both in rural and urban areas since the study has found out that location was a factor in student's academic adjustment.

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## **INFLUENCE OF GENDER ON MATHEMATICS READINESS OF HANDICAPPED SECONDARY SCHOOL STUDENTS IN LEARNING MATHEMATICS IN ENUGU STATE, NIGERIA**

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### **Abstract**

*The purpose of this study was to determine the influence of gender on mathematics readiness of handicapped secondary school students in Enugu State. The population of the study was 93 handicapped Senior School One (SSS1) entrants which all were purposively used as sample because the sample size was small. The study was guided by two research questions and one null hypothesis. The hypothesis was tested at  $\alpha = 0.05$  level of significance. The instrument used for the study was Mathematics Readiness Test (MATHRET) instrument developed by Unodiaku (2010). The MATHRET was face validated by the researcher and its reliability was established using Cronbach alpha technique which yielded 0.82. The data obtained with the instrument were analyzed using percentage, mean and analysis of variance (ANOVA) Statistic. Percentage, mean and standard deviation (S.D.) were used in answering the research questions, while ANOVA statistic was employed in testing the hypothesis at  $P \leq 0.5$  significant level. Findings of the study showed that in the overall test 17.21 percent and 26.88 percent of the handicapped students were found to be 'ready' and 'fairly ready' respectively while 55.91 percent of them was 'not ready' for Senior Secondary Mathematics work. Females were found to be more ready than males with mean error difference of 5.16 in favour of the females. It was recommended to teachers for use in classifying students into readiness level ('ready', 'fairly ready' and 'not ready'), and to teachers and stakeholders in school administration for use in determining the readiness levels and establishment of differential norms of students, among others.*

**Keywords:** Gender, Mathematics Readiness, Handicapped and Errors.

## **Introduction**

Invariably, western education is inevitable machinery for African child development through inculcating in the child national and global cultural practices in education. The attainment of the child's educational practices requires integration of assessment culture and research in African education so as to determine the extent African education has contributed or should do to enhance the child's acquisition of the western education. This situation calls for investigating or looking into emerging trends in assessment and research in teaching and learning of the 'queen' and 'language' of science called mathematics in the global education of the African child. Philosophy of Nigeria's education believes that education maximizes the creative (innovative) potentials and skills of the individual for self-fulfilment and general development of the society (FRN 2013).

Furthermore, one of the main national goals of Nigeria education includes building a great and dynamic economy. These beliefs and goals of the Nigeria nation can be achieved through concerned efforts in teaching and learning of mathematics. Emphasis is laid on mathematics because mathematics is applied in almost all areas of human activities such as in trade and commerce, science and technology and is found in all aspects of ethno-mathematics, research and statistics. Transactions in business between nations are facilitated by the applications of mathematics. According to Adetula (2010), the mathematical knowledge will help Nigeria to produce citizens that can manufacture drugs, raw materials, machines and tools needed for our industries. It becomes pertinent therefore, to examine the emerging trends/innovation in assessment and research in teaching and learning of mathematics in Nigeria educational system with particular reference to secondary education level of the handicapped students. Such innovation in research on the Nigeria handicapped child's learning of mathematics will give an insight into how possible Nigeria nation can balance the learning potential in mathematics between handicapped and-handicapped learners as well as achieve success in science and technological breakthrough. Obviously, Nigeria nation cannot benefit from all these aforementioned importance of mathematics and contributions of handicapped students, if Junior Secondary school three (JSS3) handicapped students lack readiness/preparedness/mastery of Junior Secondary School mathematics contents that can enable them cope with Senior Secondary School (SSS) mathematics programme.

Readiness is a specific factor of cognitive strategies, content knowledge, academic behaviours and contextual knowledge (Conley, 2015). Readiness has to do with 'preparedness' or 'mastery' of a subject-matter background knowledge that can enable the learner to cope with further or next higher level of learning of the subject-matter or related learning task (Ausubel, Navok and Harison, 1978). Mathematics readiness may be conceptualized to refer to students' 'preparedness' or to cope with further learning of mathematics at the next higher level of mathematics learning. In other words, the handicapped students advancing from Junior Secondary School three (JSS3) level to Senior Secondary School one (SSS1) level may lack the subject-matter (mathematics) background knowledge or sophistication that can enable them cope with further or related learning task, in SSS 1 level. Thus, readiness becomes an essential factor in any learning which involves acquisition of subsequent related skills (Unodiaku, 2010). This is particularly so with mathematics (Igbo, 2008; Unodiaku; 2010), because of the nature of its structure (Piaget, 1979), and the hierarchical pattern of its organization (Unodiaku, 2010).

Unodiaku (2010) noted that teachers as well as examination bodies have been using achievement test over the years in measuring students' learning outcomes in mathematics. Achievement test measures what students have learned (Annie and Mildred, 2008), while readiness test measures the 'degree' or 'mastery' of all that the students are supposed to learn (Ausubel, et al). This is to say for instance, that a teacher who taught for instance geometry and mensuration only to JSS 3 students may use achievement test to assess them and if they do well he may conclude that they have gained adequate knowledge or mastery of JSS 3 mathematics curriculum contents. When such students are promoted to SSS 1, they will not do well at this new level because the JSS 3 curriculum contents were not covered. However, a teacher using mathematics readiness test to assess such JSS3 students must have taught or covered adequately all the four content areas (number and numeration, algebraic processes, geometry and mensuration, and everyday statistics) and ensure that the students demonstrated mastery of all the four content areas before administering mathematics readiness test to them. Moreso, the achievement tests used by teachers in assessment of the students were not developed with well-known psychometric properties and test development theories. Consequent upon these, handicapped students are advanced from Junior Secondary

School level to Senior Secondary School level of mathematics learning unpreparedly or without mastery of the mathematics ‘contents’. In general, when a child is prematurely exposed to a learning task before he is adequately ready for it, he not only fails to learn the task in question (or learns it with undue difficulty), but learn on his experience to fear, dislike and avoid the task (Ausubel, Navok and Harison, 1918). Readiness can be determined from the degree of mastery in terms of the frequency of errors the learners commit or from the process skills he acquired. In other words, readiness in mathematics can be judged based on the number of mathematics skills, concepts or ideas that students ‘pass’ or ‘fail’. These skills, ideas or concepts that students failed are referred to as ‘errors’. Therefore, a group that commits less errors than another group is regarded as being more ready than the other group that committed more errors and vice versa.

Obviously students’ ‘unpreparedness’ or ‘lack of mastery’ of mathematics background knowledge in Junior Secondary School level before they were advanced to Senior Secondary School level resulted to their poor performance in mathematics at the Senior Secondary School and National examination Council Examinations are evidenced from their chief examiners’ yearly reports and researchers’ reports too. For instance, number and numeration are aspects of mathematics which students exhibit lack of interest and find difficult to understand (Harbor-Peters, 1990; and Onah, 2007); interest in mathematics and algebra in particular also dwindle leading to poor performance of Secondary School students in it (Ezema, 2009; and Ozofor, 2009); students’ achievements in mathematics, particularly geometry show a progressive decline in quality and number of passes (WAEC, 2001-2006 and Odo, 2009). And among the areas in mathematics that students find difficult include geometry and mensuration (Harbor-Petesrs, 1990; Ozigbo, 2008; and Okolu, 2009).

A situation such as the above reports and research evidences on Senior Secondary School students’ poor performances in the four content areas of the Junior Secondary School mathematics curriculum contents, is a clear indication that the JSS 3 students were prematurely advanced to the Senior Secondary School class one (SSS1) level. In view of this situation coupled with paucity of developed and validated mathematics readiness test instrument for identifying the readiness levels of Senior Secondary School entrants for Senior Secondary School mathematics work, teachers and researchers are faced with the problem of access to locally

developed instrument with which to measure students' readiness for Senior Secondary School mathematics work. Okonkwo (1998) and Obienyem (1998) all therefore suggested that Senior Secondary School entrants' mathematical readiness of JSS 3 students intending to resume a new mathematics programme in Senior Secondary School mathematics learning can be investigated. Consequent upon Okonkwo (1998) and Obienyem's (1998) notion, Unodiaku (2010) developed and validated mathematics readiness test (MATHRET) for Senior Secondary School entrants in which the construct validity, internal consistency and inter-rater reliability coefficient of the instrument were established. Incidentally, literature search revealed paucity of readiness test developed on mathematics and few available ones did not examine the handicapped students separately from non-handicapped ones, as well as gender of the handicapped students because gender differences have become on the hotlist of critical issues around the world (Khwaileh and Zaza, 2011). For instance, chief examiners (WAEC and NECO) and individuals made general reports on students poor performance in mathematics and so did not indicate specifically the extent of poor performance of the handicapped students.

Handicap is a condition that restricts a person's ability to function physically, mentally and socially (Onah, 2012). That means one's inability to perform a function or activity due to disability. Based on the foregoing reports, it vindicates that both handicapped and non-handicapped students performed poorly on mathematics. According to Draper (1918, Retri, Aug, 2016), attaining and understanding mathematics knowledge led to sound character and mind; that mathematics was universal and therefore the same for deaf people and hearing people. These global low levels of academic achievement in mathematics are also experienced in the education of deaf children in Zimbabwe, a country that has the double distinction of having a literacy rate of 92%, which is the highest in Africa (United Nations Development Programmes, 2010). This study is geared towards determining the readiness levels of handicapped students.

Literature search about gender and performance of handicapped students in mathematics revealed that mathematics attainment of most deaf high school leavers are lower than those from non-deaf peers (Gregory, 2011; and Griffiths, 2012). In a similar report, Cosden and Mcnamera, (2012) found that disabled Secondary School students are more vulnerable to academic stress and failure in mathematics than non-disabled counterpart, compared to nondisabled students. Disabled

Secondary School Students attain lower Secondary School graduation rate, and higher rate of failure in mathematics (Vogel and Adelman, 2010). The notion that handicapped students are finding the study of mathematics more difficult than their non-handicapped students in foreign scene, it becomes worrisome what will be the situation of the handicapped students locally because of their disabilities and lack of infrastructural facilities.

Literature on gender and academic performance of male and female students in mathematics exists with different views and findings. Some interesting studies conducted have shown that girls performed better than boys in mathematics tests (Agwagah, 1993; Arnot, David & Weiner, 1999; Hydea & Merzb, 2009; and Unodiaku, 2015). However, some research findings revealed that males performed better than females in mathematics achievement (Fennema, 2000; Ozofo, 2001; Johnstone Seymour, 2010; Olosunde and Olaleye, 2010; and Unodiaku, 2013). Other reports vindicated that male and female students are at parity in mathematics performance (Onibkun, 1979; UNESCO, 2004; and Usman and Nwoye; 2010). Several researches have been carried out in various contextual topics to examine factors that influence gender achievement in mathematics tests. For instance, many of such studies were focused on factors related to differences in the performance of males and females in mathematics (Abiam & Odok, 2006; and Zhu, 2007). Other factors identified in literature include establishment of symbolic oppositions by schools (Asante, 2010); socio-economic status of parents, cultural and traditional influences (Kaino & Salani, 2004). There is no known study on gender on mathematics performance of male and female handicapped students to the researcher. Instead, 'individuals and Chief examines' reports were based generally on the combination of all categories of the examines and so did not report separately males' performance from that of females'. These inconstancy reports therefore need to be clarified by this study, so as to know that extent of readiness of the male or female handicapped students, or which group is more superior to the other or whether they share equal strength in mathematics.

### **Statement of the Problem**

According to Unodiaku (2010), poor achievement in mathematics among Secondary School students is related to students' lack of possession of mathematics potentials/process skills. Lack of possession of process skill among the students

implies the frequencies of errors they commit in mathematics are of high degree. Such high degree of errors they commit in mathematics problem-solving implies that they are 'not ready' for further learning of mathematics at the next higher level of mathematics instruction. It has been reported (Fennema, 2000; Johnstone & Seymour, 2010; Olosunde and Olaleye, 2010; and Unodiaku, 2013) that males and females students do not perform equally in mathematics, showing that they are in different readiness levels. Such reports neither indicated separately the performances of non-handicapped students from the handicapped ones, nor indicated separately the performances of male handicapped students from that of the female handicapped ones. The problem of the study pose as a question is to what extent do male and female handicapped Students vary in terms of their respective readiness levels ('ready', 'fairly ready', or 'not ready')? Therefore, the problem of this study is to explore the influence of gender on mathematics readiness of handicapped students in learning mathematics in Secondary School Enugu State.

### **Purpose of the Study**

The main purpose of the study was to investigate the influence of gender on mathematics readiness of handicapped students in learning mathematics in Secondary School in Enugu State.

### **Research Questions**

Two research question were posed to guide the study. The questions are as follows:

1. What percentage of handicapped Senior Secondary School entrants are 'ready', 'fairly ready', or 'not ready' (in terms of their mean error scores on the MATHRET) for the Senior Secondary School mathematics learning?
2. To what extent do males and females handicapped students vary in terms of their mean error scores as measured by MATHRET?

### **Null Hypothesis**

The following null hypothesis formulated to guide the study was tested at  $\alpha= 0.05$  levels of significance.

**Ho:** There is no significant difference in the means of errors committed by male and female handicapped students that influence their degree of readiness for Senior Secondary School mathematics as measured by MATHRET.

### **Research Method**

The study adopted survey research design. This design was successfully applied by Unodiaku (2010) in identification of mathematics readiness level of Senior Secondary School class one (SS 1) entrants in Enugu State. The population of the study consisted of 93 SS1 entrants. The whole population was purposely used because the population was small. The effective sample (93) was composed of 35 males and 58 females.

Mathematics readiness test instrument (MATHRET) developed Unodiaku (2010) and revalidated by the researcher sample of similar characteristics but in area different from the area of the study was adopted. The MATHRET items were composed of seventeen essay questions spread across the five content areas of SS1 mathematics curriculum contents viz: number and numeration, algebraic processes, geometry and mensuration, and everyday statistics. The MATHRET items were subjected to experts for face-validation and the reliability estimate of the MATHRET was established using Cronbach alpha statistic. The reliability coefficient of the test statistic yielded 0.79. All the 17 items developed and validated by Unodiaku (2010) and revalidated by the researcher survived the validation and reliability processes. Consequently, the MATHRET was composed of 17 items used for the study. Percentage, mean and standard deviation were used in answering the research questions. The research hypothesis was tested using analysis of variance (ANOVA) statistic at  $P \leq 0.05$  level of significance.

### **Results**

The findings of the study were presented in line with the research questions and hypothesis.



**Research Question 1:** The research question one was answered using Table 1 below.

**Table 1: Contingency Table showing the percentage of 93 SSS 1 Entrants that were ‘ready’, ‘fairly ready’, and ‘not ready’ for Senior Secondary School Mathematics**

Total frequencies of errors committed by students out of the 1365 max, freq. of errors	4508
Total frequencies of errors committed by students classified as ‘ready’	775
Total frequencies of errors committed by students classified ‘fairly	1212
	2521
Total number of students that committed 39% and below of 17700 freq. of errors (‘ready’),	16
Total number of students that committed between 40% and 54% inclusive (‘fairly ready’).	25
Total number of students that committed 55% and above of 17700 freq. of errors (‘not ready’).	52
Percentage ‘ready’,	17.21%
Percentage ‘fairly ready’.	26.88%
Percentage ‘not ready’.	55.91%

Table 1 revealed that 17.21 percent of the students were found to be ‘ready’, 26.88% of them were ‘fairly’, while the remaining 55.91% of them were ‘not ready’ for Senior Secondary School mathematics learning.

**Research Question 2:** The result of data analyzed was used to answer research question two and shown in table 2 below.

**Table 2: Summary of Mean Error Difference committed by Male and female Handicapped Students as Measured by MATHRET**

Gender	N	Freq. of Errors Committed	Mean (x) errors	S.D.
Males	35	1809	51.69	1.825
Females	58	2699	46.53	2.251
Grand Mean	93	14508	48.47	1.901
Mean error difference between males and females			5.16	

Table 2 revealed that the mean errors committed by males students was 51.69 with S.D. of 1.835 while the mean errors committed by females students was 46.53 with S.D. of 2.251. The mean error difference was 5.16 in favour of female. Obviously, the females were more ‘ready’ than their male counterpart for Senior Secondary School mathematics learning.

**Table 3: Analysis of Various (ANOVA) Table of Handicapped Males and Females Error Score in MATHRET**

Score of variation	Type III Sum of Squares	df	Mean Square	F	Sig.	Result
Corrected Variation	28.275 <sup>a</sup>	1	28.275	9.713	.020	S*
Intercept	1948.153	1	1948.153	169.238	.019	S*
Gender	28.275	1	28.275	9.713	.011	S*
Error	264.922	91	2.911			
Total	2869.000	93				
<b>Corrected Total</b>	<b>301.410</b>	<b>92</b>				

a. R square = .113 (adjusted R square = .11). S\* = significant at 0.05 probability level.

Table 3 presents the statistics of the distribution of difference between the paired differences (paired scores), and the 95% confidence interval of the difference. The gender has F value of 9.713 and is significant at .011 (i.e.  $0.011 \leq p \leq 0.05$ ). Therefore, F is significant at 0.05. Hence, the hypothesis is rejected. That is, there is significant difference between the mean error scores of male and female handicapped students as measured by MATHRET.

### **Discussion of Results**

The total frequencies of errors committed by the students were 4508. Out of this 4508., the 775, 1212 and 2521 frequencies of error scores were actually found to be committed by the students classified as 'ready', 'fairly ready' and 'not ready', respectively. The total number of students that committed 39% and below of the maximum obtainable frequencies of errors (13605) otherwise referred to as those that were 'ready' was 16 students out of the total sampled size of 93 students used for the study. The number of students that committed between 40% and 54% inclusive otherwise referred to as 'fairly ready' were 25 students while those that committed 55% and above were 52. The percentage found to be 'ready' and 'fairly ready' were 17.21% and 26.88% respectively while the percentage found 'not ready' was 55.91%. These results clearly indicate that the percentages of students found to be 'ready' and 'fairly ready' against those 'not ready' were not encouraging. Only 17.21% and 26.88% of the sampled subjects found to be 'ready' and 'fairly ready' respectively, Senior Secondary School mathematics programme suggests that generally the handicapped Junior Secondary School students lacked evidence of readiness for senior Secondary School mathematics learning. According to Obienyem (1998), mathematics unpreparedness of Secondary School students at the point of admission may be related to the inability of most teachers to integrate manipulative into their lessons; thereby making their lessons boring, uninteresting and mathematical concepts learnt in disconnected and distorted manner.

The disparity in readiness of the handicapped male and female JSS 3 students for Senior Secondary School mathematics work reveals that the female handicapped students received more quality of mathematics instruction at the JSS 3 level than their counterpart students. This mean difference (5.16) between male and female handicapped students was tested and found significant ( $p \leq 0.05$ ). This

suggests that gender is a significant factor of mathematics readiness of the handicapped student for Senior Secondary School mathematics work. The mean error difference of 5.16 in favour of the suggests that females were more ready than their males counterpart for Senior Secondary School mathematics learning. This finding on females' superiority in mathematics over their males' counterpart was in consonance with earlier reports (Agwagah, 1993; and Unodiaku, 2015), who all reported that females achieved higher than males in mathematics tests. However, Olosunde and Olaleye, (2010) and Unodiaku (2013) reported that males were 'more ready' and 'fairly ready' than their counterpart female students in mathematics readiness test. Yet, no significant difference in mathematics achievement between males and females were reported (Olasehinde and Ololaye, 2014; Aja and Imoke, 2016; Jane and Janet, Retr. July, 2016). This disparity in reports on males and females superiority in mathematics achievement tests appears inconclusive. Specifically, males and female students taught algebra using PBL did not significantly differ in achievement and retention scores. This report reveals that male and female students can compete and collaborated with equal strength in mathematics.

### **Conclusion**

Based on the findings of the study, it was concluded that in general the JSS 3 students were not ready for Senior Secondary School mathematics work and disparity in mathematics readiness of male and female Senior Secondary School one handicapped entrants was in favour of female students. In other words, the females were found to be more ready than their counterpart. This result suggests the need to establish differential norms for male and female students. If these factors are duly integrated into mathematics pedagogy, there is tendency that fundamental problems in mathematics learning will be permanently resolved.

### **Recommendations**

Based on the findings, the following recommendations are made:

1. Educational administrators and stakeholder in education should place more emphasis on the use of qualified mathematics teachers, teaching aid an innovative approaches in teaching handicapped students so as to enhance their mathematics readiness as well as bridge the gap in performance in males and females.

2. Teacher should establish differential norms for both male and female students.
3. Secondary School mathematics curriculum designers and authors of secondary school mathematics textbooks should consider disparity in performance of male and female handicapped students while designing mathematics curriculum and writing mathematics textbooks respectively.

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## **RELATIONSHIP BETWEEN ACADEMIC SELF-CONCEPT AND SENIOR SECONDARY STUDENTS' ACHIEVEMENT IN BIOLOGY**

By

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### **Abstract**

*The study investigated the relationship between Academic Self-Concept and Senior Secondary Students Achievement in biology. It employed ex-post facto research design. Two research questions and one null hypothesis, which was tested at 0.05 level of significance guided the study. The study was carried out in Enugu Urban of Enugu State, Nigeria. Five hundred and eighty (580) senior secondary year three (SS3) biology students were drawn from twenty-nine (29) government owned secondary schools in Enugu, Enugu State, Nigeria using simple random sampling technique. The instrument used to determine the academic self-concept and students' achievement in biology were a 4-point scale of Academic Self-Concept (ASCS) and SSCE biology result scores respectively. The reliability coefficient for ASCS was established using Cronbach Alpha and found to be 0.81. Data collected were analyzed using means and standard deviation for the research questions and analyses of covariance (ANCOVA) for testing the null hypothesis at  $P < 0.05$  probability level. A positive relationship between students' Academic Self-Concept and the students' biology achievement was found to exist. Also students' Academic Self-Concept influences their SSCE biology achievement. The study, therefore, recommended SSCE biology curriculum review to incorporate non-cognitive variables as Academic Self-Concept.*

## **Introduction**

Biology as a branch of science is the study of plants and animals. The knowledge of biology as a subject by secondary school students makes them well informed and motivated to assume roles in which the practical and theoretical aspects are used in unravelling some basic problems of life like sickle cell anaemia and albinism. Again, to produce experienced and qualified doctors, pharmacists, biology teachers and all those concerned with the study of animal and plant life, a good foundation in biology is required.

In Nigeria, the poor academic achievement of secondary school students in biology and its negative consequences have been of great concern to many parents, teachers, science educationists and science students themselves. Evidence available showed that most students' achievements in the sciences, especially in biology, have been very poor (STAN, 2015; WAEC Chief Examiners' Reports, 2009-2011).

In 2009, the nation was shocked and devastated when the National Examination Council (NECO) released its 2009 SSCE result showing that only 1.8% passed with five credits and above (Okpala, 2010). In view of this poor achievement, biology students resorted to massive examination malpractice in SSCE to the extent that biology is rated 3<sup>rd</sup> highest case with a population of 25, 577 out of 236,613 case of examination malpractice in 2009 NECO senior school certificate examinations (Okpara, 2010). This is a worrisome situation. This poor academic achievement has been attributed to lack of qualified science teachers, inadequate instructional technology, students poor study habits (Akinboye, 2005) and students' lack of financial support such as scholarships, bursary awards and loans (Salami, 2004). He suggested that adolescents personality, vocational interests, academic achievement and socio-cultural factors should be identified and included in the career counselling process by psychologists. Several efforts have been made to solve this enigma and this trend motivated the researcher to delve into finding the relationship between academic self-concept and senior secondary students' achievement in biology.

Academic self-concept refers to how a student views his or her academic ability when compared with other students. Self-concept as a construct is multidirectional as it refers to the individuals perception of "self" in relation to any number of characteristics such as academic and non-academic, gender roles and sexuality, and others. It is a collection of beliefs about oneself and is distinguishable

from self-esteem which is a function of the purely evaluative element of the self-concept.

”Self-concept had a long history within psychology and education because it provides a gauge to determine the effects of academic and social functioning on the emotional well-being of the individual” (Myers, 2009, P.54). Self-concept is generally viewed as a valued educational outcome. It is typically defined as a person’s general composite or collective view of themselves across multidimensional sets of domain specific perceptions, based on self-knowledge and evaluation of value or worth of one’s own capabilities formed through experiences with and interpretations of the environment (Byrnes, 2003; & Eccles, 2005). Self-concept is made up of one’s self schemas, and interacts with self-esteem, self-knowledge, and the social self to form the self as whole. It includes the past, present, and future selves, where future selves (or possible selves) representing individuals ideas of what they might become, what they are afraid of becoming. Possible selves may function as incentives for certain behaviour, Myers (2009). In addition, people have a tendency to perceive the past selfless favourably Wilson; Buehler; Law ford; Schmidt; Yong (2012).

Children and adolescence begin integrating social identity into their own self-concept in elementary school by assessing their position among peers Trautwein; Ludtke; Marsh; Nagy (2009). By age 5; acceptance from peers has a significant impact on children’s self-concept, affecting their behaviour and academic self- concept Gest; Rulison; Davidson; Welsh (2008). By age 10 or 11, children asses their academic abilities by comparing themselves to their peers Rubie-Davies (2006). These social comparisms are also referred to as self-estimates Freund; Kasten (2012). Self-estimates of cognitive ability are most accurate when evaluating subjects that deal with numbers such as mathematics, biology and others.

A model of self-concept contains three parts: Self-esteem, stability and self-efficacy. Self-esteem as earlier mentioned a function of the purely evaluative element of the self-concept. It is where one makes judgments about his or her self-worth. Stability refers to the organization and continuity of one’s self-concept while self-efficacy is best explained as self-confidence because it is specifically connected with one’s abilities. The construct of self-concept is grounded primarily in self-worth theory (Eccles & Wigfield, 2010). Briefly, self-worth theory suggests that all individuals have a motivational “tendency to establish and maintain a

positive self-image or sense of self-worth (Eccles & Wigfield, 2002, P. 122). Since children spend a significant portion of their lives being evaluated in school classrooms, self-worth theory postulates that a key to develop and maintain self-worth is to develop and maintain a positive academic self-concept.

Researchers debate when self-concept development begins but agree on its importance on person's life. Rubie-Davis & Lee (2013) indicate that parents' gender stereotypes and expectations for their children impact children's understandings of themselves by approximately age 3, others suggest that self-concept develops later, around age 7 or 8, as children are developmentally prepared to begin interpreting their own feelings, abilities and interpretations of feedback they receive from parents, teachers and peers about themselves.

Despite differing opinions about the onset of self-concept development, researchers agree on the importance of one's self-concept, influencing people's behaviours and cognitive and emotional outcomes including (but not limited to) academic achievement, levels of happiness, anxiety, social integration, self-esteem, and life-satisfaction.

Research by Trautween (2009) indicates that, children and adolescents begin integrating social comparison information into their own self-concept in elementary school by assessing their position among their peers. Gest (2008) research findings reveals that peer acceptance has a significant impact on one's self-concept by age 5, affecting children's behaviour and academic success. Both of these research examples capsule the social influences on a person's self-concept. While this study looks into the ASC and its relationship with students' achievement, the resultant effect, it is believed when disseminated and implemented will help improve the students' academic achievement in SSCE biology.

### **Purpose of study**

The purpose of this study is to find out the relationship between academic self-concept of senior secondary school year three (SS3) biology students and their achievement in Senior School Certificate Examination (SSCE) Biology in Enugu Urban as well as to determine the extent to which Academic Self-Concept influences students' achievement in biology.

In order to do this, two research questions were posed:

1. What is the relationship between academic self-concept and students' achievement in Senior School Certificate biology examination (SSCE)?
2. What are the mean scores of the students' in each group of high and low levels of Academic Self-Concept (group here refers to high and low levels).

One hypothesis was formulated and tested at 0.05 level of significance.

### **Ho<sub>1</sub>**

Academic self-Concept will not significantly relate to student's achievement in SSCE biology.

### **Methodology**

Ex-post facto design was employed for this study. The study was carried out in Enugu State, Nigeria. The population of study was 5758 which comprised of all the senior secondary three (SS3) biology students within Enugu Urban. The sample size of the study was 580 SS3 biology students selected from 29 schools. Simple random sampling technique, specifically by balloting was used to select twenty (20) SS3 students from each school.

The instrument for data collection is Academic Self-Concept Scale (ASCS), adapted from Reynolds (1980). The instrument which was used to assess how positively one talks about his/her academic ability was developed and used by Reynolds (1980). This instrument used a 4-point rating scale ranging from 1 (strongly disagree) to 4 (strongly agree). Those with high academic self-concept have high rating on the scale. It has a reliability coefficient of .814 using the Cronbach Alpha Model. The SSCE scores were reversed stanine scores ranging from A1 – F9. As a result, they were converted to t-scores before being used in the analysis. The four points of the rating scale were assigned point values of 4, 3, 2, 1 for Strongly Agreed, Agreed.....respectively.

The data was collected through the distribution of 580 copies of the research instrument (ASCS) to the 580 respondents which were retrieved on the spot after the respondents completed the instruments. The research questions were answered using mean and standard deviation, and Spearman rho correlation co-efficient (because the scores included ordinal scores).The null hypothesis was analysed using regression analysis and ANOVA at 0.05 level of significance. The scores were recorded and used with the SSCE biology result for analysis.

## Results

### Research Question 1

What is the relationship between academic self-concept and students' achievement in senior school certificate biology examination (SSCE)?

The 4 points of the rating scale were assigned point values of 4, 3, 2, 1 for Strongly Agreed, Agreed..... respectively.

**Table 1: Correlation Matrix of Academic Self-Concept and Achievement.**

Variable	ASCS	Arch
ASCS	1	
Arch	.10	1

N=580

There is a positive relationship between academic self-concept and achievement ( $r=.10$ ,  $P < 0.05$ ). This relationship is however weak. This showed that students with high academic self-concept have high achievement while those with low academic self-concept achieved poorly.

### Research Question 2

What is the mean achievement scores of students in each group of academic self-concept?

**Table 2: Mean and standard deviation of achievement scores of students by high and low groups.**

Variable		Mean	Standard
ACSC	Low	50.018	.983
	High	50.178	.984

Table 2 showed that the students with low academic self-concept have a mean of 50.018 and standard deviation 983 while those with high academic self-concept have mean of 50.178 and standard deviation of .984. This indicated that students with high academic self-concept achieve higher than those with low academic self-concept. The variability of the students in the two groups are similar.

**Null hypothesis 1**

Academic self-concept does not significantly influence achievement of students in biology at 0.05 level of significance.

**Table 3: Regression analysis of academic self-concept on achievement in biology.**

Variable	R	R <sup>2</sup>	AR <sup>2</sup>	F	df	P	T	sign
ASCS	.175	.031	.026	6.33	1	.175	2.52	0.013

N=580; P < .05

From the regression analysis of Academic Self-Concept on achievement in biology in Table 3, Academic Self-Concept was a significant predictor of academic achievement (R<sup>2</sup>=.031, P=.175, F=6.33). In other words, Academic Self-Concept has a positive influence on academic achievement.

**Discussion**

The correlation matrix of Academic Self-Concept and achievement in Table 1 revealed that there is positive relationship between academic self-concept and achievement (r=.10, P < 0.05). This finding that ASC was positively related to academic achievement of the students strongly supported hypothesis 1. These results agree with previous studies (Bandura, 2005, Salami, 2004) which found that academic self-concept was significantly related to academic achievement (Bandura, 1997, Salami, 2004). This finding can be explained on the ground that students with high academic self-concept have confidence in their ability to organize and execute actions to solve their academic problems which impacted positively on their academic achievement. Academic self-concept therefore has significant influence on the achievement of students in SSCE biology.

There is also a difference in the academic achievement of high and low level Academic Self-Concept of students as shown in table 2. This suggests that students with low academic self-concept (X= 50.081, SD= .983) achieved lower than those with high academic self-concept (x= 50.104, S=.984). This report gives credence to Olatoye (2004) who said that low academic achievement in school is a direct influence of students' low academic self-concept.

## **Conclusions**

There is positive relationship between academic self- concept and students' academic achievement. Academic self-concepts of the students have influence on students' academic achievement in SSCE Biology. Students who have good self-esteem have a clearly differentiated self- concept. When students know themselves, they can maximize outcomes because they know what they can and cannot do (Huitt, 2004). We develop and maintain our self-concept through the process of taking action and then reflecting on what we have done in comparison to our expectations and the expectations of others and to the characteristics and accomplishments of others. Hence self- concept is not innate, but is developed or constructed by the individual through interaction with the environment and reflecting on the interaction. This dynamic aspect of academic self-concept is very important because it indicated that it can be modified or changed.

## **Implications**

A review of the voluminous self-concept & self-esteem literature suggest the following implications:

1. Self-concept is related to many other developmental accomplishments. For example, the affective component of self-concept (i.e. self-esteem) has been empirically associated with positive social development, ethnic identity development, positive peer of parents' interactions & relationship, insulation agents, the development of a defiant identity & delinquent behaviours, less anxiety and depression, and greater satisfaction with life.
2. Although the size and direction of the relationships (as well as the measurement and methods used in the research studies) have sometimes been argued and criticized. In general, ASC has been consistently linked to positive academic outcomes. This finding is not surprising given that the high value placed on academic competence by society typically result in positive academic competence feeling for learners who are successful in their academic endeavours. This positive academic affective self-evaluations are believed to influence future academic motivation. Part of the disagreement with the self-concept research findings stems from the use of different "achievement" indicators. ASC is more consistently correlated with great and less consistently correlated to test scores. It has been hypothesize that ASC



exert more influence on grades (vs test scores) as great are believed to be more influenced by motivation and volition.

3. The adverse impact of repeated academics failure can threaten a students ASC and general self-worth. As a result, a student may develop a need to protect both their private and public sense of perceived academic competence or self-worth from failure. The need for self-worth protection can result in the development of maladaptive defensive strategies that include defence pessimism (e.g. maintaining unrealistic low expectations for success, discounting the importance of success), self-hand-capping (creating an impediment that serve as an excuse for possible failure-e.g. procrastination), and self-worth protection (a general approach of not expending effort so that failure can be attributed to ambiguous causes rather than personal inadequacy). As is the case with most defensive coping strategies, there may be an uneducated near-term protection of feelings of self-esteem and self-concept. However research indicates that adoption and repeated use of failure avoidant defensive protective strategies can produce poor and inconsistent long term achievement, lower academic interest and motivation negative affective consequences (e.g. increased anxiety, decreased life satisfaction), and less self-regulated learning. It has been suggested that defensive fail avoidance strategies may be most prevalent in competitive (vs cooperative) learning environment.

### **Recommendations**

Counselling psychologist working with students should be aware that students' academic problems may arise from low academic self-concept and as such offer therapeutic interventions to alleviate the students' academic problems.

Biology curriculum review should incorporate non-cognitive variable as academic self-concept which has been discovered to be significant predictors of academic success while government formulates a policy that makes annual in-service and refresher courses compulsory for the science teachers especially biology teachers. This will guarantee the opportunity to understudy the implications of academic self-concept on the students' achievement in biology and its solutions.

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**INFLUENCE OF IGBO TRADITIONAL VALUES AS  
PEDAGOGICAL TOOL FOR THE TEACHING OF MORAL  
EDUCATION AMONG SECONDARY SCHOOL STUDENTS IN  
ENUGU STATE**

By

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**Abstract**

*This study investigated the influence of Igbo traditional values as pedagogical tool for the teaching of moral education among secondary school students in Enugu State. The study adopted survey research design. Simple random sampling technique was adopted in selecting 253 SSS2 students from four intact classes in six randomly selected schools, while 73 teachers were randomly selected from teachers teaching humanities. Out of 253 students used for the study, 101 are males while 152 were females and out of the 73 teachers, 26 are males while 47 are females. A questionnaire instrument developed by the researcher and validated by experts was used for data collection. The reliability of the instrument was established using Cronbach alpha technique and its reliability index was found to be 0.88. The study was guided by three research questions and two hypotheses. The hypotheses were tested at 0.05 significant level. One of the results of the findings showed that the use of Igbo traditional values as pedagogical tool for the teaching of moral education among secondary school students in Enugu State has great influence on moral development of the students and impact on their moral consciousness. Moreover, the use of textbooks, curriculum of teacher trainees and seminars and workshops, that contains morals and values systems of Igbo society including supervision of teacher effectiveness in teaching morals and values of the igbos to the students were found to be effective skills that teacher can be equipped with for effective instruction of morals and values of the Igbo society. It was recommended that Igbo traditional values should be integrated as pedagogical tool for the teaching of moral education of secondary school students, among other issues.*

**Keywords:** Igbo traditional values, moral education, teaching and students.

### **Introduction:**

In the pre-colonial era of Igbo society, moral education was practiced as it ought to be with the parents passing the torch of societal morals (Deuteronomy 11:8-23) by teaching their children good (traditional) moral principles/values at home. During that era, moral education was completely informal and it was the prime duty of the elders who gave instructions to the youths at homes and during the performance of rites of marriage (Uzodimma, 2013). This prime function of the elders led to moral upbringing of the youths who grew up with the value systems and cultural values of the society. In this regard, parents are encouraged to strengthen the moral behaviour of these children through care, love and soft words so that they will have reasons to conform to an external force (Njoku, 2016). The youths are thereby equipped with desirable behaviours such as according respect to what is sacred, obeying the code of conduct in the society, respect for elders, avoiding behaviours considered by elders to be taboo. Based on these and other desirable behaviours inherent in the youths then, material comfort was sought for with recourse to the moral implications.

Today, however, the advent of western education came with formal education system which failed to carry along or integrate the traditional values of the Igbo society, despite that one of the goals of Nigeria education is inculcation of national consciousness, values and national unity to the learners (National Policy on Education [NPE], 2013). Moreso, in order to fully realize the goals of education in Nigeria as well as gain from its contribution to the national economy, government is anticipated to ensure that “quality of instruction at all levels of education shall be oriented towards inculcating moral and spiritual principles in inter-personal and human relations” (NPE, 2013, P.13). These statements of the national policy on education suggest the need to inculcate in the youths morals and values of the society through the schools and classrooms by teachers as agents of transmission. Moreso, character formation is intrinsic to classrooms and schools and is an inescapable part of the teacher’s craft (Campbell, 2003, Narvaez, 2006). The above statements clearly indicate the need for integration of moral education into Nigeria education system.

According to Uzodima (2013), such instructions or values are lacking in today’s school system, partly because since the takeover of mission schools by government, such instructions and values were not inscribed properly in the

education curriculum of our secondary schools and partly because of over emphasis on modern science and technology. In some situations, moral education has been replaced with civic education or religious studies. Ideally, the school system which is supposed to be used to educate future citizens so as to achieve the national educational objective of making the nation a great and dynamic society (NPE, 2013) is turned into shambles. School managers themselves who are supposed to know better and institutionalize discipline in school system have succumbed to the epidemic called materialism. Obviously, material comfort is sought for without recourse to the moral implications in school system (Uzodimma, 2013). Many secondary school students indulge in deviant behaviours such as truancy, cultism, sexual assault, absenteeism, indecent dressing, disrespect and dishonesty to mention but a few (Ugwu, 2010). This is another evidence of social disorder, aberration of the value system of the Igbo society and erosion of the Igbo cultural values, thereby giving way for moral decadence to creep in.

Evidence of moral decadence and social vices among the present day secondary school students have been offered in literature. For instance, different kinds of social vices and ills are felt at different spheres of the society (Uzodigwu, Retr. 2017). Afuge (2015) stated the forms of moral decadence as: cultism, rape, exam malpractice, teenage pregnancy, sexual harassment, student's prostitution, indecent dressing and so on. The youths as the foundation of labour force and the future of the Nigerian society need to be acquainted with basic moral values without which the nation would collapse and crash. The present situation calls for the urgent need to overcome these moral decadence and social vices prevalent among the students if the objective of achieving success in modern science and technology in a just and egalitarian society such as Nigeria is to be actualized. This is a task before policy makers, educational administrators and curriculum designers who should knit together its moral fibre again, some of these basic Igbo traditional values which ought to be reawakened and also inculcated in the consciousness of the youths. According to Uzodimma (2013), they have to learn these mores, but now more than ever, managers of education are expected to first design a salient formative pattern of cultural moral education for our secondary schools which will enable the students achieve excellent outcomes in the face of shrinking, dwindling and rapid social change. Sam, Narvaez, Darcia and Daniel (2017) believed that in order to be assured that the moral formation of students will be in good hands, the teacher educator need only to ensure that preservice teachers are prepared to be outstanding

teachers. This could be so because teachers mould certain forms of social life within classrooms and influence students' experiences of community and school membership (Bryk, 1988 and Campbell, 2003). Obviously, social vices and moral decadence among the students can be reshaped positively by well trained teachers who can teach moral education with various methodologies.

Differences in brains and behaviour between men and women have been reported in literature. For instance, Loreto (Retr. 2017) viewed that although many people are taught that differences in male and female behaviour are solely due to culture, science suggests a biological basis for many of these differences with such pronounced differences between the two genders, it seems logical that the brains of men and women are different (Brandly, 2017). Based on these author's observation of differences between male and females, it becomes pertinent therefore to investigate the extent of variation in the opinions of male and female respondents on this work.

#### **Statement of the Problem:**

Secondary school students are bedeviled by moral rectitude. The school administrators, stakeholders in education including parents and entire society are worried at the rot in the behavioural attitudes of these students. The situation was worsened by the focus on science and art but insignificant progress in the area of moral or ethics as evidenced in the rate of vices that characterize secondary school students of today. This is so because the tools of teaching moral education, used generally in the schools, are hampered by the difficulties inherent in the attempt to integrate western and indigenous values and by other associated factors of the colonial circumstances (Uzodinma, 2013). Moreover, few teacher education programmes are intentionally and deliberately preparing preservice teachers for the task (Kumar, 2017). The western values learnt in schools dismantled any form of Igbo traditional and inherited cultural values, thereby paving way for violence, terrorism, murder, looting, oppression, arson among other social vices inherent in the society. The Igbo traditional values and inherited value systems need to be integrated and used as pedagogical tool for the teaching of moral education among secondary school students. The problem of the study posed as a question is, to what extent can the Igbo traditional value be used as a pedagogical tool for the teaching of moral education to secondary school students in Enugu State.



**Purpose of the Study:**

The main purpose of the study is to determine the influence of Igbo traditional values as pedagogical tool for teaching moral education in secondary schools. Specifically, the study sought to determine:

1. the extent the teaching of Igbo traditional moral values in secondary schools can have an influence on the moral development of students and eventually impact on their moral consciousness;
2. the extent to which the rot and moral decadence observed among the students were influenced by malformation of the Igbo moral concepts and value systems;
3. how teachers in the schools can be equipped with the skills to instruct students about morals and values of the Igbo society;

**Research Questions:**

Three research questions were posed to guide the study. They are as follows:

1. To what extent can the teaching of Igbo traditional moral values in secondary schools influence the moral development of students and eventually impact on their moral consciousness?
2. To what extent do rot and moral decadence observed among the students influence malformation of the Igbo moral concepts and value systems?
3. To what extent can teachers be equipped with the skills to instruct students about morals and values of the Igbo society?

**Hypotheses:**

Two hypotheses were formulated to guide the study. The hypotheses were tested at 0.05 level of significance ( $P < .05$ ).

**H<sub>01</sub>:** There is no significant difference between the mean responses of students and teachers on the extent to which the rot and moral decadence observed among the students were influenced by malformation of the Igbo moral concepts and value systems.

**H<sub>02</sub>:** There is no significant difference between the mean responses of students and teachers on how teachers can be equipped with the skills to instruct students about morals and values of the Igbo society.

**Method:**

The study adopted survey research design. This design was considered appropriate for the study because the subjects were reached in their natural environment. The population of the study consisted of 3125 2015/2016 SSS2 students and 258 teachers in 55 secondary schools in Udi Educational Zone of Enugu State (Research & Statistics Unit, Udi Zonal Office, PPSMB, Enugu, 2017). The sample for the study was 253 SSS2 students obtained from six intact classes in six randomly selected schools from the 55 secondary schools, while 73 teachers were randomly selected from teachers teaching subjects under humanities (English Language, Economics, Geography, Accounts, Commerce, Literature-In-English and Igbo Language). Out of 253 students used for the study, 101 are males while 152 are females, and out of 73 teachers, 26 are males while 47 are females.

Instrument used for the study was questionnaire of four-point Likert scale consisting of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The SA, A, D and SD were scored 4, 3, 2 and 1 point(s) respectively. The instrument consists of two sections (A and B). Section A was administered to teachers while Section B was administered to students. The instrument was face validated by experts in education Measurement and Evaluation Department of University of Nigeria, Nsukka. Moreso, experts in Philosophy of Education Unit of the same university ensured relevance of its content, clarity of statement and logical organization. The instrument was Pilot tested using 67 subjects that did not participate in the main study. Cronbach alpha was employed in establishing the reliability of the instrument which yielded 0.88. The data collected with the instrument was analyzed using mean ( $\bar{x}$ ) to answer the research questions while t-test statistic was used to test the hypotheses at  $P < 0.5$  significant level. The criterion of agreement of positive value is a mean ( $\bar{x}$ ) of 2.5 and above and that of disagreement for negative value, a mean ( $\bar{x}$ ) of below 2.5. Items with mean ( $\bar{x}$ ) value of 3.5 and above were considered as being highly rated.

**Results:**

The results of the study were presented in line with the research questions and hypotheses.

Research Question 1 was answered using Table 1 below:

**Table 1:** Mean ( $\bar{x}$ ) responses of students and teachers on the extent teaching of Igbo traditional moral values can influence moral development of students and impact on their moral consciousness.

S/N	Items	Teachers	Students	Total	$\bar{x}$	Decision
1.	Do you think that the use of Igbo traditional values and value systems for teaching moral education can change the negative behaviour of students?	3.4	2.86	6.26	3.13	Accepted
2.	Can teachers use the traditional values effectively as instrument to teach moral education?	3.51	2.75	6.28	3.14	Accepted
3.	Is it necessary to train teachers of moral education in the original and authentic codes of Igbo traditional values and value system?	3.55	3.11	6.66	3.33	Accepted
4.	Can the teaching of traditional moral values in schools influence the moral development and consciousness of students?	3.42	3.01	6.43	3.22	Accepted
<b>Total</b>						

Table 1 revealed that an accepted consistency of the respondents' proposed that the teaching of Igbo traditional values will have a great influence on the moral development of students and eventually impact on their moral consciousness.

Moreso, it revealed that Igbo traditional moral codes can be used effectively by educators if they are trained for moral education instructions in the secondary schools. In view of this approach, it shows that educators can apply or use it as a tool to inculcate the moral character in the lives of the students.

**Research Question 2:**

**Table 2:** Mean ( $\bar{x}$ ) responses of teachers and students on the extent of rot and moral decadence observed among the students influence malformation of the Igbo moral concepts and value systems.

S/N	Items	Teachers	Students	Total	Decision
1.	Assault and Battery	3.15	3.01	3.08	Accept
2.	Theft	3.14	3.22	3.18	Accept
3.	Indecent dressing and speech	3.28	3.07	3.18	Accept
4.	Examination malpractice	3.46	3.18	3.32	Accept
5.	Bribery	2.73	1.82	2.28	Reject
6.	Sexual immorality	3.02	2.73	2.88	Accept
7.	Fighting	3.11	3.03	3.07	Accept
8.	Bullying	3.2	3.34	3.27	Accept
9.	Drug abuse	3.12	2.97	3.05	Accept
<b>Total</b>					

Table 2 shows that the respondents have rated all the items (except item 5 with mean of 2.28, which has the mean below the acceptance criterion of mean ( $\mu$ )  $\geq 2.5$  on the extent rot and moral decadence observed among the students influence malformation of the Igbo moral concepts and value system significantly high.

**Research Question 3:**

**Table 3:** Mean ( $\bar{x}$ ) responses of teachers and students on the extent teachers were equipped with the skills of instruction on morals and values of the Igbo society.

S/N	Items	Teachers ( $\bar{x}_1$ )	Students ( $\bar{x}_2$ )	Total ( $\bar{x}_3$ )	Decision
1.	The use of approved textbooks containing morals and values of the Igbo society.	2.89	2.47	2.68	Accepted
2.	To entrench morals and values of Igbo society on the curriculum of teacher trainee programme.	3.25	3.01	3.13	Accepted
3.	Organizing workshops, seminars and symposium about morals and value systems of the Igbo society.	3.17	3.03	3.10	Accepted
4.	The use of religious knowledge and civic education as a good alternative for moral education.	2.13	2.01	2.07	Rejected
5.	Proper supervision of teaching to ensure that teachers instruct morals and values of Igbo society to the students.	3.05	2.87	2.96	Accepted
<b>Total</b>					

Table 3 shows that the respondents accepted that teachers should be equipped, to a great extent, with the skills to instruct morals and values of the Igbo

society. This is indicated by items 1, 2, 3 and 5. However, the respondents rejected item 4, which stated that the use of religious knowledge and civic education is a good alternative for moral education.

**Table 4:** Analysis of t-test statistic of mean ( $\bar{x}$ ) responses of male and female students on the extent rot and moral decadence of the students were influenced by malformation of the Igbo moral concepts and value systems.

Respondents	N	Mean ( $\bar{x}$ )	S.D.	df	t-cal. val.	t-crit. Val.	Decision
Teachers	73	4.06	0.391	324	1.521	1.96	Accept Ho
Students	253	3.98	0.412				

Table 4 shows that the t-cal. Value (1.521) is less than t-crit. value (1.96). That means the hypothesis of no significant difference is not rejected ( $P < .05$ ). Therefore, there is no significant difference in the opinions of teachers and students on the extent rot and moral decadence of the students were influenced by malformation of the Igbo moral concepts and value system ( $P < .05$ ).

**Table 5:** Analysis of t-test statistic of mean ( $\bar{x}$ ) responses of male and female teachers on how teachers can be equipped with the skills to instruct students about morals and values of the Igbo society.

Respondents	N	Mean ( $\bar{x}$ )	S.D.	df	t-cal. val.	t-crit. Val.	Decision
Males	26	2.29	0.142	71	1.604	1.96	Accept Ho
Females	47	2.35	0.171				

Table 5 shows that the t-cal. Value (1.604) is less than t-crit. value (1.96). That means the hypothesis of no significant difference is not rejected ( $P < .05$ ). Therefore, there is no significant difference in the opinions of male and female students on how teachers can be equipped with the skills to instruct students about morals and values of the Igbo society.

### **Discussion of the Results**

Research question one relates to the extent teaching of Igbo traditional moral values can influence moral development of students and impact on their moral consciousness. All the items were rated positively and highly by the respondents showing that they agreed that all the items are influencing moral development of the students as well as impacting on their social consciousness. Both teachers and students rated item 3 highest. This finding suggests that students lack moral values probably from homes as well as moral consciousness. This situation calls for the need for teaching of moral education in schools. In support of this finding, Uzodinma (2013) reported that many of these children do not have a proper value system because they lack positive moral guidance from adults, particularly from parents and teachers. Moreso, malformation of Igbo moral concepts and value system was found to be influencing the rot and moral decadence of the students significantly ( $P < .05$ ) as indicated by the opinions of teachers and students. This is evidenced in the finding of research question two in which the respondents rated highly all the items on the extent rot and moral decadence observed among the students were influenced by malformation of Igbo moral concepts with exception of item 5 with mean of 2.28 which is below the criterion mean of 2.5.

Table 3 shows acceptance of the proposition of the need for teachers to be equipped with the skills to instruct morals and values of the Igbo society. The item by item mean of the respondents showed how teachers can be equipped with the skills to teach morals and values of the Igbo society to the students. The result showed that the use of textbooks, entrenchment of morals and Igbo values in the curriculum for teacher trainees, organizing workshops and seminars, and proper supervision of instruction are indicative that teachers are not equipped with the skills to instruct morals and values of the Igbo society. Obviously, this finding suggests the need to integrate and enhance the value system in our educational system. In support of this observation, Ella (1993) reported that the following media were found to be effective in integrating and enhancing the values: teaching the values in the early life of the child, use of committed and devoted teachers, provision of suitable environment and facilities, the teaching of mother tongue, folklore, appropriate methodologies such as child-centered education. Similarly, Sam, et al (2017), all believed that in order to be assured that the moral formation of students will be in good hands, teacher education need to ensure that preservice

teachers are prepared to be outstanding teachers. However, the respondents rejected the view that religious knowledge and civic education can be used as a good alternative for moral education. This finding appears to be reflected in the opinions of male and female teachers on how teachers can be equipped with the skills to instruct students about morals and values of the Igbo society in which no significant difference in the opinions of the two groups were found ( $P < .05$ ).

### **Conclusion:**

The study has demonstrated that the use of Igbo traditional moral values as pedagogical tool for the teaching of moral education among secondary school students in Enugu State has great influence on moral development of the students and impact on their moral consciousness. The respondents (teachers and students) all strongly agreed that rot and moral decadence observed among the students were influenced by malformation of the Igbo moral concepts and value systems, as can be seen from no significant difference in the mean ( $\bar{x}$ ) responses of male and female students on the issue. The use of textbooks containing morals and values of the Igbo society, curriculum of teacher trainees containing morals and values, organizing workshops and seminars about morals and value systems of the Igbo society, and supervision of teacher effectiveness in teaching morals and values to the students were found to be effective skills that teachers can be equipped with for effective instruction of morals and values of Igbo society. In view of this research report, the use of Igbo traditional values as pedagogical tool for the teaching of moral education among secondary school students appears to be imperative and urgently too.

### **Recommendations**

Recommendations were made based on the findings of the study. They were made as follows:

1. Teachers should embark on integrating Igbo traditional values as pedagogical tool for the teaching of moral education to secondary school students.
2. Authors of secondary school textbooks should emphasize on Igbo moral concepts and value systems; indicating how the Igbo traditional values can



- be used as pedagogical tools for the teaching of moral education to the students so as to eliminate rot and moral decadence observed among them.
3. Government agencies such as Ministry of Education and stakeholders in education should be sensitized by the results of this study on the existence of malformation of the Igbo moral concepts and values systems among the secondary school students.
  4. Government through her agencies, should organize workshops and seminars for teachers on how Igbo traditional values could be used as pedagogical tool to achieve success in teaching moral education in secondary schools.

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## **MOBILE EDUCATION: AN INNOVATIVE EDUCATION THAT UTILIZES MOBILE DEVICE TO ENHANCE LEARNING**

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### **Abstract**

*Mobil education is an aspect of learning that employs portable electronic devices to access and share information. It is a trend in higher education and is redefined as the manner in which learning takes place and how instruction is delivered. This paper identified that mobile devices have applications that serve as study aids and learning tools for students and lecturers. These are quizzlet LLC “app”, Google mail “app”, Nerve whiz “app” and websites “app”. These “app” serve as learning tools that provide students and lecturers instant access to their course work, e-books and pdf files. These capabilities and potentialities in mobile device revolutionize education. Recommendations were put forward, among which is that stakeholders must work together to evolve new ways of learning and build capacity in mobile education. Ministry of education should support policy makers to bring policies that could help the country benefit from capabilities and potentialities in mobile device. Government should make sure that the policies made are affected in various schools.*

**Key words:** mobile education, mobile devices, learning.

## **Introduction**

Mobile education implies the use of portable electronic device to access and share information, is a trend in higher education and is redefined as the manner in which learning takes place and how instruction is delivered (Geist, 2011, Miller, 2012). Mobile education provides students and teachers an opportunity to access information instantaneously regardless of location (Rossing et al, 2012). Learning can take place anywhere at any time through the use of mobile device. Devices commonly used are smart phones with windows, LG Android, or Apple operating systems, or tablet computers. Implementation of mobile device use is well documented in elementary and secondary school education with 1.5million tablet-personal computers(pcs) currently used in government schools, there is limited research supporting the use of these devices in higher education (Kessler, 2012). During lesson, mobile device enhances students learning experience and engages them. The tablet personal computers (pcs) are effective in improving their learning environment. Computer helped to create a co-operative learning environment among students. With the use of mobile device, students were able to share information more efficiently, formulate responses to questions and this enhances their sense of accountability. Within the context, accountability for learning is essential to foster in Nigerian graduates, as they are encouraged to be self-directed learners. Therefore, it is necessary to investigate strategies to integrate the use of mobile devices in higher education, especially in graduates and post graduate studies.

As Nigerian institutions begin to recognize the paradigm shift of mobile device use, redefining the way information is consumed, disseminated and used, it is necessary to carry out more studies in this area (Geist, 2011). Mobile device will innovate the way instruction is delivered in higher education settings and enhance students' knowledge.

## **Application of mobile device to revolutionize education**

Mobile learning devices have been found to be efficacious in the internalization of information, with one of its most notable capabilities being its utility as an electronic-reader. Students are choosing to buy electronic-books that can easily download on their mobile phones, while lecturers are choosing to upload excerpts from texts as portable document format( pdf) files and sharing them with students (Geist, 2011). Publishers stay viable in this innovative (new) market by creating

visual interfaces and multimedia built in their electronic- books to enhance knowledge and make learning more interactive.

This is particularly important as Rossing et al, (2012) found that visual and tactile learning opportunities presented by these devices enhance learning. Mobile devices (tablet pcs) have applications that serve as study aids and productivity tools for students. Students use “apps” to create flashcards for studying, accessing and editing documents on google docs for assignments (Miller, 2012). The design of mobile phones (tablet-pcs) combines electronic-reading capabilities with web-browsing, as well as an assortment of applications or “apps” that facilitate the integration of information by making accessibility instantaneous (Rossing et al. 2012). These capabilities and potentialities in mobile devices enhances class work, allow students to learn when and where they needed to do so. It leads to find of small-scale studies. It supports lifelong learning, available anywhere, adaptable, intuitive to use (Sharpes, 2000 in Noss, 2013) and revolutionize education.

#### **Utilization of Mobile devices as learning tools.**

Mobile device are turned into learning tools through the use of mobile applications or “apps” e.g Quize LLC “app”. Quizlet LLC is a company that create free study tools that can be accessed through their web-site or mobile apps (Shuler et al, 2013). Students upload course content to create flashcard sets that are shared and edited by their class-mates through it. Other features include games and quizzes to help students learn exam material. Students make use of apps such as Nerve whiz, Pearson med Terminology, Medterm scramble stretching HD, Visanatomy, Ess skeleton, Human anatomy atlas and Visual anatomy lite to learn anatomy. Students are expected to have their coursework prior to enrollment. In this context, apps prove to be useful resources in that it provides students instant access to their coursework in a manner that is faster and more efficient than using search engines. Unlike web resources, apps require fewer selection steps and keystrokes to access information as their content is highly targeted and specific to any area of interest (Shuler et al, 2012).

Moreover, scratch a visual programming environment and a good network learning tool available in the mobile device for students to create and share research and innovative ideas in technology. It is a network for sharing the creative products produced by students. Its innovative features come from the configuration of software and social networking elements. It involves assembly of existing skills, ideas and resources in a new and productive way (Mitch Resnik, 2009 in Noss,

2013). Furthermore mobile Phone an integral part of educational tool forms major export market for educational system. Direct income are generated from publishing of electronic-books (e-books), online learning, educational software, benefits from competitive advantage in Massive open online courses (MOOCs), educational analysis and online learning resources disseminated through mobile device (Noss, 2013).

Mobile phone serves as an educational tool that promotes the distribution of articles. Technology is developed through distributing inspired articles on use of eye-tracking systems in helicopter gunships on mobile phones. Students that don't have functional libraries in their schools, have internet mobile phones for reading of inspired articles on technological innovations from various universities around the globe (Noss, 2013).

### **Utilization of Mobile devices to enhance Learning**

Mobile devices as educational tools enable students to access course content to perform actions such as grade viewing, viewing and posting discussion board threads, as well as uploading assignments and downloading pdf files, accessing school e-mail, student bills and class schedules, these in turn enhances their learning (Miller, 2012).

Learning is more enhanced when students use Google mail "apps" to access their e-mail in order to receive and send communications to professors and class-mates. The ability to retrieve e-mail through mobile device enables students to stay informed, especially with regards to changes in deadlines, course syllabi, meetings, lectures and training. Furthermore, instant access to e-mail facilitates prompt responses to faculty, thereby enhancing their learning through communication. The use of clickers allows students to answer questions synchronously and anonymously during lectures through a live polling system. The implementation of devices in this manner enables participation, which in turn makes learning more interactive. The ability to access scholarly journals to discuss current evidence-based practice/ or stream video content demonstrating educational performance of evaluations in real-time may open up a dialogue between students and instructors. This makes the learning process more dynamic as students are able to have a self-directed role and become active participants in their learning process. Social networks have become a medium for enhancing academic communication outside of the classroom mainly through facebook. Students access face book through apps on their mobile device. Most notably, students form online communities through

the use of social networks with the purpose of reinforcing course content, sharing information and planning projects. Further sharing and collaboration have become methods through which students enhance one another's academic performance. Mobile devices have been the vehicle through which students have been able to exploit the electronic resources available to them. Their portability and processing speed make learning anywhere and anytime possible and students are seizing these opportunities. It also encourages, support and enhances self-directed learning (Kolowich, 2012).

Mobile device enhances learning at national, regional and local levels, encouraging collaboration and cross-fertilization of ideas. It enhances leisure reading by distribution of M-novels, poems and plays, some deal with difficult subjects such as living with HIV in countries where less than 10% of public schools have functional libraries but 70% of urban youth have internet-enabled mobile phones (Noss, 2013). Students that enroll in many universities are too large for conventional student-lecturer interaction, massive open online courses (MOOCs), an innovative online mobile education serve as interactive element/tool. Also the network that is established among MOOCs students plays an important role in the course design (Waldrop, 2013).

### **Conclusion**

For Nigeria to overcome academic challenges, all stakeholders must work together to evolve new way of doing things and build capacity in mobile education. There is also the need for Nigerian undergraduates to pursue self- directed learning through the use of mobile devices to overcome academic competitiveness in global economy.

### **Suggestions**

Learning, especially in graduate programmes are expected to be self-directed through the use of mobile devices. In order to enhance learning, the following recommendations are made.

1. All stakeholders must work together to evolve new ways of learning and build capacity in mobile education.
2. Ministry of education should support policy makers to bring out policies that could help the country benefit from the capabilities and potentials in mobile device and give students free access into websites.

Emphasis should be placed on mobile education for self-directed learning by the government.

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## **INNOVATIONS IN TECHNOLOGY FOR TEACHING AND LEARNING OF SOCIAL STUDIES**

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### **Abstract**

*Information communication technology (ICT) is one of those automation induced revolutionary changes in education that reached the schools in the advanced world in the sixties. Irrespective of the fact that information communication technology (ICT) has aroused controversies from its adherents and opponents, it has continued to be looked at, from the perspective of Social Studies classroom teaching-learning process, as an effective innovation. Our society today is reliant on technology for so many things; paying bills, staying in touch with family, researching simple questions and even checking out at the grocery store couldn't be done today without our technological resources. It stands to reason that as Social Studies instruction prepares students to be productive members of society, educational institutions must pay more attention than ever before to information communication technology. This paper focuses on the essence of ICT in teaching Social Studies instruction, instructional improvements related to the use of ICT in Social Studies, the objectives of ICT implementations in our educational system, the causes of low ICT application in teaching Social Studies instruction and finally the place of Social Studies in solving the problems of ICT in the teaching and learning of Social Studies.*

## **Introduction**

Information and Communication Technology (ICT) is electronic technologies used for information storage and retrieval. Development is partly determined by the ability to establish a synergistic interaction between technological innovation and human values. The rapid rate at which ICTs have evolved since the mid-20th century, the convergence and pervasiveness of ICTs, give them a strong role in development and globalization (Nwagwu, 2006). ICTs have a significant impact on all areas of human activity (Brakel and Chisenga, 2003).

The field of education has been affected by ICTs, which have undoubtedly influenced teaching, learning, and research (Yusuf, 2005). A great deal of research has proven the benefits to the quality of education (Al-Ansani, 2006). ICTs have the potential to accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change (Yusuf, 2005).

The followings are the aim and objectives of ICT implementation in education according to Aduwa-Ogiegbean and Iyamu, (2005); to implement the principle of life-long learning / education; To increase a variety of educational services and medium / method; To promote equal opportunities to obtain education and information; To develop a system of collecting and disseminating educational information; To promote technology literacy of all citizens especially for students ; To develop distance education with national contents; To promote the culture of learning at school (development of learning skills, expansion of optional education, open source of education etc.) and lastly; To support schools in sharing experience and information with others.

Social Studies Education teachers could use ICT in lesson delivery and facilitate the process of learning for the learners. ICT could also be utilized to stimulate economic, social, political and scientific issues or problems of interest to Social Studies Education class. This innovation or technological development is varied and has had a spillover effect on the schools with special emphasis on the teaching-learning process that is continuously yawning for improved performance. Hence concerted effort must be made to prepare teachers of the next millennium to be capable of managing ICT in their teaching-learning processes.

### **Information Communication Technology and Social Studies**

Information communication technology can be defined as the study and the use of computers, microelectronic etc for storing and transferring of information. It can also mean the development, design, study, implementation and management of computer related information. (Nwanyanwu, 1999).

Across the disciplines, technology offers unique opportunities to teachers. Examples of these opportunities include the ability to research, create, presentations and communicate on discussion boards. For Social studies, technology offers a new way to reach out for the world. Much of the Social Studies curriculum is based around the ideas of learning about the world around us and the myriad ways that people across the globe function and love differently but effectively. With ICT, Social Studies teachers have a chance to allow the learners to explore and experience the world in a new virtual way. Through ICT, the learners can now see satellite or regular pictures of geographic locations of their choice. Communicate instantly with international children through email, instant massager or skype, explore a historic tomb through the virtual world of the computer, listens to cultural music through hi-tunes and CD players among other opportunities.

### **Essence of Information Communication Technology in Teaching Social Studies**

ICT is helping in many ways in the teaching and learning of Social Studies. Some of the importance are explained below;

- i. Access to Variety of Learning Resources:** In the area of technology, ICT aids plenty of resources to enhance the teaching skills and learning ability. With the help of ICT in Social Studies, it will be easy to provide audio visual education. The learning resources are being widens and widen. Now with this vivid and vast technique as part of the ICT curriculum, Social Studies learners are encourage to regard computers as tools to be used in all aspects of their studies. In particular, Social Studies learners need to make use of the new multimedia technologies to communicate ideas, describe projects and other information in their work.
- ii. Immediacy to Information:** ICT enables immediacy to information in teaching Social Studies. Now in the year of computers and web networks the pace of imparting knowledge is very fast and one can be educated anywhere at any time.

- iii. **Collaborative Learning:** ICT encourages easy study as well as teaching in groups or in clusters in Social Studies classroom. With the use of online people can unite together to do the desired task. The internet and its web sites are now familiar to many children in developed and developing countries such as Nigeria, with this, the teachers and learners of Social Studies find it very easy to seek information.
- iv. **Authentic and Up to Date Information:** The information and data which are available on the net is purely correct and up to date. Using ICT in teaching Social Studies will enable the students to have purely authentic information about what is happening around them and also helps in updating the Social Studies learners on the current information.
- v. **Participation of Learners:** ICT encourages active participation of the Social Studies learners and their thinking in classroom. ICT enables Social Studies Learners to respond to the interaction going on in the classroom therefore making the classroom an active class.
- vi. **Information Recall:** Information presented to Social Studies learners visually is very difficult to forget it. Therefore with the use of ICT in Social Studies makes learning more easier and also enables the learners to remember what they have learnt.
- vii. **Stores Records of Learners:** Applying ICT in Social Studies instruction enables the teachers to store the performance of the learners and can be retrieved at will for assessment and evaluative purposes.
- viii. **Feedback Purposes:** The use of ICT in Social Studies makes learners to lookout for performance remedy.

### **Instructional Improvements Related to the Use of ICT in Social Studies**

According to Mezieobi, Fubara and Mezieobi (2008) highlighted some of these ICT instructional improvements in Social Studies;

1. **Computer Assisted Instruction in Social Studies (CAI):** CAI can be defined as an instructional design whereby computer systems deliver instruction directly to learners by allowing them to interact /relate with designed lessons that have been programmed into the system (Ughamadu, 1998).

According to Mezieobi, Fubara and Mezieobi (2008) Patrick Suppes who coined the term CAI classified it into three levels, namely;

- a. Practice and drill level: This level exposes learner to the knowledge, concept and skills of computer which he had hitherto learned in order for him to pass through a series of computer and drill programmes for purposes of the learner becoming more proficient.
  - b. Tutorial level: The teacher here is the computer. The computer plays the instructional role of the teacher and at the same time interacting with the learner.
  - c. Dialogue level: Here, the learner's level of interaction with the computer is high which enable the computer to give appropriate feedback in response.
2. **Computer Assisted Testing in Social Studies (CAT):** This is computer device that focuses mainly at the student achievements or performance and for finding solutions to the student errors for advanced instructional improvement.
  3. **Computer Managed Instruction in Social Studies (CMI):** This can be defined as the use of the computer to organize and manage instructional and classroom activities. These activities includes; lesson plans, teaching timetable, construction-administration-evaluating-and scoring of tests and finally storing test and teaching practice results and retrieving them if need be.

### **Challenges of Low ICT Application in Teaching Social Studies**

1. **Lack of/poor perception of ICTs among teachers and administrators.** There is widespread ignorance and misconception about ICTs amongst teachers of Social Studies in Nigeria (Ighoroje and Ajayi, n.d). One of the major inhibitors to teachers of Social Studies fully embracing ICTs is the average teacher's general lack of exposure to them. For most teachers of Social Studies, information technology is still something unfamiliar, distant, and mysterious. Rather than being seen as a tool for personal and national development, information technology is seen as a hurdle. Some teachers are not aware of the existence and importance of the Internet (Adomi, Okiy, and Ruteyan, 2003).
2. **Lack of/inadequate ICT facilities in schools:** According to Enakrire and Onyenena, (2007) discovered that insufficient numbers of computers and peripheral devices inhibit deployment of ICT by (Social Studies) teachers.

Similarly, Adomi (2005) discovered that unavailability of some ICT components in the schools hampered (Social Studies) teachers' use of ICTs. This problem may be due to underfunding (Enakrire and Onyenenia, 2007).

3. **Frequent electricity interruption.** Electricity failure has been a persistent problem militating against ICT application and use in Nigeria schools particularly in Social Studies classroom (Adomi, 2005; Adomi, Okiy, and Ruteyan, 2003). This makes the few schools with ICT facilities unable to use them regularly.
4. **Inadequate ICT manpower in the schools.** The main problem facing ICT programme is workforce training (Yusuf, 2005). Teaching as a profession in Nigeria is considered to be for poor people, therefore the few professional that are available prefer to work in companies and industries where they can earn better salaries. With this deplorable condition, teachers of Social Studies are not motivated to go the extra mile in assisting the students to acquire more knowledge in Social Studies through the use of ICT in teaching and learning (Oduroye,n.d).
5. **High Cost of ICT Facilities.** Cost has been reported as one of the factors which influence provision and use of ICT in Social Studies classroom (Adomi, 2006). The cost of computers is too high for many to afford. Monthly Internet rates are exorbitant and the charges for satellite television are unaffordable for most schools (Adomi, 2005). This has made it difficult for Nigerian schools to acquire and install ICT facilities for the use of teachers and students of Social Studies.

### **Place of Social Studies in Solving the Problems of ICT in the Teaching and Learning Processes**

ICT usage for now in Social Studies classrooms recently is farfetched. But for us to commence our ICT induced classroom revolution in Social Studies, the following are to be done;

1. The federal government must through legislation make regular power supply an important part of our environment and life style including our educational environment.

2. An educational policy should be put in place making the use of ICT an integral part of the instructional media of all schools especially in the teaching of Social Studies.
3. The implementation take off year of the foregoing ICT related policy will be put at year 2018 (Yusuf, 2005). Prior to this period, universities faculties of education, department of Social Studies in colleges of education and some of the secondary schools of learning should include ICT such as computer assisted instruction in the classroom for proper delivering of Social Studies instruction.
4. ICT illiterate serving teachers in their large numbers should within a stipulated time frame show transparent evidence of learning how to use ICT or having mastered the ICT related in service training. This in turn be made a promotional criterion for Social Studies teachers.

### **Recommendations**

Information Communication Technology into the Social Studies classroom is a great way to bring learners the interaction, pacing and sources they need to successfully master material. It allows Social Studies educators to greatly diversify instruction and provide powerful, authentic activities that will engage learners in the learning process. Effective use of ICT in Social Studies classroom can allow learners greater flexibility to assume a sense of ownership over their learning. In addition it can greatly increase the ability to scaffold instruction to meet the needs of all learners. Learners of Social Studies instruction are encouraged to regard ICT as tools to be used in all aspects of their studies. In particular, they need to make use of the new multimedia technologies to communicate ideas, describe projects and other information in their work. This requires them to select the medium best suited to conveying their message, to structure information in a hierarchical manner and to link together information to produce a multi-dimensional document in Social Studies.

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**THE STUDY OF STAFF AND STUDENT PERSONNEL IN-SERVICE TRAINING NEEDS OF SECONDARY SCHOOL PRINCIPALS IN ENUGU STATE**

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**Abstract**

*This study examined the in-service training needs of secondary school principals in two broad areas (i) staff personnel administration and (ii) student personnel administration. This study adopted a survey research design. Following a thorough review of related literature, administrative responsibilities of principals were identified. These formed the basis for the construction of the instrument Principals' In-service Training Needs Instrument (PITNI). The two roles of the principal i.e. staff personnel administration and student personnel administration formed the two sections. Each section had its relevant administrative responsibilities called skills. The instrument was face-validated by experts. The reliability of the instrument was determined using Kuder Richardson formula 21 and found to be 0.86. The instrument which was based on a four-point likert scale was administered to 92 principals in Enugu and Nsukka education zones of Enugu State. The data obtained were analyzed using mean scores, standard deviations and t-test statistic. The results showed that the principals agreed that the administrative responsibilities are important for their in-service training. In this regard, gender, nature of school (boarding and non-boarding) and experience were not significant factors. One major finding of this work is that the two leadership roles under study should be considered as the most essential areas in school Administration and should be emphasized by Ministry of Education, Post Primary School Management Board etc. The implication of this study is that since all the respondents agreed that they need the skills in the instrument, in-service training for principals should therefore be organized for them using the identified needs.*

**Key words:** Principals' In-service Training needs, staff personnel administration and student personnel administration.

## **Introduction**

In Nigeria, the Federal Government views education as an instrument par excellence for achieving national development (FRN 2004). Secondary school in Nigeria is one of the institutions established to inculcate desired skills to adolescents for academic excellence and achieving national development. The principal is the leader in a secondary school. According to Wekhuyi (2014) the principal is the most influential individual in any secondary school. He/she is responsible for activities around the school. It is his/her leadership that sets the tone of the school, the climate of learning, the level of professionalism, morals of teachers and non-teachers and the degree of concern for what the students may or may not become. Ayeni and Akinola, (2010) opined that sustainable quality assurance in secondary school education is a continuous process of the best practices in the management and utilization of human and material resources and strategic supervision of teaching and learning activities for the realization of the set goals in schools. In this regard for any secondary school to function effectively the principal, the staff and students must co-operate and put in their best.

Zuhari and Suparman (2011), agreed that sustainable quality assurance in an educational institution is also made possible when every member of the institution contributes his/her quota to the quality process. Furthermore Osagie (2011) noted that if national development must be achieved through education, then there is need for a strong teaching force to handle the teaching in the educational institution. This teaching force must be supervised and motivated to get the desired result.

The principal as the leader must be properly trained and retained to be able to supervise and motivate the teachers, non-teachers and students for academic excellence. By implication, Maduabum (2012), observed that the principal of a school is a planner, director, controller, coordinator, organizer, adviser and a problem solver. This follows that the principal has to undergo training as soon as he/she is appointed and retained regularly in the job so as to acquire the skills to be above those he/she is to lead. In England for example as noted by Wekhuyi (2014) the National College for School Leadership (NCSL) was formed in the year 2000 to ensure that the current and future leaders develop managerial skills especially in human management and the capacity to lead and transform the school education system into the best in the world. Fink, (2005) agreed that aspiring principals are

prepared through the National Professional Qualification for Headship (NPQH) programme and are inducted through Early Headship Programme (EHP) on ascension to principalship. Those trained are continually developed through Heads for the Future (HFTF) programme, Brundret and De Cuedas, (2007) added. In Nigeria there is a strong desire to train and retain principals, this is evidenced by the occasional workshops and seminars organized for principals. In-service training for school principals is of utmost importance in exposing and retooling them with the latest relevant knowledge and skills to help them to function better in school environments that are constantly changing.

Agusiobo, (2000) argued that through in-service training need analysis, trainers would be able to come up with needs and requirements of the participants. In this light the trainer would be able to formulate skills relevant to the needs of the principals. Ayeni, (2012) pointed out that the principal as the Chief Executive of the school must make it possible for staff to have access to suitable facilities of all kinds in order to discharge fully their responsibilities. Agusiobo (2000) further stated that the ideal principal ensures that every student is given adequate opportunity and motivation to learn. In view of these, it is pertinent to identify different staff personnel and student personnel skills that can be incorporated in a programme that would serve as a component of in-service training needs of the principals.

In line with this view, Onyango, (2001) observed that for successful steering of institutions, principals need to be equipped with human skills that enable them work with other people, communicate and work within teams and conceptual skills which help one to understand and better decide the actions that would ensure mutuality in organizations.

### **Statement of the problem**

The problem of this study is the absence of a systematic training programme for principals of secondary schools in Enugu State. The question now is: how can the gap in the area of in-service training needs of principals be bridged? This study, therefore, tried to answer this question by identifying and formulating administrative skills for in-service training of principals.

### **Scope of the study**

The study covered staff personnel administration and student personnel administration as applicable to the principals of secondary schools in Enugu State.

### **Purpose of the study**

The major purpose of this study is to identify and analyze the training needs of secondary school principals in Enugu State. Specifically, the study intends to;

1. Identify the specific training needs of secondary school principals in staff personnel administration.
2. Identify the specific training needs of secondary school principals in student personnel administration.
3. Examine the extent to which principals agree with each training need with respect to their gender, experience and nature of school.

### **Research questions**

The following research questions were constructed to guide this study.

1. To what extent do the staff personnel administrative skills in the instrument constitute necessary training needs of the principals?
2. To what extent do the student personnel administrative skills in the instrument constitute necessary training needs of the principals?

### **Hypotheses**

The following hypotheses guided the study;

1. There is no significant difference between the mean scores of principals who head boarding schools and those who do not on how they agree that the administrative skills formulated meet their training needs.
2. There is no significant difference between the mean scores of male and female principals on how they agree that the administrative skills constructed meet their training needs.
3. There is no significant difference between the mean scores of experienced and inexperienced principals on how they agree that the administrative skills constructed meet their training needs.

### **Methodology**

This study employed a descriptive survey research design. This is because opinions of the respondents were sought. The study was conducted in Enugu State, which is made up of six education zones namely Enugu, Agbani, Awgu, Udi, Nsukka and Obollo-afor. Enugu State is one of the 36 states that make up the Federal Republic

of Nigeria. The population of the study is the ninety two principals from Enugu and Nsukka education zones sampled from the six education zones in Enugu State. In Enugu and Nsukka Education zone there are thirty two and sixty principals, respectively (sources: PPSMB 2013). Having reviewed relevant literatures on this study, the principal In-serviced Training Needs Instrument (PITNI) was developed. The Principals In-service Training Needs Instrument (PITNI) was developed with two parts. An introductory part which called for the respondents personal data, such as his/her sex, location of school, experience in years, name of school and nature of school (boarding and non-boarding). The two administrative roles of principals formed the two sections. Section A with seven items is on staff personnel administration and section B with twelve items is on student personnel administration. The questionnaire constructed is modified four point likert scale with the following responses Very Great Extent (VGE), Great Extent (GE), Low Extent (LE) and Very Low Extent (VLE) and with nominal values of 4, 3, 2, and 1 respectively for the two research questions. Validation of the instrument was done by three experts in the Faculty of Education.

Crombach Alpha was used to determine the internal consistency of the items. This involved the conduct of pilot study with a sample of forty principals randomly selected from secondary schools in Awka zone of Anambra State. The reliability of the instrument was determined using Kudar Richardson formula 21 and found to be 0.86. The researcher engaged the services of two research assistants who were trained on how to administer and retrieve the instruments from the respondents in each of the two education zones. About 80 copies of questionnaires distributed were retrieved thereby giving a return rate of 90%. After collating the scores, mean ( $\bar{x}$ ) and Standard Deviation (SD) were used in answering the research questions and t-test was used to test the three hypotheses. For decision-rule, 2.50 was used as a bench mark, any item with a score of 2.50 and above was regarded as positive whereas those with a score of less than 2.50 was said to be negative. To further analyze the hypothesis for each section of the PITNI using t-test statistics, where calculated value of t is less than critical value of t, the hypothesis was accepted otherwise the hypothesis was rejected. For the purposes of the analysis, principals who have served for five years and above were regarded as experienced and under five years, as inexperienced.

**Result**

The results of the study were presented in line with the research questions and hypotheses.

**Research question 1**

To what extent do the staff personnel administrative skills in the questionnaire constitute necessary training needs of the principals?

**Table 1: Mean scores (x) and standard deviations (S.D) of secondary school principals in staff personnel administration in Enugu State.**

S/N		Enugu principals			Nsukka principals			overall		
		X	SD	Decision	X	SD	D	X	SD	Decision
1.	Selection of staff and handing groups like HIV positive staff	3.53	0.70	Accept	2.85	1.16	GE	2.70	0.93	Accept
2.	Request placement, assignment and recommendation for transfer of teaching and non-teaching staff.	3.75	0.52	Accept	2.82	1.16	GE	2.99	0.84	Accept
3.	Orientation of staff on first arrival and evaluation of staff	3.43	0.55	Accept	3.63	0.76	VGE	3.53	0.66	Accept
4.	Providing for in-service training for growth and motivation of staff	2.80	0.68	Accept	3.21	0.98	VGE	3.01	0.83	Accept
5.	Ensuring and maintaining healthy school atmosphere for efficient and good public relations	3.80	0.41	Accept	3.72	0.64	VGE	3.76	0.53	Accept
6.	Procurement and allocation of staff such as materials needed for official duties	3.03	1.00	Accept	2.96	0.70	GE	3.00	0.85	Accept
7	Compiling annual report on all teaching and non-teaching staff as required	3.40	0.72	Accept	2.51	0.72	VGE	3.46	0.72	Accept

Table 1 shows that the least overall mean score is 2.80 while the highest is 3.80. All the mean scores are each greater than 2.50. Therefore, principals agreed to a very great extent that the skills are good.

**Research question 2**

To what extent do the student personnel administrative skills in the instrument constitute necessary training needs of principals? This was answered using mean scores and standard deviations. The results to this research question are presented in table 2.

**Table 2: mean scores and standards deviations of principals in student personnel administration.**

S/N		Enugu principals			Nsukka principals			Overall		
		X	SD	Decision	X	SD	D	X	SD	Decision
8	Services rendered to students	2.60	0.61	Accept	2.72	0.65	A	2.66	0.60	Accept
9	Auxiliary services in the areas of food, health, recreation, transportation	2.92	0.81	Accept	2.85	0.95	A	2.82	0.54	Accept
10	Students data interpretation and policy procedure	3.00	0.73	Accept	2.94	0.78	A	2.97	0.50	Accept
11	Encouragement of moral and physical and development of all students in the schools	3.73	0.53	Accept	3.51	0.52	A	3.62	0.42	Accept
12	The maintenance of proper order and discipline in the school.	3.73	0.44	Accept	3.79	0.51	A	3.74	0.49	Accept
13	The registration and classification of students and reporting their progress through the school	3.30	0.53	Accept	3.33	0.56	A	3.32	0.41	Accept
14	Ensuring that the attendance of students to school every day is recorded in the register in accordance with the instructions contained therein	3.53	0.48	Accept	3.26	0.61	A	3.40	0.52	Accept

15	Conducting the school in accordance with government approved time table, and making same available to all pupils, teachers and inspectors	3.58	0.46	Accept	3.43	0.51	A	3.51	0.71	Accept
16	Making available to student the list of textbooks approved for use in schools by the Ministry	3.30	0.50	Accept	3.14	0.77	A	3.22	0.71	Accept
17	Giving attention to the health and comfort of pupils and to maintain cleanliness.	3.52	0.49	Accept	3.25	0.78	A	3.39	0.41	Accept
18	Reporting promptly to the nearest medical or health authorities any suspected outbreak of epidemic in the school	3.40	0.42	Accept	3.33	0.66	A	3.37	0.42	Accept
19	Taking all necessary steps to enforce discipline, ensuring high moral and ethical tone of the school.	3.70	0.40	Accept	3.11	0.54	A	3.41	0.61	Accept

Table 2 indicates that each of the mean scores is higher than 3.50. Hence the respondents agreed on each of the skills. Principals in the two zones agreed in each skill but they agreed to a great extent in skills 8 and 9. Enugu principals agreed to a very great extent in skills 10 while their counterparts in Nsukka agreed to a great extent. The principals in the zones agreed to a great extent that the skills are good.

### Hypothesis 1

There is no significant difference between the mean scores of principals who head boarding schools and those who do not on how they agree that the administrative skills formulated meet their training needs.

The mean scores of each section of the PITNI was tested using the t-test statistic. The results are shown in table 3. Table 3 shows the summary of the respondents mean scores, standard deviations and t-test statistic in each section of PITNI.



**Table 3 mean scores, standard deviation and t-test analysis of the principals who head boarding and those who do not on how they agree that the administrative skills formulated meet their training needs.**

	Boarding N = 12 principals		Non-boarding N = 33 principals				
Section	Mean	SD	Mean	SD	T-cal	T-crit	Decision
A	3.20	0.61	3.00	0.73	1.35	1.96	Not significant
B	3.23	0.79	3.25	0.54	0.35	1.96	Not significant
Overall	3.22	0.70	3.13	0.64			

From the table there is no significant difference between the mean scores of principals who head boarding schools and those who do not. For further analysis the t-test statistics was calculated the decision was found to be not significant this shows that the null hypothesis was upheld.

### **Hypothesis 2**

There is no significant difference between the mean scores of male and female principals on how they agree that the administrative skills constructed meet their training needs. The mean scores of each section of the (PITNI) was tested using the t-test statistic. The results are shown in table 4. Table 4 shows the summary of the respondents mean scores, standard deviation and t-test statistics in each section of PITNI.

**Table 4: mean scores, standard deviations and t-test statistic of male and female principals on how they agree that the administrative skills constructed meet their training needs.**

Section	Male=23		Female = 33				
	Mean	SD	Mean	SD	T-cal	T-crit	Decision
A	3.07	0.66	3.06	0.67	0.07	1.92	Not significant
B	3.28	0.58	3.20	0.74	0.57	1.92	Not significant
Overall	3.18	0.62	3.13	0.71			

Table 4 shows that the male principals obtained a mean score of 3.18 with SD of 0.62 while their female counterparts had 3.13 with SD of 0.71. In each section both sexes had mean scores of above 3.00. This means that they agreed to a very great extent with each of the sections. For further analysis of the overall mean scores of male and female principals, the t-test was calculated the decision was found to be not significant this shows that the null hypothesis was upheld.

### **Hypothesis 3**

There is no significant difference between the mean scores of experienced and inexperienced principals on how they agree that the administrative skills constructed meet their training needs. The mean scores of each section of PITNI was tested using the t-test statistic. The results are shown in table 5. Table 5 shows the summary of the respondents mean scores, standard deviations and t-test statistic in each section of PITNI.

**Table 5: mean scores and standard deviations of experienced and inexperienced principals in each section of PITNI**

Section	Experienced N = 30		In-experienced N = 29		T-cal	T-crit	Decision
	Mean	SD	Mean	SD			
A	3.15	0.56	3.14	0.78	0.09	1.92	Not significant
B	3.14	0.56	3.21	0.74	0.62	1.92	Not significant
<b>Overall</b>	3.14	0.56	3.18	0.76			

Table 5, experienced respondents obtained a mean score of 3.14 with standard deviation of 0.56 while inexperienced counterparts had a mean score of 3.18 and standard deviation of 0.76. Both have mean scores of more than 3.00 in each section of PITNI showing that they agreed to a very great extent. For further analysis the t-test was calculated the decision was found to be not significant this shows that the null hypothesis was upheld.

**Discussion:**

The result obtained in the study on staff personnel administration has shown that the principals agreed to a great extent that the skills are significant training needs for them. This means that each skill actually deals with staff personnel administration matters. For effective staff personnel administration, Ayeni, (2012) pointed out that the principals as the Chief Executive of the school must make it possible for staff to have access to suitable facilities of all kinds in order to discharge fully their responsibilities in achieving the educational objectives. He also opined that the teachers must be well supervised and motivated in order to sustain their interest, and make them dedicated, committed, willing, enthusiastic and inspiring teachers. The principals must therefore determine personnel needs and satisfy them for effective personnel management. This therefore shows that principals require in-service training on staff personnel matters.

The principals agreed to a great extent with the skills on student personnel administration. This might mean that they actually deal with students' personnel administration matters. According to Agusiobo (2000) the ideal principal ensures that every student is given adequate opportunity and motivation to learn. This means that the principals must be trained in student personnel duties so that they can carry out their duties for the students efficiently.

### **Conclusion**

The skills identified are relevant in the training programme of principals in Enugu State. The skills to a great extent are acceptable to the principals. This shows that the training programme instrument for secondary school principals can serve the purpose for which it was designed. One implication of this study therefore is that the training programme instrument for secondary school principals in Enugu State is a good valid and reliable instrument for training secondary school principals. The two components of educational administration in this study, namely, staff personnel administration and student personnel administration are relevant components in school administration in which principals require some training. The fact that all principals agreed with all skills in the instruments show that the principals in Enugu State actually need the skills in their training programme so that they can improve through some kind of training programmes.

### **Recommendations**

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

1. In-service training needs of the principals identified should be incorporated in their training programme.
2. In-service programmes should be made to emphasize the identified skills on staff personnel and student personnel administration.

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## **THE NEED FOR GODFREY OKOYE UNIVERSITY MOBILE ENGLISH LEARNING TOOL (GO-UMELT)**

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### **Abstract**

*Since its conception, mobile learning has been directly tied to online education as the platform for both types of education is rooted in the ability to learn beyond the confines of a classroom. As the world continues to change and evolve rapidly, Godfrey Okoye university community and Nigeria at large should not be left behind. The English course is one of the compulsory subjects in the Nigerian educational syllabus, though many still face difficulty in learning and using the language for various reasons, ranging from low usage to being shy when asked to speak the language in public. GO-UMobile English Learning Tool (Go-UMELT) is designed to provide adult smartphone users with the opportunity to learn English and practice sessions on mobile in order to help them improve their English for the purpose of either to function effectively in the workplace, school, improve their proficiency or to get job placements. Mobile learning, also known as m-learning can be defined as the use of mobile devices as an intermediary in the teaching and learning process. Mobile devices have been brought in between the teacher and the learner, for improved learner outcome. This medium of learner-centred learning with a mobile device greatly indicates the use of this device as a cognitive tool in the promotion of higher thinking skills. In order to develop GO-UMELT, the researchers conducted a preliminary study using online questionnaire to determine the need of such a learning tool that will aid learners to improve their English. The target population is the Smartphone users in Godfrey Okoye University who are willing to improve their English knowledge. The total number of respondents that have participated in this study is 150 whose age ranges between 18 to 60 years old, drawn from the over 2400 staff and students of Godfrey Okoye University, out of whom more than 70 percent are smartphone users. The result of this study indicates that the users need such a smart tool to improve their English. This research recommends that the government and organisations should invest in young innovators to develop several categories of language learning apps.*

**Keywords:** M-Learning, E-Learning, English Learning Tool, GO-UMELT, Learner-centred learning, Interactive platforms.

## **Introduction**

We live in a world that moves fast and the technological advancement happen at such speed we have difficulty following. In only a few years, the mobile market has changed drastically with the advent of smartphones and the number of people that own these kinds of devices is growing at a fast rate especially among young people.

According to the statistics of Africa Infotech Consulting (AIC) presented at the Nigeria International Technology Exhibition and Conference (NITEC) in 2016, penetration of smart phones in Nigeria has reached 30 per cent. Nigeria has up to 23.million smartphones as at 2015 and it is said to possibly increase to 34 million by 2018.

With the smartphones, a new market of mini-software called apps (clipped from application) has appeared and is growing at an incredible speed. Apps are easily available online. The app stores, iTunes app store and the Android market (Google Play), opened in 2008. ITunes app store has 2.2million apps while Google Play has 2.8 million apps as at March 2017(Hopwood 2017).

Amongst this incredible number of apps, there is a great variety of apps intended for students of languages or second language speakers (L2). The areas of language the apps are designed to teach can range from teaching only vocabulary or pronunciation, up to being well constructed language courses.

These apps are numerous and seems to have something in common that they are not based on any known theory of second language learning or pedagogy and confine themselves to one or two areas of language (Example: the app, English Idioms which deals on English Idioms and Phrases).

The courses for language learning as applications for downloading are geared towards making language learning easy, easily accessible and fun. They offer various approaches and methodologies to language learning with study material that emphasizes different aspects of language learning either linguistic or for communicative purposes. The technological limitations, none the less, have the effect that the underlying technological structure is always the same although the different developers incorporate some new technology such as voice recognition and intelligent feedback and methods (social networking) to overcome the computer's incapability to understand unexpected input and to reply with an output that has not be pre-programmed. Some of the developers try to incorporate constructivist aspects to the courses with emphasis on communication and



cooperation but because of technological limitations, the apps are predominantly behaviouristic.

Mobile Assisted Language Learning (MALL) is a sub-discipline of CALL (Computer Assisted Language Learning) which makes use of mobile devices such as smartphones and tablets for language learning (Walker, Davies and Hewer 2011). These devices can be described as mini-computers that allow the learner to install applications (mini-software) of their choice from the various online app stores. In these stores, there is a great variety of language learning apps that can be used offline or need an internet connection. These apps include:

1. **FluentU:** FluentU takes real-world videos like music videos, commercials, news, and inspiring talks and turns them into English learning experiences. It uses a natural approach that helps you ease into the English language and culture over time. You'll learn English as it's spoken in real life (Educationalappstore.com).
2. **Rosetta Stone:** This is probably the most famous method for learning languages. It teaches you English with English. Rosetta Stone has exercises designed to help you learn basic words, before forming phrases and longer sentences. For example, you might learn the English words "man", "woman", "park" through pictures. In the next step, Rosetta Stone might try to teach you "A man and a woman is sitting in the park". You might not know what "sit" means, but you can probably guess it correctly.
3. **MindSnacks:** This app is known for its fun and simple to use interface. Instead of studying endless word lists, you have fun games to learn new English words with. Learning new vocabulary is easier when you are motivated and MindSnacks helps make it fun. There are nine mini-games inside of the MindSnacks app. Each game is designed to help you master English words a certain way. For example, there is a game with lots of balloons—there are red balloons and blue balloons. Then, you might have three blue balloons with the words "glorify", "ludicrous", "abstruse", and three red balloons with the words "absurd", "praise", "hard to understand". Each word on the blue balloon means something similar to a word on the red balloon. You would match these up like this—"glorify – praise", "ludicrous – absurd", "abstruse – hard to understand". This game is designed to help you learn new words.

4. **Open Language:** Open Language has a lot of different sections to learning English. If you already learnt another language before, you might know the CEFR—it stands for the Common European Framework of Reference for Languages, which is a way to measure how good you are in a language. It goes from A1 (Beginner) to C2 (Native). On every level, you would find different courses for different uses. For example, there is Business English, English used in giving presentations, English in daily life and Interview Skills in English. As you can see, Open Language is really well organized. Each lesson is really comprehensive too. For each lesson you take, Open Language has many learning exercises to help you strengthen different areas of that lesson vocabulary.
5. **Duolingo:** Duolingo teaches you English from many languages – French, Portuguese, Russian, Italian, Dutch, Spanish, and many more languages in the future. Duolingo is designed to help you learn English quickly. That means if you have never learnt English before, by using Duolingo about twenty minutes a day, you can probably start to talk in simple English, read a lot of English articles, and listen to some basic English phrases in very little time. It is very effective app. In each lesson, Duolingo teaches you about seven new words based on a topic – like education, school, science and adjectives. There are exercises you have to do in each lesson. For example, you might have to match new words with a picture, you might have to translate an English phrase back to your native language, and you might have to repeat an English phrase.

According to Wickremaratne, Wimalaratne, and Goonetilleke (2008), online learning encourages users to have more of a control over themselves with the lessons to be learnt. However, in designing materials for online learning one has to find one's own way to suit the goals of both the teacher and the program, the needs of the students and the technology available.

With the recent advancement in the technological world and the adult learners' growing desire to have flexibility with their learning tool, such that the tool allows them to learn even while on the move and while they play games, hence there is a need for mobile devices that enhances teaching and learning in a virtual classroom environment. Mobile devices can be used in both online setting and in the brick-and-mortar (traditional setting).

A mobile learning tool to enhance the learning on the move should be smart, easy to use, and user-centered. Considering the current challenges faced by adult learners, in their daily lives, as they seek better job opportunities, engage in international business collaborations, pass driving tests and seek English qualification to study abroad, we intend to develop a mobile application called GO-UMELT (Godfrey Okoye University Mobile English Learning Tool).

GO-UMELT is a mobile English learning application that is developed using Android operating system as well as Java programming software, specifically for learning of English language. With more than 1 million applications having been developed for Android, and with over 25 billion downloads, certainly Google's Android platform. This tool will be a flexible and user friendly tool to address some of the challenges facing adult learners. In order to develop GO-UMELT, a preliminary survey on the need for the product was conducted beforehand. The results of this survey together with reviews on similar work will help in designing a conceptual framework for the development of this application. We hope this tool will take care of the users' learning needs, even while on a train, bus, work place and just at anywhere and anytime.

### **Statement of Problem**

Most study points to the need for learner-centered systems to improve teaching and learning and the findings of these studies indicate that when learners take control of their learning instructions, the learning exercise becomes easier and enjoyable for such learners.

It is a known fact that there is low reading culture among 21<sup>st</sup> century learners. Individuals find it easier to pick of their phones and interact or rather learn informally. On the other hand, these learners find it difficult to use their smartphones properly for effective learning of English Language. These smartphones are readily available for them but are rather used more for social interactions, and not used at all for educational purposes. The problem still foretells that there is low level of awareness how smart phones can be used in the learning of English via the use of mobile English Learning apps. A lot of learners are not even aware that these apps are available and this might be because they are not incorporated in the day-today classroom learning.

### **Purpose of the study**

The main purpose of this study is to enhance English learning using GO-UMELT. Other specific purposes were raised to guide the study, this includes:

1. To inquire the availability of English learning apps for learners who wish to improve their English language.
2. To investigate the user need of GO-UMobile English Learning Tool (GO-UMELT).
3. To ascertain the usefulness of GO-UMELT to job seekers in Nigeria.
4. To prepare learners for exams like WAEC, TOEFL and IELTSs, and for the improvement of English knowledge.

### **Research Questions**

1. To what extent are mobile English learning apps available for learners who wish to improve their English Language?
2. What are the needs for GO-UMobile English Learning Tool?
3. How useful is GO-UMobile English Learning Tool to jobseekers in Nigeria?
4. How effective is GO-UMobile English Learning Tool in the successes of examination candidates?

### **Methodology**

The online survey design was employed in this study to determine the need for GO-UMobile Learning Tool. The study was carried out in Godfrey Okoye University whose population consist of staff and students of Godfrey Okoye University, totalling 2400, of which 150 respondents were used. Simple random sampling technique was used which included 100 males and 50 females. Faced validity was used to validate the instrument of the study. The researcher used structured online questionnaire for the data collection which were validated by three measurement and evaluation experts. Feedbacks from the experts in the form of suggestion, cancellation, correction and general scrutiny assisted the researchers in reconstructing and modifying the items contained in the questionnaire. The instruments (online questionnaires) were distributed to all selected respondents. Mean was used to analyse the data. A decision rule was derived by adding the assigned values and dividing it by the number scores. Therefore any score below 2.5 is interpreted as rejected and 2.5 and above is interpreted as accepted.

**Result of the Study**

**Table 1:** Mean score of respondent on the availability of mobile English learning apps for learners who wish to improve their English Language.

S/N	Items	SA	A	D	SD	Total	X	Remark
	Availability of English Learning Apps							
1.	App that corrects grammatical errors	54	45	27	24	429	2.86	Accepted
2.	There are apps that teaches concord	37	11	69	33	352	2.35	Rejected
3.	There are applications for learning spellings	78	31	18	23	464	3.09	Accepted
4.	There are applications for learning essay writing	13	29	90	18	337	2.25	Rejected
5.	There are tools for vocabulary development	56	48	44	4	460	3.07	Accepted
	Grand mean						2.72	Accepted

Table 1 above revealed that there are mobile apps for correcting grammatical errors, Mobile apps that teaches concord and those for spellings. There are others for essay writing and vocabulary. The grand mean of 2.72 shows acceptance of the above items as mobile learning tools in the market.

**Table 2:** Mean score of respondent on the need for GO-UMobile English Learning Tool.

S/N	Items	SA	A	D	SD	Total	X	Remark
	Need for GO-UMobile English Learning Tool							
5.	English Language app is important for learning	100	25	21	4	525	3.5	Accepted
6.	GO-UMobile would help users to improve their English proficiency	40	76	30	4	452	3.01	Accepted
7.	GO-UMobile would help users to improve their speaking skills	70	42	12	26	454	3.03	Accepted
8.	GO-UMobile would help users to improve their writing skills	20	89	23	18	411	2.74	Accepted
9.	GO-UMobile would help users to improve their reading skills	73	45	12	20	471	3.14	Accepted
10.	GO-UMobile would help users to improve their listening skills	57	23	54	16	421	2.80	Accepted
	Grand mean						3.03	Accepted

Table 2 above revealed that English learning app is important for learning, GO-UMobile English learning tool would help users improve their English proficiency such as speaking skills, reading skills, writing skills and listening skills. The grand mean of 3.03 shows acceptance of the need for GO-UMobile English Learning Tool.

**Table 3:** Mean score of respondent on the usefulness of GO-UMobile English Learning Tool to Job Seekers in Nigeria.

S/N	Items	SA	A	D	SD	Total	X	Remark
	Usefulness of GO-UMELT to Job Seekers in Nigeria							
11.	GO-UMELT would aid job seekers speaking skills	12	07	64	67	264	1.76	Rejected
12.	GO-UMELT would aid their writing skills	89	16	22	23	471	3.14	Accepted
13.	GO-UMELT would aid their listening skills	76	52	07	15	489	3.26	Accepted
14.	GO-UMELT would aid their reading skills	57	55	17	21	448	2.99	Accepted
	Grand mean						2.79	Accepted

Table 3 above revealed that job seekers find GO-UMELT suitable and useful while seeking for job opportunities in Nigeria. The grand mean of 2.79 shows acceptance of the item above on the usefulness of GO-UMELT for Job Seekers.

**Table 4:** Mean score of respondent on the role of GO-UMobile in the exam success of candidates

S/N	Items	SA	A	D	SD	Total	X	Remark
	Effectiveness of GO-UMobile in the successes of examination candidates							
15.	GO-UMobile usage increases exam candidates' competence in comprehension	55	36	21	38	408	2.72	Accepted
16.	GO-UMobile usage increases exam candidates' competence in Oral English	33	53	34	30	389	2.59	Accepted
17.	GO-UMobile usage increases exam candidates' competence in letter writing	50	31	23	46	370	2.57	Accepted
18.	GO-UMobile usage increases exam candidates' competence in essay writing	37	56	12	45	385	2.57	Accepted
19.	GO-UMobile usage increases exam candidates' competence in Vocabulary Development	67	39	24	20	453	3.02	Accepted
20.	GO-UMobile usage increases exam candidates' competence in tenses	78	57	11	4	509	3.39	Accepted
21.	GO-UMobile usage increases exam candidates' competence in concord	67	49	17	17	466	3.11	Accepted
	Grand mean						2.85	Accepted

Table 4 above revealed that GO-UMobile usage increases exam candidates' competence in comprehension, tenses and concord. The grand mean of 2.85 shows acceptance of the above items on the role of GO-UMobile in the exam success of candidates.



### **Discussion of Findings**

Results of the study in table 1 show above that there are mobile apps for correcting grammatical errors for teaching concord and those for spellings. There are other ones for essay writing and vocabulary. The grand mean of 2.72 shows acceptance of the above items as mobile learning tools in the market. This was evident from the grand mean of 2.72 which is above the cutoff point of 2.50. The finding was understandable based on the fact; mobile learning is the fundamental goal of every education hence the objectives are geared towards building the learning of English with smartphones. In line with this finding, Chiong and Shuler (2010) assert that the app market for young children continues to explode and there are numerous apps available for kids and parents alike.

The findings on the need for GO-UMobile English Learning Tool with a grand mean of 3.03 showed that GO-UMobile English Learning Tool is needed for improvement of learner's English. The finding here is interesting in that the study disclosed how GO-UMobile English Learning Tool would contribute to learners improvement basics skills of English which are speaking skills, listening skills, reading skills and writing skills which in turn help learners to adapt in his environment. Most teachers try to incorporate all four skill areas into their planning, though some classes may focus more on one set of skills or the other, due to the course and learner objectives (Oxford, 2001).

Results of the study in table 3 showed that the respondents agreed above that job seekers find GO-UMELT suitable and useful while seeking for job opportunities in Nigeria. The grand mean of 2.79 shows acceptance of the item above on the usefulness of GO-UMELT for Job Seekers. This was evident from the grand mean of 2.79. The finding was relevant in getting facts on the preferable English learning skills sort by job seekers. It was shown that a good number of respondents prefer apps for writing skills.

The findings on the effectiveness of GO-UMobile in the examination successes of candidates with a grand mean of 2.85 showed that GO-UMobile English Learning Tool contributes immensely to the exam success of candidates. The finding here is interesting in that the study disclosed that GO-UMobile English Learning Tool would contribute to learners improvement performance of comprehension, Oral English, tenses and concord which are basic aspects of the English language.

## **Conclusion**

Adult learners have different learning styles that differ from that of young learners. This group of learners requires flexibility, and always likes to be in control of their learning process. In view of this fact, a tool for English learning called GO-UMELT on the mobile platform for adult learners who owned smartphones is proposed here. GO-UMELT when launched eventually will help the working class, housewives, and non-native speakers improve their English ability at the comfort of their homes. Based on the responses and findings from the preliminary study, it is clear that there is a need for this application for the potential users. A research on the conceptual framework on GO-UMELT in order to assist the design and development of this application also has been conducted. The model is adapted based on framework by Huanglingzi, Ronghuai, Salomaa, & Ding (2008), due to its completeness in addressing the basic factors that need to be considered in developing a mobile application. GO-UMELT is feasible to be used by potential users based on the preliminary study that had been conducted and research on the proposed conceptual framework which will assist in the design of the prototype for GO-UMELT in the future.

## **Recommendations**

Based on the finding, the following recommendations were made:

1. The government and organisations should invest in young innovators to develop several categories of language learning apps.
2. Seminars and workshop should be organized to train teachers on how to used apps for instruction.
3. There should be training for upcoming English teachers to develop software application for teaching English.
4. Students should be enlightened on the need to download English learning app in their smartphones for effective learning.
5. Further research is required to unearth an app for easy assimilation & learning of such local languages like Yoruba, Hausa, Igbo, as well as such foreign languages like Chinese, Russian, German, French, Bahasa Malayu, Thai, Cantonese etc.

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**EVALUATING THE EFFECTIVENESS OF INNOVATIVE  
FUNDING STRATEGIES IN RESOLVING FUNDING PROBLEMS  
IN SOUTH-SOUTH NIGERIAN UNIVERSITIES**

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**Abstract**

*The galloping rate of inflation that characterizes the Nigerian economy has also decimated the actual value of fiscal allocations to the universities. It is obvious therefore that the fiscal allocations to the universities may not improve or get better in the near future. In the circumstance, the need to identify and adopt innovative strategies to improve on funding the schools motivated the study that was guided by two (2) research questions and one (1) hypothesis. The study being a descriptive research adopted the Ex-Post-Facto research design with all the six (6) Federal universities in South-South Nigeria constituting the population of the study. The purposive sampling technique was used to select two (2) universities, university of Benin and Federal university, Otuoke being the oldest and newest universities respectively as sample for the study. A total of 325 respondents comprising all the university management, staff and students served as respondents. A questionnaire titled: Innovative Strategies for Funding University Education Questionnaire (ISEFEQUE) was used to collect data for the study. Section A elicited demographic information about the universities and respondents; section B contained a list of 10 innovative strategies for university funding while section C requested the respondents to indicate the extent to which they support the adoption of the strategies for implementation. The respondents rated their responses on a 5-point Likert scale. The questionnaire, validated and pilot-tested ( $n = 20$ ;  $r = 0.78$ ) were administered on the respondents with the help of four (4) research assistants and lasted for six (6) weeks. The mean, standard deviation and ANOVA were used to analyse the data collected for the study. The result of the analysis showed that the innovative funding strategies were rated high by the respondents. Both the university management and student union government indicated their willingness to support the adoption of the innovative funding strategies for implementation.*

Based on the findings, it was recommended among others that innovative funding strategies be adopted to reverse the problem of inadequate funding in schools.

**Keywords:** Innovative, Funding, Strategies, Universities

## Introduction

No economy can develop beyond the quality of what its educational system can produce. It is on the basis of this premise that education in Nigeria has been adopted as *instrument par excellence* for effecting national development (FRN, 2004). Education at the university level is therefore deliberately supplied to develop the needed high level manpower, the recipe that fast tracks the processes of national development. To this end, government has allocated enormous fiscal resources to develop the universities (critical functions of teaching, research and consultancy, particularly in the recent past (Federal Ministry of Finance, 2017). Table 1 shows the budgetary allocations to the universities in the last ten (10) years.

**Table 1: Budgetary Allocation to Federal Universities, 2006-2016**

Year	Recurrent (₦)	Capital (₦)	Total (₦)
2006	15,562,439,234.98	6,946,005,000.00	22,508,444,234.98
2007	33,602,812,586.91	6,369,578,263.00	39,972,390,489.91
2008	33,194,971,502.91	9,622,169,359.00	42,817,140,861.91
2009	35,154,483,391.00	10,007,438,641.72	45,161,922,032.72
2010	39,023,050,639.33	8,281,674,820.10	47,304,725,459.43
2011	46,249,849,778.10	16,379,833,969.00	62,629,683,747.10
2012	50,624,894,688.70	16,324,066,000.00	66,948,960,688.70
2013	94,519,652,955.62	12,800,575,723.10	107,320,228,678.72
2014	80,553,350,992.09	14,043,721,234.00	94,597,072,226.09
2015	98,802,011,178.22	20,402,382,798.00	119,204,393,976.22
2016	106,134,411,080.81	16,111,030,980.00	122,245,442,060.81
<b>Total</b>	<b>633,421,928,028.67</b>	<b>137,288,476,787.92</b>	<b>770,710,404,817.59</b>

**Source:** Compiled from Federal Government Appropriations to Federal Universities, Ministry of Budget and Economic Planning, Abuja, 2017.

Within the period under review, government has released over ₦770.7 billion to all the available 36 federal universities in the country. This means that on the average, the universities are allocated over ₦77 billion annually with each

university getting a paltry sum of ₦2 billion to finance both recurrent and capital expenditures. This no doubt is seemingly inadequate for the universities that have myriads of expenditures to finance.

Public investments in university education takes place in three (3) levels. The first level is concerned with appropriation from regular government subventions in addition to special interventions from parastatals and agencies of government. The second level has to do with Internally Generated Revenue (IGR) in the universities while the third depends on donations, endowments and scholarships from private individuals and organizations. The total fiscal appropriation receipts from federal government in the recent past (2006-2016) to fund public education at all level is shown in Table 2.

**Table 2: Federal Appropriations to Public Education, 2006-2016**

<b>Fiscal Year</b>	<b>Total Budget ₦ (Trillion)</b>	<b>Total Allocations ₦ (Billion)</b>	<b>% Allocations</b>
2006	2,856.76	314.24	11.0
2007	3,068.48	273.09	8.9
2008	3,284.73	427.01	13.0
2009	3,445.41	226.68	7.0
2010	4,206.50	271.16	6.45
2011	4,802.27	350.56	7.3
2012	5,042.44	504.24	10.0
2013	5,385.98	468.58	8.7
2014	5,708.23	559.03	10.0
2015	6,211.44	559.03	9.0
2016	6,844.31	506.48	7.4
<b>Total Mean</b>	<b>5,085.65</b>	<b>447.19</b>	<b>9.88</b>

**Source:** Compiled from Federal Government Appropriations to Federal Universities Ministry of Budget and Economic Planning, Abuja, 2017

As shown in Table 2, the mean total budgetary allocation to fund public education at all levels is a paltry sum of 447.19 billion which represents 9.88 percent of the total national budget within the period under consideration. Comparing the fiscal releases to the universities with the total budgetary allocations to the entire

education sub-sector in Table 2 shows that more than half of the total education budget is allocated to the universities alone. This creates a fear that the situation of underfunding in the universities may not improve in the nearest future. Government in the circumstance seemingly lacks the capacity to increase fiscal releases to the education sub-sector and the universities in particular.

The decline in the real Gross Domestic Product (GDP) since the 1980s to date according to Bok (2003), Ibara (2011) and Muhammad (2016) explained why budgetary releases are inadequate to finance education expenditures. The GDP estimated to be 8.16 percent is reported by the Central Bank of Nigeria (CBN) to be the reason why money supply, particularly by way of deficit finance had increased tremendously in the last 10 years. By 1985 for example, the naira exchanged for US\$1, to ₦10 and later in 1995, the naira had depreciated to ₦85: US\$1 and; presently, the value of the naira has depreciated so badly to ₦385: US\$1. More worrisome is the rate of inflation that has perennially remained high, thus depleting the real value of actual fiscal releases to the universities to finance their expenditures.

The evidences of underfunding according to Academic Staff Union of Universities (ASUU, 2004) are legion. Classrooms are overcrowded; the quality of teaching manpower is not only poor but inadequate; workers embark on incessant strike to protest poor remuneration that are also paid in arrears; scarcity of all production inputs except students to mention many but a few. The situation in universities in South-South Nigeria from observation appears to be worse. In these universities, available lecture halls and laboratories are always overcrowded because the facilities are either inadequate or at various stages of dilapidation. For staff remuneration, only 80 percent of salaries is paid because available personnel emolument cannot pay full entitlements. School fees paid by students and other internally generated revenues are barely up to 10 percent of total fund required to finance expenditures in the universities. This situation cannot be allowed to continue if the accreditation of National Universities Commission (NUC) and employers of labour is to be enjoyed. The need to increase IGR has become germane as the question that begs for answer therefore is: what are the identifiable innovative funding strategies to reverse the perennial problem of funding in the universities? Will staff and students accept the strategies?



### **Research Questions**

1. What are the innovative university funding strategies in universities in South South Nigeria?
2. To what extent are the identified university innovative funding strategies effective?
3. To what extent do university management, staff and students support innovative funding strategies in South South Nigeria universities?

### **Research Hypothesis**

Research question 3 was answered and thereafter hypothesized.

### **Hypothesis 1**

University Management, workers and students will significantly differ in supporting innovative funding strategies in South South Nigerian universities.

### **Literature**

There is very little financial support from the public to the universities through gifts and endowment funds. Therefore, Igbineweka (2016) observed that minimal additional income is derived from income generating activities such as farm produce sales and consultancy services. There has actually been a decrease in income to the universities from these additional sources. Universities have recently started paying more attention to better income generating activities to supplement subventions from the government. The World Bank project report on the reform of Federal universities concluded that it might not be cost effective to develop university income generation activities and warned that such income generating activities might undermine the university goals mission of teaching and research (The World Bank, 2015). Student fees account for only about 5% of the university total income. Universities have therefore started exploring alternative sources of funding such as fee-paying students and improved relation with industries to supplement their income. There is an increasing demand and willingness to pay for academic programmes offered on a part-time basis. Many Nigerian universities are starting to rely on this mode of income generation as an alternative source of funding (Aina and Adebisi, 1999). Satellite campuses in some instances according to Ibara (2011) have been set up to cut down on cost. Short-term courses offered on a part-time basis have become popular among part-time students who are already employed and can afford to pay fees or have their employers paying their fees.

Public education funding experiences from other countries across the world magnify the problem of inadequate funding in Nigerian schools. A few case studies are examined in Japan, Canada, South Africa and Ghana. In Japan, schools receive enrolment support fund that they apply to the cost of their students' tuition which equals about \$100 a month, per student. However, if these funds are not sufficient, the student must make up the difference. If students come from a low-income household, the government provides further subsidies of up to \$200 a month. Private schools also receive a great deal of public funding, with Japanese government paying 50% of private teachers' salaries. Other forms of funding are capital grants, which go to private schools for specific cost, including new buildings and equipment. While private schools are considered to be more competitive and prestigious than public schools, public schools still account for 99% primary schools and 94% of lower secondary schools. There are many more upper secondary schools, however; 23% of upper secondary schools are classified as private. The Japanese government spends less on its schools than do many other OECD countries. Schools are functional but unadorned, and most schools have a very small administrative staff, with only a principal, and assistant principal, a janitor and a nurse. The focus of the funding is on teachers and students. In 2008, Japan spent 4.9% of their GDP on education – lower than the OECD average of \$8,831.

The situation for higher education in Japan is however different from that of the primary and secondary education. According to a 2000 survey by the OECD, Japan's funding to higher education GDP, compared with 0.9 percent in the United States, 0.7 percent in the United Kingdom and 1.0 percent in both Germany and France. Free education from the ages of six to eighteen is available to all Canadians, and more than 90% of Canadians attend state-funded schools. Public schools derive more than 90% of their revenue from the government at the local and provincial level. Over the last 20 years, most provinces have taken over the funding of their schools, so that the local contribution is zero or close to it. The provincial government provides funding directly to schools. The amount of funding a school board receives is recalculated each year based on the number of regular students, special needs students and location. In addition to public schools, Canadian students can also choose to attend either charter or private schools, though this represents fewer than 10% of students. Majority of these schools receive some funding from the government, depending on how they are classified. Charter schools are expected to meet the same provincial standards as public schools, while private or independent schools must only meet board general standards. In 2008,

Canada spent 6% of its GDP on education, which was slightly more than the OECD average of 5.9%. This meant on average, that Canada spent \$8,388 per student for secondary education; OECD countries averaged \$8,972.

Canada is a federation of ten province and three territories. Under the Canadian constitution (1867), the provincial and territorial governments govern postsecondary education. The federal government provides only indirect support to postsecondary education through financial transfers to the province and through its funding of university research and student assistance. Public postsecondary education derives majority of its funding from provincial/territorial and federal government sources. In 2006-07, Canada's public expenditure on public higher education for postsecondary education was C\$32 million [US\$26.6 million] (CICIC 2010). Provincial and territorial governments provide most of the direct funding for public education in Canada (45 percent). The balance of public postsecondary education income is obtained from tuition fees (21 percent), sale of goods and services (14.6 percent), federal government (9.3 percent), investment income (2.7 percent), and other income including philanthropic contributions (7.4 percent).

Cost sharing of higher education in Ghana was introduced in 1997 through the adoption of the 'Akosombo Accord' that divide the responsibility of the university funding between the government (responsible for 70 percent of the total funding) and three sources (30 percent) including university internal revenue-generation, private donations and student tuition fees. Student academic and residential facility user fees were introduced 1998. Students who are living in the university housing pay both, while students off campus pay the non-residential academic facility user fees and a small non-residential academic facility user fee. Academic fees were imposed ranging (depending on Course area) at present (2009) from GHC 93 (US\$391) to GHC 300 (US\$126) per year for continuing undergraduate residents (Kwame Nkrumah University of Science and Technology website). Residential students were charged a residential facility user fee of GHC218 (US\$92) plus hall dues of GHC40 (US\$17), while non-residential students pay a small non-residential academic facility user fee GHC24 (US\$10). Universities may not admit fee-paying students who do not meet the competitive departmental requirements and cut off points, but satisfy the minimum entry requirements (Kwame Nkrumah University of Science and Technology website).

It is not possible to compare the levels and patterns of education expenditures in Nigeria with those in other countries. In UNESCO and World Bank publications for example, educational expenditure data for Nigeria are either totally omitted or are recorded for the Federal Government alone (Saint, Harriet & Strassner, 2003). In an ideal situation, financial administration in a university setting ought to be cost-effective. This condition is achieved when all inputs into the university enterprise having financial value, comprising money and money convertible inputs such as materials, equipment, labour, time, power electricity etc. have been utilized for the achievement of the goals of the institution without wastage or losses due to corruption.

### **Method of Study**

The survey research design was adopted to observe and describe the situation of using innovative funding strategies in solving the problem of underfunding in public universities in South East Nigeria. The six (6) federal universities in the area were chosen as the study population, while two (2) universities representing 33.3% were purposively chosen to constitute the study sample. The University of Benin and Federal University, Otuoke, being the oldest and newest universities respectively were deliberately chosen to constitute the study sample. The management staff comprising all the 2 Vice Chancellors; 5 Deputy Vice Chancellors; 20 Deans/Directors/Provosts, 118 Heads of Departments; 180 universities worker in bursary department and 28 universities students union government members who are the ends users of public investment in university education were also randomly selected to participate in the study as respondents. The only instrument used for data collection was a questionnaire titled: *Innovative Strategies for Funding University Education Questionnaire* (ISEFEQUE). The questionnaire had three sections A, B and C. Section A elicited demographic information about the universities and respondents; section B contained a list of 10 funding strategies from which the innovative once were identified by the respondents. Section C requested the respondents to indicate the extent to which they support the adoption of the innovative strategies for implementation. The respondents rated their responses on a 5-point Likert scale. The level of '*Effectiveness*' and '*Support*' of the funding strategies rated to be above the theoretical mean (3.00) was rated as "*Effective*" and "*High*" respectively while the one below was rated "*Ineffective*" and "*Low*". The instrument validated and

pilot-tested ( $n = 20$ ,  $r = 0.82$ ) in Delta State university, Abraka were administered directly on the respondents with the help of four (4) research assistants for 6 weeks. The data collected to answer the research questions were analysed using means, percentages and standard deviation while the only hypothesis formulated for the study was tested using anova.

## **Results**

### **Research Question 1**

*What are the university funding strategies perceived to be innovative.*

To answer research question 1, respondents rated the extent to which available university funding strategies in literature are innovative. The responses were descriptively analysed with means and standard deviation. The results of analysis are shown in Table 3.

**Table 3: Descriptive Analysis of the Extent to which University Funding Strategies are Innovative**

S/N	Innovative Funding Strategies	X	$\bar{x}$	SD	Remarks
1	Streamline academic programmes,	1404	3.20	0.014	Innovative
2	Institutional Unit cost ascertainment for budget preparation.	1345	4.14	0.018	Innovative
3.	Government to solely finance university education	448	1.38	0.011	Traditional
4	University students contribute 50% of fund.	981	3.02	0.010	Innovative
5	University management to generate 25% fund through IGR	1209	3.72	0.017	Innovative
6	Resuscitate the students loan board	435	1.34	0.035	Traditional
7	Employers of labour to contribute 25% of fund	1036	3.19	0.011	Innovative
8	Bursaries, scholarships and endowment funds	367	1.13	0.006	Effective
9	Enshrining responsibility and Accountability in the System	708	2.18	0.020	Effective
10	Implementing the 70: 30 funding ratio of academic to non-academic activities	601	1.85	0.011	Traditional

N = 325

According to the data in Table 3, the innovative funding strategies in South South Nigerian universities are the streamlining of academic programmes; institutional unit cost ascertainment for budget preparation; appropriate and reasonable school fees including universities and employers of labour generating 25 percent each of required fund.

### Research Question 2

*To what extent are identified innovative funding strategies in South-South Nigerian universities effective?*

To answer research question 2, responses of management staff, workers and students were analysed using means and standard deviation. The result of the analysis is presented in Table 4.

**Table 4: Mean Effectiveness of Perceived Innovative funding Strategies in South-South Nigerian Universities**

S/N	Innovative Funding Strategies	X	$\bar{x}$	SD	Remarks
1	Streamline academic programmes,	1040	3.20	0.004	Effective
2	Institutional Unit cost ascertainment for budget preparation.	1326	4.08	0.018	Effective
3	University students contribute 50% of fund.	1199	3.69	0.003	Effective
4	University management to generate 25% fund through IGR	1030	3.17	0.007	Effective
5	Employers of labour to contribute 25% of fund	1199	3.69	0.001	Effective

N = 325

According to Table 4, all the five identified innovative funding strategies are effective. They are the streamlining of academic programmes (3.20); institutional unit cost ascertainment (4.08) and university students contribution of 50 percent of required fund (3.69). The other two are university management (3.17) and employers of labour (3.69) contribution of 25 percent each.

### Research Question 3

To what extent do university management staff and students support innovative funding strategies in south-south universities?

To answer research question 3, university Management; workers and; students support for innovative funding strategies in South-South Nigerian universities were analysed using means and standard deviation. The result of the analysis is shown in Table 4:

**Table 4: Mean Analysis of Respondents' Support for Innovative Funding Strategies in South-South Nigerian Universities**

Source	N	X	$\bar{X}$	SD	Remarks
University Management	150	562.5	3.75	0.00173	High
Workers	86	374.96	4.36	0.00205	High
Students	28	106.68	3.81	0.00223	High
Mean Total	325	872.14	3.97	0.0020	High

According to the data in Table 4, university Management (3.75), workers (4.36) and students (3.81) support for innovative funding strategies in resolving the problem of funding in South South Nigerian universities is high.

### Hypothesis 1

*University management, workers and students will not significantly differ in supporting innovative funding strategies in South-South Nigerian universities.*

To test hypothesis 1, the means of the support of university management, workers and students were compared and analysed with one-way anova. The result of the analysis is shown in Table 5

**Table 5: Anova Summary of Means of University Management, Workers and Students' Support for Innovative Funding Strategies in Universities**

Source	Sum of Squares	DF	Mean square	F	Sig.
Between Groups	28.67	2	14.33		
Within Groups	12141.00	323	34.68	0.410	0.068
Total	12168.67	325			

P>.05

According to the data in Table 5, the Anova F-value (0.410) with a P-value (0.068) is greater than the alpha level of 0.05. Therefore, the null hypothesis that says university management, workers and Students will not significantly differ in supporting innovative funding strategies in resolving funding problems is therefore retained.

## **Discussion**

The Nigerian economy is basically driven by earned revenues from oil sales. It is however unfortunate that the drastic fall in the price of oil in the international market in the recent past has negatively impacted on public expenditures, the education sub-sector being the worst hit. Value of fiscal releases to education is further depleted by the galloping inflation that has made the procurement of teaching-learning facilities prohibitive. The result of this study has therefore unmasked the inability of government to effectively fund education generally and university education in particular.

A paradigm shift from the traditional ways of sourcing funds for education has become apt. The observed support for innovative strategies for university funding by university Management, workers and students unions is therefore good and heart-warming. What makes it even more heart-warming is the readiness of both university management, workers and students to support implementation of the innovative funding strategies. Elsewhere in Ghana, Japan, Canada and, South Africa republic education at all levels is jointly financed by the government,



employers of labour, parents and proceeds from business. In a situation like this, it is incumbent on those providing the responsibility and accountability from school administrators and teachers. The advantage of this in promoting effectiveness and efficiency in the use of available resources to achieve pre-defined goal (s) can-not be over emphasized.

### **Conclusion**

Based on the findings, the study concluded that innovative funding strategies have been identified and support effective in solving the problem of underfunding in South-South Nigerian universities. To this end, university management, workers and student unions are ready to adopt the innovative strategies to improve on funding.

### **Recommendations**

Based on the findings, the following recommendations were made:

1. The innovative funding strategies are effective. Therefore, university authorities should adopt them as funding policies to reverse the perennial problem of inadequate funding.
2. The willingness to support the adoption of the innovative funding strategies in the universities is overt. Therefore, all critical stakeholders in the universities particularly students and employees should be encouraged to support the innovative funding strategies. for implementation

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## **DYNAMISM OF LEADERSHIP IN THE MANAGEMENT OF UNIVERSITIES IN NIGERIA**

By

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### **Abstract**

*Leadership is the ability to influence a group of persons towards the achievement of group goals. Leadership is predicated on followership. This implies that a leader without the compliance of the followers is not leading but, only occupies a leadership position. Universities in Nigeria and other part of the world are places where higher education is acquired. The dynamism of leadership in universities of learning entails the adaptability of leaders in management positions in higher institutions to carry its subordinates along in achieving the general goals of education and the higher institution of learning in particular, with the aim of producing an individual equipped with the necessary skill and knowledge to contribute significantly to the development of the economy. There are many factors that can inhibit the ability of leaders in management position in universities to reflect the spirit of dynamism in their leadership such as, inability to adapt to demanding situations, poor communication and feedback, superiority and inferiority complex and non-coherent of group goals. This paper therefore, recommends the quality of yielding by leaders to ensure effective leadership, good communication network for feedback purposes, recognizing lecturers needs and team work among leaders in management positions in universities in Nigeria*

**Keywords:** Dynamism, Leadership, Universities, Management

## **Introduction**

Leadership is one of the basic and most important needs in the management of higher institutions. It is often considered to be the solution to most organizational problems (Daft and Marcic, 2006). It can direct human resources toward the strategic objectives of an institution and ensure that organizational functions are aligned with the external environment. Moreover, effective leaders are able to predict the future probabilities and design choice strategies to satisfy uncertainties (Riaz and Haider, 2010). The importance of leadership in the management of universities cannot be over-emphasized when one considers the impact effective leadership has on the management of human and material resources including other plants and facilities in each discipline and departments in universities of learning in order to achieve institutional goals and objectives. A society or nation with ill-managed universities has no advantage over other institutions because other educational and non-educational institutions in the country depend on the universities to produce trained manpower to handle the economy and contribute to the economy of the country. This then calls for efficient and effective leadership in the management of universities in Nigeria in the face of heightened universal conventions in standards and expectations. It follows, therefore, that the government and society at large cannot earn the full reward of putting the desired management of universities in place unless optimized management and leadership are ensured. The quality of leadership and management provided in universities can only be ascertained by how well an institution or body fulfils its roles and objectives. What then does leadership entails?

## **Concept of Leadership**

The concept of leadership has been interpreted in several ways. Saleh (2015), define leadership as a process whereby an individual influences a group of individuals to achieve a common goal. Leadership is a process by which a person influences others to accomplish an objective and directs the organization in a way that makes it more cohesive and coherent. This definition is similar to Northouse's (2007) in Saleh (2015) who defined leadership as a process whereby an individual influences a group of individual to achieve a common goal. Leadership is the act of transmitting values to subordinate which most of them follow to use to perform their work.

The act of leadership is group role direction. In some situation leadership emerged from appointment and in others leadership can just emerge or be imposed on the people or even imposes himself. Leadership has been described as a dynamic process in a group to contribute voluntarily to the achievement of tasks (Saleh, 2015). Leadership is generally defined as the art or process of influencing people so that they will strive willingly toward the achievement of objectives. This concept can be enlarged to involve not only the willingness to work but also the willingness to work with zeal and confidence. It is the functional behaviour of a leader in relation with subordinates to facilitate the accomplishment of group goals. In this regard, leadership is the ability to get things done with the assistance and co-operation of other people within the Institution. Adeyemi (2004) supported those views and remarked that leadership involves a guide that directs activities of individuals in a given direction in order to achieve the goals of the organization.

In the educational setting, Grace and Kalu (2016) sees leadership as the ability of a school administrator to influence his teachers and pupils to work, obey school rules and behave in a proper way to achieve the school goals and objectives. The authors went further to say that a school administrator who relies mainly on forcing his teachers to work and obey rules is not a school leader but just a school administrator. Additionally, if he relies solely on organizational authority he may, by using force, get work done but in all probabilities the work may be poorly performed. Furthermore, if his subordinates feel that his commands are inappropriate; they may disobey him or leave the organization if they can afford to do so. On the contrary, an administrator who uses the authority he obtained from the school to influence the behaviours of his teachers, is likely to be effective, and that is leadership.

To this end, Leadership is the ability to influence a group of persons towards the achievement of group goals. Leadership is predicated on followership. This implies that a leader without the compliance of the followers is not leading but, only occupies a leadership position. Leadership is very necessary in the management of universities in Nigeria.

### **University Institutions in Nigeria**

Education in general and university institutions in particular in every society is obviously known to be an indispensable tool for nations' economic growth and

development. It has been empirically proven and universally acknowledged that unless the citizens of a given country are well educated and appropriately trained, the achievements of rapid economic and social development cannot be guaranteed (Ahmed 2013). It is a common knowledge that in the world over, higher institutions are enterprise that produce and distribute public good, which is knowledge. As asserted by Babalola (2008), the production of knowledge by universities has always focused on teaching, learning and research, hence, it is believed that higher institution is a major investment requiring a huge amount of financial resources, thus funds allocated to higher institutions are said to be long term investments of immense benefits both to the individual and to the society.

Higher institutions in Nigeria are those institutions that are established by the Federal and States government as well as private individuals. They include universities, polytechnics, monotechnics and colleges of education. Higher institution especially university institution in Nigeria is an education that is acquired after the completion of secondary education. Universities produces values that help individuals benefit themselves and contribute meaningfully to the development of the society in various fields of profession. The Federal Government of Nigeria in its National Policy on Education (2013) hopes that these values can be better inculcated through a well-designed national system of university education whose broad objectives were stated as follows:

- The inculcation of national consciousness and national unity;
- The inculcation of the right type of values and attitudes for the survival of the individual and the Nigerian Society;
- The training of the mind in the understanding of the world around; and
- The acquisition of appropriate skills, abilities and competences both mental and physical as equipment for the individual to live in and contribute to the development of this society

Based on the stated broad objectives of universities in Nigeria, leadership in a more dynamic way is necessary to deal with the current trends in the management positions of universities in Nigeria.

### **Dynamism of Leadership in Management Positions in universities in Nigeria**

The leader's unique achievement is a human and social one, which stems from understanding fellow workers and the relationship of their individuals goals to the



goals of the group. This is because, individual goals coincide with their social goals which has to do with the relationship of workers which in turn, will lead to the group goals (Grace and Kalu, 2016).

Grace and Kalu (2016) define leadership as a process of influencing the activities of an individual or a group of efforts towards goal achievement in a given situation. In essence, leadership involves accomplishing goals with or through people. The important aspect of this definition is that leadership cannot exist in isolation; there must be the leader and the follower. Leadership involves change in the individual being led. The leader tries to change the followers' perception of problems and their behaviour. The subordinates then willingly follow the leader. Leadership influences a process by effectively changing the behaviour of others. A leader must therefore be concerned with human relationships.

While management and technology are focused on things, leadership concerns itself with people. However, leaders must recognize the effect of dynamism in leadership. Dynamism entails leaders' ability to adapt to various circumstances and lead their followers based on the prevalence circumstance or situation. Therefore, a leader seeks to orchestrate the dynamics of people when working with them. Leadership recognizes that people may sometimes be irrational, emotional, uncontrollable and even unpredictable. Leadership develops an inspirational context using vision and values. It integrates people as teams when properly deployed. The teams have purposes and these purposes will in turn bring about new vision. But the people in charge are likely to be more of administrators, managers, technologists or bosses rather than true leaders. Leadership is reflected in the ability to initiate action and move others to a shared goal. This is "persuasion" not position power. Its product is the will to win, the desire to belong.

Leadership is something more than just personality or appointment. It is intimately linked with behaviour. It is essentially a human process at work in organizations. As a working definition, leadership can be described as a dynamic process in a group, whereby one assumes a leadership role in a variety of situations over a period of time.

Leadership is the most important determinant of an organization's success. It is critically important in organizations that consciously practice Total Quality. Management and leadership are often confused. One can make a distinction

between them in terms of attitudes and behaviours. While leadership is the process of guiding others towards goal accomplishment, management can be defined as the rational assessment of a situation and the design, organization, direction and control of the activities required for attaining the goals. (Adeyemi, 2004). While leadership involves vision, motivation and empathy, management is more detached and analytic.

Both leadership and management are critical for organizational effectiveness. All managers of an organization need leadership skills. Many organizations are restructuring at all possible levels. These restructuring bring great changes in culture and values along with new job roles and responsibilities for all employees. To carry out these kinds of changes requires leadership at all levels of organization. Leadership and Management are complementary. A successful manager must be effective at leading and managing.

Management is the ability to cope with complexity, to devise structures and systems that produce order and harmony. Leadership on the other hand, is the ability to cope with change, to establish a new direction, and to get institutions and individuals to move in that direction (Bennis, 2009). A Vice-Chancellor's job involves both management and leadership, but the latter is more important than the former. A Vice-Chancellor (VC) does not successfully run a university primarily by crunching the numbers, redrawing organizational charts or applying the latest business school concepts and techniques. The key function of a Vice-Chancellor is to lead the university: to harness the social forces within it, to shape and guide its values, to build a management team, and to inspire it and others working in the university to take initiatives around a shared vision and a strategy to implement it. In short, a Vice-Chancellor should be an enabler rather than a controller (Bain, 2004).

The Deans, HOD's and other management positions in university institutions requires the ability to lead with high level of adaptability base on the situations on hand or circumstances of the subordinates. This is true because leadership is predicated on followership. Leadership seems to exist when followers are adhering to the directions of the leaders in his shared vision; this can only be possible when a leader considers the situations of the followers when leading and setting directions, otherwise the departmental or institutional goals and objectives cannot be achieved.

### **Challenges of Leadership in the Management Positions in university Institutions**

The following constitutes challenges that limit the application of dynamic leadership in management positions in higher institutions in Nigeria:

- 1) **Inability to adapt to demanding situations:** Most leaders in the management of universities has their own way of leading which is most times based on the bureaucratic system or culture of the institution. Deans, HOD's and other management positions in higher institutions lead based on what should be done in line with due process without considering the unique or demanding circumstances in which attention is to be given rather than allowing time or due process to take its shape of decision.
- 2) **Poor communication and feedback:** the communication process is poor due to the fact that due process based on the institution culture in carrying out things must be followed. When feedback is supposed to be instant based on a unique situation, it is unnecessarily delayed because the processes must be followed before attention is given to the issue concerned.
- 3) **Superiority and Inferiority Complex:** When management positions are viewed as "boss" "head" "Problem-Solver" and so forth, they will be a gap between one occupying a management position in higher institution and the followers and subordinates. This is especially so when Head of Units, HOD's, Deans, Rectors, V.C's sees their management positions as "the boss". Hence, they will be superiority-inferiority complex in the relationship between them and their subordinates when it comes to interactions, communications, and shared activities in the school environment.
- 4) **Non-Coherent of Group goals:** This arises when there is a disparity between the interest and method of leading of leaders in management positions in various departments or units in the school system. The group goals of each department and units which supposed to reflect the entire institution goals will therefore conflicts or not be in coherent because, others in some management positions in the school system are dynamic in their style of leading while others lead based on school rules, regulations, processes and culture.

### **Recommendations**

Based on the challenges of applying dynamic leadership in the management positions of universities in Nigeria, the following recommendations are made as the way forward:

- 1) Leaders in management positions in universities such as HODs and Deans should be able to adapt the quality of yielding. Yielding involves being reasonable and considers the conditions and circumstances surrounding the people whom you are leading so that the virtue of dynamism – the ability to change or adapt – can be utilized when handling management positions in universities
- 2) HODs and Deans in various departments should have good communication network with lecturers in their department for feedback purposes; which can only be heightened when there is dynamism in the style of leading these lecturers
- 3) Faculty Officers and Deans in various departments in universities should ensure that they have a good communication network between lecturers in the department in order to achieve departmental and faculty goals.
- 4) HOD, Faculty Officers, and Deans should have a united way of ensuring that departmental and faculty goals are achieved through effective and efficient method of communication including adapting to leadership situation which basically involve recognizing the interest and needs of lecturers in the department.

### **Conclusion**

Management is the ability to cope with complexity, to devise structures and systems that produce order and harmony. Leadership on the other hand, is the ability to cope with change, to establish a new direction, and to get institutions and individuals to move in that direction. The Deans, HOD's and other management positions in universities require the ability to lead with high level of adaptability base on the situations on hand or circumstances of the subordinates. This is true because leadership is predicated on followership. Leadership seems to exist when followers are adhering to the directions of the leaders in his shared vision; this can only be possible when the leader considers the situations of the followers when leading and setting directions, otherwise the departmental or institutional goals and objectives cannot be achieved.

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Eze, Anastasia Ukamaka & Dr. D. I. Mezieobi

## **REPOSITIONING SOCIAL STUDIES EDUCATION FOR NATIONAL DEVELOPMENT IN ECONOMIC DISTRESSED NATION**

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### **Abstract**

*Social studies is a course of instruction which has pragmatic social relevance. The socio-economic, political and technological transformation of the society is the primary focus of social studies instruction. It is obvious that social studies education as a discipline whose birth was hoped to transform the society, with disciplined citizens, whose creative ingenuity can help in stabilizing the economy should be effectively implemented at the upper basic level in Nigeria schools. The depressed economy of Nigeria has increased the upsurge of social problems in Nigeria; as manifested in crimes upsurge, unemployment, frustrations, incidences of suicides, retrenchments, abject poverty, amongst others. It is therefore, imperative that social studies instruction at the upper basic education level needed to be refocused in order to equip the learners with survival skills for self-reliant future existence. A productive economy of vibrant citizens will improve the economic atmosphere and enrich the masses with creative outputs in their various businesses and creative enterprise to contribute to the advancement of the economy. The paper examines some shortfalls in social studies education at the upper basic schools in Nigerian educational system. These shortfalls are mostly in the area of implementation, ineffective use of instructional materials, content area and poor knowledge of Information Communication Technology (ICT) and so on. This paper also identifies means of maintaining sustainable viable social studies education programme to sustain a viable economy. The paper recommended that students should be exposed to innovative teaching methods, and seminars, workshops and conferences should be organized for social studies teachers on regular basis to discuss issues and problems that could affect national development amongst others.*

## **Introduction**

In a democratic society, the education system must perform a positive and dynamic role in perpetuating and improving that society. The school has an obligation to provide a curriculum designed to develop effective living in the society. Such a curriculum should equip the learners with skills, understanding, attitudes, habits and appreciation that will contribute to this broad goal.

It is for this complementing role that social studies, as a school discipline was introduced in the curriculum. In other words, social studies has its primary function, the treatment of the entire range of man's activities include: self-realization, human relationship, economic efficiency and civic responsibility.

In 1975, social studies replaced history, geography, civics and government in the Nigerian education system. Social studies according to Adaralegbe (1980) is the modern attempt at inter-disciplinary study of a topic, a problem, an issue, a concern or an aspiration. It is a problem approach discipline through which man studies and learns about problems of survival in his environment. Ololobou (2002) viewed social studies education as a programme of study in which learners are exposed to carefully selected physical and social environment realities, with an inbuilt package for the development of skills of various kinds and nurturing of values, attitude and actions conducive to the continued orderly survival of society. Social studies education is an integrated body of knowledge formulated to equip the learner with significant values, attitudes, skills and knowledge in order to be productively functional in the society. Mezieobi (2002) defined social studies education as a citizenship education; as a vehicle for human skill development, as ecological studies and as a value laden field of study. In view of this, social education contents are learners activity-packed and majorly focused on man and his interactive behaviour.

Osakwe and Itedjere (2014) stated that social studies education is an integrated and inter-disciplinary field of study whose ultimate aim is to produce people who are civically competent. Udosen (2001) believes that if well taught social studies education can play an important role in influencing the behaviour, attitudes, interests and feelings or values of the young and yet unborn generations of the society. As a result of the significance attached to social studies education for the realization of the national objectives vis-à-vis vibrant economy, social studies is the vehicle for the inculcation of Nigeria's philosophy of education.

Ogunsanya (2008) opined that if attention is given to the development of desirable attitudes and values in social studies education through careful design of deliberate and systematic teaching of values, social studies is therefore a unique subject. He further posited that its uniqueness places it in the best position to contribute much more than all other subjects added together to achieve national aims of education which according to him include, the inculcation of the right type of values and attitudes for the survival of the individual and Nigeria society. Thus, to ensure a viable economic progress in Nigeria, the social studies education has to be repositioned.

### **Conceptual Framework**

Social studies is an inter-disciplinary course of study that studies human beings in groups of inter-relationships within both their social and physical environments. Social studies has been accorded a place of pride in the National Policy on Education of the Federal Republic of Nigeria by making it a core subject in the lower and upper basic schools in Nigeria (NPE, 2014). This is because of the crucial roles of social studies education in preparing and mobilizing students in schools to enable them create awareness and understanding that would transform them into citizens with skills, competences, moral values and reasoned judgments to effectively live, interact, inter-relate and contribute positively to economic, social, political and cultural development of their societies (Okobia, 1985). Mezieobi, Fubara & Mezieobi S.A. (2008) saw social studies as an integrative field of study which probes man's symbiotic relationship with his environments, evolves man with the reflective or contemplative capacities, intellectual, affective, social and work skills, to enable him understand his world and its problems and rationally solve or cope with them for effective living in the society.

Social studies education is founded on the philosophy of life long education that emphasizes the acquisition of political values, attitudes and skills for wise utilization of human and natural resources for personal and societal improvement and progress. The philosophy of social studies education is in agreement with the nature of the Nigeria society (Danladi 2005).

The reflection inquiry approach by social studies is built on the assumption that society creates citizens who can identify related problems, analyse them and take rational decisions. In other words, social studies education aligns national



values and skills with national development programmes. This is considered important because social economic and political programmes are expected to be the product of the country's social, economic and political values and traditions.

Social studies as a school subject came into being in order to modify the dysfunctionality of the past inherited political and social issues in the society. It thus becomes an instrument for equipping learners with the relevant knowledge of their fast changing society. Therefore, social studies' main goal is to prepare the learners to be more humane, rational, responsive and responsible participating citizens in the society. Social studies is concerned with how man interacts in the society. These include what he does with his fellow men in the society and the value system. Different institutions such as social, economic, religious and political, established by man in the society will make him interact well with other people in the society. Social studies deals essentially with the social and public issues such as problems of national unity and diversity, choices, values, economic development and thus prepares students for all relational encounters in the environment.

Depressed economy is an economy which experiences a prolonged period of recession or a significant and prolonged downturn in the economy. Characteristics of a depressed economy of include: declining business activities, falling prices, rising unemployment, public fear and panic, in times of depression, consumers' confidence and investment decreases, causing the economy to shut down.

### **Challenges of Effective Social Studies Teaching in a Depressed Economy**

Despite the position social studies occupies as a core subject in the primary and junior secondary schools, a critical examination of Nigeria state of economic will prove to you that social studies education is faced with numerous challenges as follows:

- ***Teacher's incompetency***: Teacher's incompetency is the principal factor in the inappropriate implementation of the social studies curriculum at all levels of the educational system in Nigeria. The domination of the generalist social studies teachers in Nigeria social studies classroom is obvious indication that social studies implementation is bound to be malfunctional. Teaching force in social studies is dominated by personnel trained in history, geography,

economics, political science. This caliber of social studies “teachers”, teach social studies in the light of single subject approach in place of integrated approach. Obebe (2005) noted that teachers still teach history and geography inter-changeably in their social studies classrooms. This approach mar the injection of creative abilities to uplift the economy of Nigeria.

- **Poor Implementation:** - Teachers’ approaches to social studies teaching are largely pedagogical emphasis on cognitive achievement to the utter neglect of the affective and psychomotor domains. Mezieobi (2000) pointed out that the malfunctioning of the social studies curriculum in Nigeria is attributed largely to the inappropriate utilization of teaching methods and techniques relevant to the effective teaching of social studies. Innovative teaching methods as use of ICT, value clarification, future wheel and so on are suggested.
- **Poor Curriculum Contents:** - Social studies education ought to address societal problems through imparting right values, knowledge and skills into the learners. It is obvious that social studies has failed in its implementation. Curriculum contents ought to deal with realities of life. Society is dynamic by this, it implies that the society is constantly changing with time. Most of the social studies texts have become obsolete. Current events such as terrorism, suicide bombing, corruption, are not treated in them. This calls for constant curricular review at all levels of education enterprise.
- **ICT Non -Compliance:** Most social studies teachers are not compliant of ICTs, thus, they do not utilize them in their teaching endeavour.

### **Sustainability of a Viable Social Studies Programme in a Depressed Economy**

If social studies education transformation objectives must be accomplished and the mission of sustaining a viable economy the following should be emphasized:

- Social studies education curriculum should be made to take cognizance of important changes and challenges in the environment and prepares the learners to meet such challenges. The social studies curriculum should be revised periodically and updated with critical, national and international issues in economic management.

- The teaching of social studies should be entrusted in the hands of professionally trained social studies educationist who would utilize the appropriate methods, strategies, techniques and resources germane to effective social studies education implementation.
- The social studies teacher must on constant basis, recharge his professional skills, competences through regular exposure to professional development activity, via workshops, conferences and seminar.
- Government should show positive commitment to the effective implementation of the social studies curriculum through regular supervision and evaluation of teachers' performance in classroom, including funding of research efforts in the area.
- Injection of entrepreneurship education into social studies curriculum is ideal to groom learners with skills for economic survival. Active entrepreneurship education in any nation is a sign of preparing talents for economic growth and progress. Onuoha in Nwaiwu (2013) noted that entrepreneurship education through social studies education commands great influence for the growth of any economy, this is because the citizens will be sensitized to improve the economy through their input and productivity.

### **How to reposition Social Studies to Revive the Nigerian Economy**

Given that the purpose of social studies education is to promote civic competence, knowledge, skill and attitudes requisite for national development, a number of strategies have been recommended on how to reposition social studies for economic development.

- Social studies contents should be designed to include work ethics, dedication, honesty, democratic principles, national ideas and values.
- Students should be taught to show commitment, demonstrate knowledge and skill to participate in national economic activities.
- Expansion of the curriculum to emphasize current economic needs. Entrepreneurship education should be incorporated into social studies curriculum to ensure that students are well equipped to take active role in economic and national development.
- Peace building: Social studies education should address that negative values orientation in our nation today. The issues that are inimical to national

development like cultism, robbery, hostage taking, suicide bombing, pipeline vandalization etc. and reemphasize, peace, patriotism and national consciousness

- Social studies education should develop in the learners the ability to think critically and innovatively. This kind of education empowers the graduates of social studies to respond to the social, economic and political goals of Nigeria.
- There should be deliberate effort to strengthen the pedagogical approaches for social studies teaching with the view of achieving national development. Social studies teaching methods should focus on thought provoking and investigation oriented approach.

### **Conclusion**

Social studies is a veritable instrument for national and economic development. The acquisition of appropriate social studies values such as dedication to duty, hard work, justice among others will boost the economic strength of a country. Social studies as a life subject produces productive citizens that ensure sustainable viable economy.

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# INNOVATIVE LEARNING STRATEGIES FOR MODERN PEDAGOGY IN SCIENCE AND TECHNOLOGY FOR QUALITY ASSURANCE IN EDUCATION

By

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## **Abstract**

*The innovative learning strategies have lots of valid learning instructional materials that enhance teaching and learning for the rapid advancement of science and technology for nations economic global competition. Continuous learning and knowledge enhancement have become more important today than ever before. Upgrading and updating knowledge in many streams have also become more rapid owing to the continuous advancement in technology. This rapid advancement in science and technology coupled with many other challenges in teaching and learning have made it imperative for the application of the innovative learning strategies among all educational system around the globe to enhance effective knowledge acquisition. This paper explains four innovative learning strategies including crossover learning strategy, adaptive learning, embodied learning and computational learning strategies for modern pedagogy, the need to continuously innovate and evolve new learning and development strategies in order to cater for today's generation of knowledge by students. It also treated some other reasons why there should be innovation in learning strategy and also points to consider while innovating learning strategies. Recommendations were made and conclusion was drawn.*

## **Introduction**

A primary objective of formal education is to create effective and efficient learning environment for effective learning outcome. For every educator wants to create an environment that will foster students love for learning. In higher education the classic learning environment centres on a one size fits all model. These models refers to a "static" environment that is one in which each learner is provided with the same information in the same structure using the same interface.(Wauters, Desmet and Van den Noorgate 2010) For this primary objective to be achieved, many factors must have to come into play. Such factors as method of instructions,

learning strategies and instructors' level of experience. Through ages, one has seen several learning strategies evolve and emerging with best practices in learning. Theorists develop new models on effective learning and in a very short time span these new models, best practices and strategies become irrelevant making way for more path initiatives. The general statement is that the reason behind innovative teaching and learning methods and approach are the failure and weakness of the traditional methods. The traditional methods are not enough to promote adequate level and quality of student learning. Race, Phil (2003). The methods tend to be teacher centred while ignoring the students centred aspects of teaching and learning. This approach to teaching and learning which saw a learner in a passive role has given way to the new education systems full of technologies. Instructions are learner centred and take into consideration the needs and abilities of individual learner. It considers learners as important as other factors of educational process. The individual learner is now expected to realise his/her potential to the fullest. The aim of innovative learning strategies can be perfect tools for the realisation of these potentials.

Technology has transformed education perhaps in course delivery options and learning pedagogies. Creating a learning culture has never been as challenging as now and a continuous knowledge enhancement has also become more important than ever. Upgrading and updating knowledge has still become more rapid than before. Learning theories and teaching methods must evolve in concert with our brain as technology mediates our interactions with an increasingly complex, information rich world to guarantee global competitiveness in this technology intervention age.

### **Concept of pedagogical innovations**

Innovations can be defined as a new idea or further development of an existing product, process or method that is applied in a specific context with the intention to create a value added (Kirkland & Sutch, 2009). By examining pedagogies, we mean to ride on technology adoption, highlighting ways of teaching learning and accessing that can be successful both now and future. Pedagogical practice always needs to be innovative because adapting to the characteristics of students and responding to their development as an inherent aspect of pedagogy. Pedagogical innovation can also be called scholastic innovation in education. These adaptations can be considered innovations if they are based on a new idea and when

they have potential to improve student learning or when they are linked with other outcomes such as improving the job satisfactions and well-being of teachers. Innovation can be said to be turning an idea into a solution that adds value from a customer's perspective.

### **Learning Innovation**

Learning innovations can be defined as a new or alternative to existing instructional and administrative practices intended to improve students' learning and students' performance (Kentucky.gov, 2015). To be more specific, learning innovation about moving from the teaching and learning system of 20<sup>th</sup> century to a new learning system of 21<sup>st</sup> century where learning and facilitation of learning are the central element. Learning innovation is not about modifying the existing teaching and learning system, rather it is about creating a new system that involves the teachers and students in significantly different ways that lead to increased student learning and engagement, defining new outcome for learning and designing new ways of measuring student progress and mastery, creating new ways of facilitating learning and designing new structures for developing adults in schools.

### **Global Competiveness**

Global competitiveness means a country's ability to compete with other countries of the world in terms of technology, economics, politics and social relatives. (Onele, 2013). This implies that global competitiveness requires new knowledge and skill which are dependent on a solid foundation of basic education. Nigeria cannot assail in global competitiveness without strong policies that supports innovation both in teaching and learning. There is much need for effective implementation of these innovative strategies. Globalization permits us to know what everyone else is doing. And we want to compete and also to improve. To be globally competitive, one must be innovatically up to date.

### **Quality Assurance**

Quality assurance according to Campbell and Rossnyai in Obunadike, (2013) is seen as an all embracing efforts covering all policies and actions through which the quality of the school system is maintained and developed. Quality assurance is the process of identifying and promoting strategies that will results in responsive and effective services to the society



### **Innovative Learning Strategies**

Many reasons abound for learning strategies to be innovated:

**Rapid advancement in technology:** The traditional knowledge system are unable to keep pace with increasing innovation and discoveries of new frontiers in science and technology. Rapid advancement in technology is building a wide wedge between knowledge and execution of these knowledge. This is age of heavy social networking. The traditional method of teaching and learning cannot be very much effective with the recent technological tool. A lot of work is being sheared and exchanged over a facebook page, posting and receiving trainings. Trainers use to combine classroom sections with interactions over the Facebook. With recent technological changes in the learning environments due to the innovations occasioned by the computer social networking sites in the internet, it is imperative for the old talk and chalk methodology to change and innovate in line with the technological innovations that have considerably influenced the nature, content and the environment in which our learners expected to learn.

**Clash of generation;** The learning pattern of both the 20th and 21th century generation are diametrically opposite each other, while the former is easy with class room and group sessions, the later prefers the more self paced learning. The former had the ability for focusing outside of work without distraction while the later always busy with mobile phones and laptops can only manage an attention span lesser than a couple of hours on learning as their distractions and engagements are more frequent and different and hence demands small learning packages. Theories seem to have given way to experimental learning. Teaching has given way to facilitation and coaching. Hence the need for learning strategy to be innovated

**Information age-** Information age (also known as computer age, Digital age or new media age) is a period in human history characterized by the shift from traditional industry that the industrial revolution brought through industrialization to an economy based on information computerization.

The onset of information age is associated with the Digital revolution just as the industrial revolution marked the onset of industrial age. (Castells 1999) The definition of what digital means (or what information

means) continues to change over time as new technologies, user devices methods of interaction with other humans and devices enter the domain of research, development and market launch.

The learners at the information age already come in with good information and knowledge and probably only require more coaching on the application of such knowledge and information. This becomes a challenge to find instructors who have enormous experience in the subject matter who the learners will develop respect for and accept before learning and imbibing from such instructors. Today very many senior lecturers find it difficult to make use of the social networking media for instructions, like the u-tube, Skype, face book, instagram etc.

Introduction and implementation of innovative learning strategies will bring little bridge for learners and the instructors. The main thing here is that there is lack of trained staff qualified to provide information that the learners do not already know about.

### **Talent Turnover**

Innovation increases talent turnover in learning strategies because it poses great challenges in retaining learning methods in education systems. Very often, schools, colleges and ministries do institute retention of talents to ensure continuity with the system for a period of time. Innovation brings in new idea and method into an existing system thus making it possible for the system schools or colleges, companies or corporations to receive a certain amount of return or behavioural changes.

### **What should be considered while innovating learning strategies?**

Before innovating learning strategy, one should think about the differences in the learning style of the learners.

Experimental learning theory by Kolb defines learning as the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experiences (Kolb, 1984) Kolb's theory presents a way of structuring and

sequencing to improve learning. He suggests that learning is cyclical and involves three stages.

1. Sensing and feeling
2. Watching and reflecting.
3. Thinking and doing

Kolb mentions that individuals differ in their preferred learning styles and recognizing this becomes the first stage in raising the awareness of alternative approaches possible and helping them to become more flexible in meeting the varied demands of learning situations. His works greatly help in formulating effective strategies to combat the multipronged challenges that are being witnessed today and as described in the foregoing paragraphs of this article. With the expansion of higher education and increasing emphasis on access, diversity, retention rates and life-long learning, there is a good reason to explore the nature of different learning styles.

It is impertinent for institutions to have a model of learning that is inclusive with a variety of learning methods, including computational thinking and group project work. On the other hand, this is also assisting educators to become more reflective teachers and turn experiences into learning. Learning must comprise concrete experience, reflective observation, abstract conceptualization and active experimentation. All these follow in a cycle. It is believed that to make learning concrete, the learning cycle should be repeated several times and the learner has to go through spiral of learning.

The four learning styles according to Kolb are the:

Diverging, Assimilating, Converging and accommodating. The following summary of the four basic learning styles is based on both research and clinical observation of these pattern of learning style inventory scores (Kolb 1984, 1999a, 1999b).

**Diverging: (feeling and watching)** The divergers are best at viewing concrete situations from many different point of view and rely heavily upon brainstorming and generation of ideas. In formal learning situation,

they prefer to work in groups, listening with an open mind and receiving personalized feedback. They have broad cultural interest and like to gather information. eg social work

**Assimilating; (watching and thinking).** People with this learning style are best at understanding a wide range of information and putting into concise logical form. They are less focused on people and more interested in ideas and abstract concepts. The assimilating learning style is important for effectiveness in information and science careers. In formal learning situations people with this style prefer readings, lectures, exploring analytical models and having time to think through. eg philosophers.

**Converging; (Doing and thinking.** The divergers are best at finding practical uses for ideas and theories. They have the ability to solve problems and make decisions based on finding solutions to questions or problems. Individual learner here prefer to deal with technical tasks and problems rather than with social issues and interpersonal issues. These learning skills are important for effectiveness in specialist and technology careers. In formal learning situations, people with this style prefer to experiment with new ideas, simulations, laboratory assignment and practical applications. eg engineers.

**Accommodating: (Doing and feeling).** The accommodators carry out plans and experiment and adapt to immediate circumstances. In solving problems, individuals here rely more heavily on people for information than on their own technical analysis. This learning style is important for effectiveness in action orientated careers such as marketing or sales. In formal learning situation, they prefer to work with others to get assignments done and to do field work.

### **David Kolb's Model**

According to his model, the ideal learning process engages all four of these models in response to situational demands; they form a learning cycle from experience to observation to conceptualization to experimentation and back to experience. In order for learning to be effective, Kolb postulated to, all four of these approaches must be incorporated. As individual attempts to use all four approaches, they may tend to develop strengths in one experience grasping approach and one experimental transforming approach leading them to prefer one of the four learning styles. Some examples of innovative learning strategies in schools includes;

### **Cross over learning**

This is a type of learning strategy that links formal and informal learning. Informal learning is learning that takes place outside school system while formal learning is the one that occurred in school system. When learning in informal settings connects educational content (formal setting) with issues that matters to learners in their lives, crossover learning has occurred. The connection work in both directions. Formal learning in schools can be enriched by experiences from everyday life, and informal learning can be enriched by adding knowledge from the classroom. The general point in this method that is effective is for a teacher to propose and discuss a problem in the classroom, then for learners to explore problem on a field trip. On their trip they collect photos or notes as evidence and discuss their findings back in the class to produce individual or group answers.

Learning outside school supports the development of skills and dispositions that help student do better within schools. The concept of crossover can also be applied to the ways in which we think about learning as a whole and the scope for adjusting how formal and informal combine to influence attitudes and motivation for learning at all ages. Research on linking informal and formal learning covers aspects that help us to consider learning in different ways such as learning design, activity design, rethinking assessment and recognition, and the ways in which methods and technology can help to transfer information and experience across settings. People in diverging style group are suited for this type of learning.

*Benefits of crossover learning.*

- Connected experiences from formal and informal settings can spark interest and motivation
- Exploits the strength of both environments and provide learners with authentic and engaging opportunities for learning.
- Since learning occurs over a lifetime, drawing from experiences across multiple settings will support the learning in recording, linking, recalling, sharing their diverse learning events.
- Development of skills and competencies may reduce students workload and allow opportunities for undirected activities outside the classroom to become part of school work.
- By engaging in practical activities, they can be supported to develop traits and skills such as persistence and self-direction that can aid success in any subject.
- Finding space to bring informal learning into formal education has the potential to enrich knowledge with experience.
- Adding direction to informal activities can enhance motivation and increase the impact of formal experience on school learning and in the work place.

**Adaptive Learning**

People differ in their learning styles and that affects their knowledge acquisition, retention and transfer. However most educational presentation and materials are the same for all learners. This creates a long problem for some learners will be bored, others will be lost and very few are likely to discover paths through the content that results in optimal learning. Adaptive teaching offers a solution to this problem. It uses data about a learner`s previous and current learning to create a personalised path through education content. Adaptive learning is an educational method which uses computers as an interactive teaching devices and to orchestrate the allocation of human and mediated resources according to the unique needs of each learner (Wikipedia 2017)

Computers adapt to the presentation of educational materials according to students learning needs as indicated by their resources to questions task and experiences. Adaptive learning systems endeavour to transform the learner from passive receptor of information to collaborator in educational process. Its application is in education but another popular application is business training. It has been designed as desktop

computer applications, web applications and are now been introduced into several curricula. Adaptive learning refers to the ways in which computer application can analyse data from learning activities to provide learners with relevant content, to sequence their learning activities, to address gap in their knowledge and to accelerate their learning, Sonwalkar (2013). Adaptive teaching products have been developed for use in classrooms, in work place and at home. This type of teaching can either be applied to class room activities or in online environment where learners control their own pace of study.

### **Examples of Adaptive Learning**

A learner writes an essay and submits online to his teacher. His teacher checks his work for errors and provides supplementary lessons when necessary. In that current essay, she had several mistakes. The teacher recognises her mistakes but gives more information on the topic. The teacher asks her to find her mistakes. The teacher finds her mistakes and also offer her extra materials to help her understand where she went wrong. This type of learning not only allow student to study at their own pace but also allow them to receive immediate feedback to see how they were doing. Behaviourist, B.F Skinner is credited with creating this method. In this type of learning, when a learner is tested at the end of each session the more she is stock on each problem the more hints she receives. Once she understands easier problems, she is given more difficult problems. A teacher in a classroom cannot provide personal assistance to each student but given such immediate feedback may improve students performance.

### ***Benefits of adaptive learning:***

- It improves student's retention and mastery of course contents
- It is truly personalised. Each student experience is based on their own performance. Questions aren't simply scrambled. Student know exactly how they are doing and where to go next. Student practise at their own pace and study more effectively.
- Can be used for any type of curriculum whether you teach in a traditional or concept based curriculum or somewhere in between. Adaptive learning tools can be used to measure students' performance on any of your learning objects

- Provides real time reporting and formative assessments. It provides better insight into students' performance while there is still time to adapt
- Maximises study time. Students get a clear picture of their strength and weaknesses, so they don't have to spend time on content they already know. They can focus on improving in the areas where they are struggling.

### **Computational Thinking (Solving Problems Using Techniques from Computing)**

This learning strategy or recent innovation in education is a powerful approach to thinking and problem solving. It involves breaking down large problems into smaller units (decomposition), recognizing how these relate to problems that have been solved in the past (pattern recognition), setting aside unimportant details called( abstractions), identifying and developing the steps that will be necessary to reach a solution (algorithms), refining these steps(debugging)and presenting a solution in a usable form. This can be done with or without computer. This aims to teach children to structure problems that can be solved. Children become not merely tool users but tool builders. They use a set of concepts, such as abstraction, recursion, and iteration, to process and analyse data, and to create real and virtual artefacts. Computational thinking is a problem solving methodology that can be automated and transferred and applied across subjects. Barr & Stephenson, (2011). People studying computing will gain understanding of computational system of all kind whether or not they include computer. Computational thinking provides insights into many areas of the curriculum and influences work at the cutting edge of a wide range of discipline Berry (2013). Wing defines computational thinking as the ability to solve problems using concepts fundamental to computer science, Wing (2006). Countries around the world including the UK, Singapore and Australia are recognising the importance of computational thinking and are taking rapid measures to introduce it into the early years of their school curriculum. Yet, there is a paucity of research into how children learn computational thinking, or the effective ways to teach it Wing, (2008).



### **Why is Computational Thinking So Important?**

It allows us to solve problems, design systems, and understand the power and limit of human and machine intelligence. It is a skill that empowers and one that all pupil should be aware of and develop competence in. Computers are now part of everyday life for most of us. Technology is essential to our lives at home and at work. Computational thinking is a skill children must be taught if they are to be ready at work place and able to participate fully in the digital world, Berry (2013). Pupil who can think computationally are better and able to conceptualise, understand and use computer based technology and so are better prepared for today`s world and the future. Learning computing principles and languages enables one acquire a set of problem solving skills. Together these are known as “computational thinking”. The value of these skills and their associated concepts, practices and perspectives is globally recognized. In England for instance, the national curriculum states, children should be offered high quality computing education that will equip them to understand and change the world, Woollard (2014)

Computational thinking differs from problem-based learning in that it arises from a need to solve immediate practical problems, rather than work through pre-prepared exercises. It breaks an initial problem down into smaller elements, then relates these to ones that have been solved in the past. It also assumes that solutions will be tested and refined until an acceptable one is reached. Thus, it can be more useful in practical settings than the problem-based learning approach, but may not be appropriate to solve human and social problems that cannot easily be decomposed into sub-problems. The convergers group learning style are suited for this type of learning.

### **Embodied Learning**

Children never forget learning that engages them emotionally, socially, physically and intellectually. Embodied learning is a learning strategy that makes use of mind and body working together to support learning. McNemey (2011). It involves self-awareness of the body interacting with real or simulated world to support the learning process. It engages student`s deeply in maths, science and along with all subjects that provides the foundation for a lifelong passion for learning. Embodied learning uses strategies to create lesson that engages students in meaningful,

authentic learning. The embodied learning model is constructed on three powerful acts that ensure students learning: engages, explores, and shows. These bring the physical, intellectual, emotional and social energies of each student into a very well planned lessons. It involves ones awareness of ones own body- its movement, biomedical measurement limit and interaction with the world. When learning a new sport, physical movement is an obvious part of the learning process. e.g; playing a new sport, learning to drive a car etc. Physical movement is essential for these form of learning. It also relates more generally to how the body shapes and conditions our cognitive learning. As we move through environment and interact with people and object, our bodies and limbs fit in with the surrounding. We continually adjust without conscious awareness to the terrain as we move about to the surrounding temperature, object and people we torch. This happens when the body does not fit in neatly into the environment (perhaps it stumbles at a concealed step) or we are learning to perform a physical activity such as dancing or we are shaping environment to our needs example; drawing, painting or building.

### **How Embodied Learning help Students**

Embodied learning has specific meaning for learning scientist comprehension and retention are affected by sensory motoric input. It is possible to create educational content that taps into embodied learning using the latest advances in motion capture technology. A long research history supports the efficacy of students “doing something” in order to learn it. In experimental psychology such task have been called self-performing task (SPT). For example; one study uses three groups- one group merely heard a list of unrelated actions phrases (lift the hat). One group performed the action without the object and one group performed the action with the object. The participant who performed the action consistently recalled more of the phrases. An accepted theoretical explanation involves the use of motoric codes. A memory trace or code is established for the content and adding the motoric component enriches the memory code beyond just the usual and auditory trace.

### **How Embodiment Affects Learning**

It follows that physical acts such as using a pen, pencil or brush to write and draw affects how we learn. When writing or drawing by hand, we are able to cross out, add notes and draw diagrams alongside the text. The process of creating a text,

mathematical solutions or drawing can be made visible to other learners or teachers. Students may use their working or crossing out to gain insight into thinking processes.

### **Recommendations**

Based on these technological advancements all over the world, it becomes imperative for our learning strategies to be implemented as to be able to cope and challenge the ever increasing world competitiveness. Developing policies for meeting global challenges etc, adjusting and restructuring the curriculum in teaching and learning to address the issues of the 21<sup>st</sup> century such as global competitiveness.

### **Conclusion**

Innovative learning strategies for modern pedagogies in science and technologies for quality assurance in education is highly indispensable in any of our modern national school curriculum to enhance adequate global economic and technological advancement. Nigeria cannot assail in global competitiveness without strong policies that supports innovation both in teaching and learning. Today many pockets of innovation are sprouting up across the educational landscape and the influence of these innovation is related to these achievement of the educational objectives in this modern day there are many innovative techniques for effective learning. We have explained some which includes crossover learning technique, adaptive, computation and embodied learning techniques. These techniques if well implemented will go a long way in boosting innovative potentials of the learners, prepare them for challenges brought about by changes in technology and for global competitiveness. If you have a burning desire to change the world for better consider making education innovation “**next**”.

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**EFFECT OF CONCEPT MAPPING AS INSTRUCTIONAL  
SCAFFOLDING ON STUDENTS' ACHIEVEMENT  
IN BIOLOGY**

By

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**Abstract**

*This study investigated the effects of concept mapping as instructional scaffolding on students achievement in Biology. Three research questions and three null hypotheses were formulated to guide the study. Quasi-experimental design, specifically Non-equivalent control group design was used. The sample consisted of 140 senior secondary two biology students randomly drawn from two co-educational schools in Udi Education Zone of Enugu State. The treatment group was taught selected biology concepts using concept mapping as instructional scaffolding while the control group was not. The study lasted for 6 weeks. Three research questions and three null hypotheses were formulated to guide the study. Data were analysed using mean, standard deviation and Analysis of covariance (ANCOVA). The findings indicated that concept mapping used as scaffolds was more effective than the one without scaffold in enhancing achievement in biology. The finding equally indicated that there was no significant interaction effect of gender and strategies on students' mean achievement scores in Biology.*

**Keywords:** Concept mapping, Scaffolding, Biology, Achievement, Strategies.

## **Introduction**

Biology is defined as the science of life because it deals with the study of living and non-living components of the environment. Biology is one of the science subjects taught at the senior secondary school levels in all Nigerian secondary schools today which attracts the greatest patronage of both science oriented and arts-based students (Nwachukwu & Nwosu, 2007). For this reason, Biology has a very high enrolment of students in the external examination (West African Examination Council, 2015), Biology as a school subject is expected to help students understand and deal with their natural environment and the organisms living within it. Biology also deals with the interactions between living and non-living components of the environment (Nwagbo, 2008). A sound knowledge of Biology is pre-requisite for entrance into such professions like Medicine, Pharmacy, Nursery, Forestry, Biotechnology, Biochemistry, Genetics and Agriculture that are of great importance to the nation.

Despite the importance of biology as a school subject available statistics from the West African Examinations Council (WAEC, 2009-2015) revealed that candidates scored below credit level or failed to obtain the grades A1-C6. By implication, most students cannot gain admission into institutions of higher learning to study biology or its related disciplines. This leaves one in doubt about the effectiveness of instructional approaches employed by the biology teachers for the teaching and learning of biology.

Researchers have shown that biology teachers do not always employ effective instructional approaches in teaching the subject (Nwagbo, 2012, Nwosu, 2007). This has led to situations where students cannot apply the knowledge of biology in real life situations. Agama (2009) posited that in most secondary schools, teaching methods are mainly based on inappropriate instructional approach, which requires teachers to give explanation or demonstration while students usually focus on textbook reading, note taking and memorization of facts. Evidence has shown from WAEC chief Examiners Report that there is high rate of failure in Biology, which could be traceable to the quality of teaching (More, 2003). To buttress this, Nwagbo (2008) had asserted that the quality of any educational programme in any country is the function of those who teach it. Nwagbo opined that even a good curriculum and a well- stocked laboratory would still not give the desired result in the hands of incompetent Science, Technology and Mathematics (STM) teachers.

Nwokelu and Afe as cited by Nwakonobi, (2008), revealed that complaints abound from students, parents, West African Examination Council (WAEC), and even Ministry of Education officials about the inability of some students to perform creditably in some subjects like Biology, Chemistry and Physics, to name a few. These poor academic achievements could be as a result of ineffective teaching strategies adopted by the teachers.

Some researchers have indicated that underachievement in science subjects such as Biology is linked to inappropriate strategies of teaching in senior secondary schools (Okoye & Okeke 2007, Nwagbo, 2009). For instance, Classroom observations in many Nigerian secondary schools during teacher supervisions showed that the majority of the teachers do not apply appropriate science strategies as identified and recommended to be effective for science instruction (Norom, 2009). Biology classroom activities are still dominated by teacher-centered instruction which has been found to be ineffective in promoting biology learning at senior secondary school level (Uzoечи, 2008) Nwagbo (2011) observed that such teacher-centered approach, which places the teacher as the sole possessor of knowledge and the students as passive recipients of knowledge, may not enhance achievement or promote positive attitude to biology in particular and science in general.

Learning is a process requiring effort in which the learner actively constructs his own meaning that is consistent with prior ideas. The ability of a learner to learn well depends on his/her ability to connect or integrate previous knowledge with new ones and also apply it to real life situations. Such learning is described as meaningful learning. So for meaningful learning to take place, the concept presented to the learner should be potentially meaningful and hence provide opportunity for the learner to form meaningful tasks. The learner should manifest the meaningful desire or tendency to make connections among concepts. The learner must actively attempt to relate what is known to substantive aspects of new concepts (Novak, 2002), concept mapping as instructional scaffolding hinges on this idea and is one of the innovative teaching methods advocated by Nwagbo 2008. Concept mapping is a relatively current issue in science teaching.

Concept mapping originates from concept maps. Rao (2015) refers to concept maps as diagrammatic representations. It is not necessarily another learning strategy but a process designed to help students learn how to learn



scientific concept which show meaningful relationships between concepts in the form of propositions which are linked together by words, circles and cross links. A concept map is a diagram showing relationships between concepts. A concept map presents the relationship among a set of connected concepts and ideas. Concept maps are identified as two-dimensional, hierarchical, node-linked diagrams that depict verbal, conceptual or declarative knowledge in succinct, visual or graphical forms (Roa, 2015).

In concept maps ideas are arranged hierarchically with the super ordinate concepts at the top of the map, and subordinate at the bottom which are less inclusive than the higher ones (Ejimonye, 2015). Concepts are connected with labelled arrows, in a downward branching hierarchical structure. The relationship between concepts is articulated in linking phrases; “give rise to”, ‘helps’ results in”, “is required by” or “contributes to” (Novak and Canas, 2008). A concept map is a special form of a web diagram for exploring knowledge, gathering and sharing information (Olaniran, 2004). Concept mapping is the strategy employed to develop a concept map. It is an instructional strategy that presents key concepts as knowledge maps that act as scaffold to facilitate learning. It was developed in 1972 by Novak and his associates at the Cornell University.

Concept mapping seems to be a promising strategy for meaningful learning since its enables the learners to consciously connect new knowledge with relevant concepts already known. In concept mapping new knowledge is integrated into existing structures in order to enhance understanding (Stoica, Moranu & Miron, 2011).

In the teaching and learning of biology (or any science subject), concepts do not exist in isolation. Each concept depends on its relationships to many others for meaning and in attempting to identify the key and associated concept of a particular topic or sub-topic, one will usually acquire a deeper understanding of the topic and clarification of any prior misconceptions.

Concept mapping is an instructional scaffold for it provides support through diagrammatical representation and orderly presentation of the relationship between concepts or components of a concept using link s, lines, and nodes for meaningful learning. Concept maps are helpful as a tool to gauge students’ understanding because they make the knowledge construction process visible (Sungar, Tekkaya & Gebbon, 2001). Concept mapping enable learners to focus on fine details,

experiencing a structured step-by-step approach, representing their knowledge structures graphically and visualizing programming concepts and procedures as a network of interrelated ideas (Association for computing machinery, 2015). Students through the links shown by the concept map on a concept could easily understand the concept without much explanation by the teacher. When the students through the concept map understand the links among components of a concept or the relationship between one concept and another, they can reason beyond the framework when the concept map is removed. Thus, concept map as instructional scaffold could enhance students understanding of concepts towards better academic achievement.

Scaffolding from the researchers view is a learning process designed to promote a deeper level of learning. Scaffolding is the support given during the learning process which is tailored to the needs of the students with the intention of helping the student achieve his/her learning goals. Scaffolding is a teaching technique whereby the teacher models the desired learning strategy/task, then gradually shifts responsibility to the students. In literal terms, scaffolding refers to poles and wooden boards that are joined together to make a structure for workers to stand on when they are working (Vygotsky, 1978a). It is used when building high structures such as storey building. Scaffolds are pillars for support to both the building and the builders. Scaffolding as an educational concept is the assistance (parameters, rules, or suggestions) a teacher gives to a student in learning situation to achieve learning. Vygotsky added that scaffolding instruction is the “role of teacher and others in supporting the learners development and providing support structures to get to the next stage or level”. As a learner gains control of these new learning, the teacher withdraws the support gradually as the learner becomes increasingly able to complete the task alone. The teacher then plans and provides further support on new learning. Such support structures could be helping the learner to complete a task by using concept mapping as Scaffolding Strategy. In using scaffolding, the teacher’s job is to help bridge the gap between what a student already knows and what he will learn next. A “Scaffold” ensures that children are not left to their own devices to understand something. The support is removed when the student is ready, like the scaffolding that supports workers who have been constructing or repairing a building. The scaffolds provides the workers with both

a place to work and the means to reach work areas that they could not access on their own which is removed when construction is complete (Olota, 2015).

Scaffolding can be used at any level of education and in any discipline including Biology, but it requires detailed planning on the part of the teacher. In using Scaffolds, the teacher helps in breaking down complex tasks into manageable bits, motivates learners, brings clear direction and reduces student's confusion. The teacher also clarifies expectation and incorporates assessment and feedback, and students understand why they are doing the work and why it is important. In Educational setting, there are many instructional strategies that can be used to break down complex tasks into manageable bits that will lead to acquisition of new knowledge and enhance achievement (Mang, 2003). It might be possible that the use of innovative instructional strategies like concept mapping could enhance achievement in Biology. However, research and experiential evidence show that most teachers of Biology are not aware of most of the innovative strategies and do not use it during instruction.

Students' academic achievement deals with the extent students have gained from a particular course of instruction. From the researchers view achievement can be viewed as the extent to which knowledge has been grasped by a student or the extent to which a student has internalized what has been taught and this can be demonstrated by his score when he is tested. According to Johnson (2002) and Shaibu and Usman, (2002) student's achievement refers to student's intellectual attainment or performance in a subject. Omachi (2000) defined achievement as the scholastic standing of a student's performance at a given moment. It has to do with the successful accomplishment of goals. The purpose of testing an achievement is to help the teacher and the students evaluate and estimate the degree of success attained in learning a given concept. It is also useful in testing the extent of students' interest in the teaching learning process. It is equally appropriate in determining the efficiency of instruction. One of the issues at stake in education today is students' achievement measure in relation to teaching and the overall success of learning outcome. Hassan, (2006) pointed out that effective learning and sound academic achievement contributes to national development. It is something of great importance to parents, teachers and students themselves, even the larger society is aware of the long term effects of high and low academic achievement since the product of schools are expected to shape the destiny of the society. Nwagbo (2006)

states that students' achievement in Biology is jeopardized by the teacher's authoritarian and introverted styles. Nwagbo advocated the use of self-learning devices as a way of getting students master learning and achieve high in biology. There is need therefore to teach Biology in an inspiring manner in order to achieve meaningful learning. Therefore, teachers should adopt instructional strategies to enhance better achievement in the subject. Hence, the need to investigate if the use of concept mapping as scaffolding strategy could affect any changes in students' achievement in biology. Since the use of concept mapping as instructional strategies engages both male and female students actively at the same time, there is need to investigate if the two could help to streamline gender differences in science.

Gender is an issue of contention in the society including the educational system. From the researchers view, gender roles are roles which society assigns to a man or woman in accordance with the culture and tradition of that society. Gender is a set of characteristics distinguishing between males and females, particularly in the case of man and woman which, depending on the context, may vary from sex to social role to gender identity (Bland, 2003). According to Okeke (2004), gender is a social or cultural construct, characteristics, behaviour and role that varies from place to place or culture to culture. It is not like sex, which is biologically determined and universal too. The issue of closing gender gap in sciences has remained elusive. In recent times gender related issues in science education have continued to receive serious attention judging from the number of studies done to that effect. Babajide (2010) opined that science subjects which include physics and chemistry are given masculine outlook by educational practitioners. In addition to this, studies by Ogunleye (2002). Ezirim (2006), Okwo and Otuba (2007), show that academic achievement in science subjects depends on gender. However, Nwosu (2001) found out that students' acquisition of science process skills is not gender specific. In addition, studies by Ogunleye and Babajide (2011) and Agomuoh and Nzewi (2003) lend credence to significant gender effect in science achievement. Madu (2004) and Agomuoh (2010) found that gender influences students' conceptual shift in favour of male students. Therefore the issue of gender and students' academic achievement has been inconclusive. While there are some views that male students perform better than females, others disagree with this view, arguing that achievement is a factor dependent on several factors such as socio- economic background, cognitive ability, type of exposure and appropriate

teaching strategies among others. Therefore, one sees that the issue of gender has not yet been resolved particularly in relation to student's achievement in Biology, hence the need for further study on that regard, especially when trying out new teaching strategy like concept mapping as instructional scaffolding.

Researchers over the years have developed or employed several teaching methods or strategies to improve students' learning. Most of the methods or strategies have been empirically proven to enhance learning and in turn improve achievement. But the reality on ground indicates that students' achievement in most subjects especially Biology needs urgent attention. Therefore a strategy that will trigger students' search of memory that will help students to correctly answer any question asked by their instructors/teachers is very pertinent. Thus, this study intend to investigate the effect of concept mapping as instructional scaffolding on senior secondary school students' achievement in Biology.

### **Research Questions:**

The following research questions guided the study:

1. What is the effect of concept mapping as an instructional scaffolding on students mean achievement scores in Biology?
2. What is the influence of gender on students' mean achievement scores in Biology?
3. What is the interaction effect of gender and strategies on the mean achievement scores of students in Biology?

### **Hypotheses**

The following null hypotheses guided the study and were tested at 0.05 level of significance.

**HO<sub>1</sub>:** There is no significant difference in the mean achievement score of students taught Biology using concept mapping Instructional scaffold and those taught using conventional method.

**HO<sub>2</sub>:** There is no significant difference in the mean achievement scores of male and female students in Biology.

**HO<sub>3</sub>:** There is no significant interaction effect of gender and strategies on the mean achievement scores of students in Biology.

**Method:**

The design of this study was quasi- experimental. The specific design was Non- Equivalent Control Group Design. The design was adopted because intact classes were used as it was not possible to have complete randomization of the subjects. The sample consisted of one hundred and forty (140) SS 11 Biology students drawn using purposive sampling techniques from two Co-educational Secondary Schools in Udi and Ezeagu Local government areas. This comprise of 62 students from School 1 made up of 30males and 32 females, and 78 Students from School 2 made up of 35 males and 43 females. The two Co-educational Secondary Schools were drawn from 15 Co- educational government owned Senior Secondary Schools in Udi education Zone of Enugu State. Purposive Sampling was used because the researcher wanted School that will lend themselves to the experiment and for proximity for easy monitoring. The two sampled Schools have well qualified Biology teachers with at least Master degree in education, and the two schools have two streams of SS 2 Classes. The researcher used two intact classes from one school as the experimental/treatment and two intact classes from the other school as the control group. The instrument used for the study is Biology Achievement test (BAT) developed by the researcher based on the biology topic taught. The instrument was subjected to content and face validation. In the content validity, the researcher carefully prepared a test blue- print or table of specification where both the cognitive levels as well as the subject content were aligned on a two grid table. In the second stage of ensuring that the instrument is valid, the researcher consulted three experts in the Department of Science Education from the University of Nigeria, Nsukka and one from the Department of Science Education, Enugu State University of Science and Technology. Two experienced Biology teachers from schools in Udi Education Zone of Enugu State were given the BAT for both face and content validation. A marking Scheme was prepared by the researcher and was equally validated by two Biology teachers from Udi Education Zone of Enugu State and four specialists from the University of Nigeria, Nsukka. Their corrections and suggestions were strictly followed. The topics taught during the study Comprised: respiratory system in animals, respiratory system in plants, classification of living organisms, transport system in animals, circulatory system in animals. The items were trial tested on thirty (30) SS 2 Biology Students in a school different from those used for the study. The reliability was computed using

Kuder- Richardson (K-R20). The instrument had a reliability index of 0.89 which guaranteed the use of the instrument for the study.

**Experimental procedure:**

The regular biology class teachers were used for the study in both experimental and control groups. Training was given to the biology teacher who took the experimental group on the application of the instructional approach. Prior to this, the biology teacher was given the validated lesson plan to enable her get used to the lesson plan. A sample lesson plan on the effective teaching of classification of living organisms using concept map is attached at the end of the lesson plan for illustration. The researcher vetted the lesson plan prepared by the biology teacher who took the control group to ensure that the teacher did not deviate from the procedures of instructions commonly used by biology teachers. Biology Achievement test (BAT) was used for both Pre-test and Post-test. The treatments consist of teaching a selected biology concept using scaffolding. Data generated were analysed using Mean, standard deviation and Analysis of Covariance (ANCOVA). In Scaffolding, the teacher who is the builder can use the gifted and fast learners as Scaffold to aid or build up the slow learners, having understood the teacher fast, they can lend support to both the slow learners and the teacher. The gifted Students then serve as go- between through interactions with the slow learners after the class. Students learn better and faster from each other.

**Research Question 1:**

What is the effect of and concept mapping as instructional scaffolding on students' mean achievement scores in Biology?

**Table 1:** Mean and Standard Deviation of Biology Students' Scores for the Experimental and control Groups.

Variable Strategies	N	Pretest		Posttest		Adjusted Mean
		$\bar{x}$	SD	$\bar{x}$	SD	
Scaffolding (experimental)	62	11.44	2.05	30.40	4.83	30.47
Conventional(control)	78	11.46	2.06	24.36	5.74	24.47

Table 1 shows that the experimental Pre-test and Post-test mean scores are 11.44 and 30.40 with standard deviation scores of 2.05 and 4.83 respectively. However the control group has pretest and posttest mean scores of 11.46 and 24.36 with standard deviation scores of 2.06 and 5.74 respectively. The result in Table 1 also shows that the adjusted mean scores for the treatment group is 30.47 while that of the control group is 24.47 indicating that the students taught Biology using Concept Mapping as scaffolding strategy performed better than those taught with the conventional method.

**Hypothesis 1:** There is no significant difference in the mean achievement scores of students taught Biology topics using concept mapping as scaffolding and those taught using conventional method.

**Table 2:** Analysis of Covariance (ANCOVA) of the Effect of Concept Mapping as Instructional Scaffolding and conventional method on Students' Mean Achievement in Biology

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1620.056a	4	405.014	15.160	.000
Intercept	2664.421	1	2664.421	99.728	.000
Pretest	19.359	1	19.359	.725	.396
Strategies	1234.335	1	1234.335	46.201	.000
Gender	293.126	1	293.126	10.972	.001
Strategies * Gender	18.310	1	18.310	.685	.409
Error	3606.765	135	26.717		
Total	107557.000	140			
Corrected Total	5226.821	139			

$\alpha = 0.05$

Data in Table 2 show a statistical significant main effect of instructional strategies on mean achievement scores of students in Biology. The result show that an F –



ratio of 46.20 with associated probability value of 0.00 was obtained with respect to the achievement of students taught Biology using concept mapping as scaffolding and conventional method. Since the associated probability value of 0.00 was less than 0.05 set as level of significance, the null hypothesis (HO1) was rejected, indicating that there was significant difference in the mean achievement score of students taught Biology using concept mapping as instructional scaffolding.

**Research Question 2:**

What is the influence of gender on students' mean achievement scores in Biology?

**Table 3:** Mean and Standard Deviation of the Influence of Gender on Students' Mean Achievement Scores in Biology.

Variable	N	Pretest		Posttest		Adjusted Mean
		$\bar{x}$	SD	$\bar{x}$	SD	
Male	65	11.85	2.15	28.77	6.07	28.95
Female	75	11.11	1.90	25.53	5.82	25.98

Results in Table 3 show the mean achievement scores of male and female students from both strategies in Biology. The result shows that male students had a pretest and posttest mean achievement scores of 11.85 and 28.77 with a standard deviation scores of 2.15 and 6.07 respectively, however, the female students taught Biology had a pretest and posttest mean achievement scores of 11.11 and 25.53 with a standard deviation scores of 1.90 and 5.82 respectively. The result also show that male students had an adjusted mean score of 28.95 while their female counterparts had an adjusted mean score of 25.98. For each of the groups, the posttest and adjusted mean achievement scores were greater than the pretest mean achievement scores with the male students having higher adjusted mean score than their female counterparts. The result shows that male students performed better than their female counterparts

**HO<sub>2</sub>:** There is no significant difference in the mean achievement scores of male and female students in Biology.

The data and result associated with this hypothesis were also presented in the ANCOVA of Table 2, where an F-ratio of 10.97 with associated probability value of 0.01 was obtained with respect to male and female students' achievement in Biology. Since the associated probability of 0.01 was less than 0.05 set as level of significance, the null hypothesis (Ho<sub>2</sub>), therefore, was rejected, indicating that there was a significant difference between the mean achievement scores of male and female students in Biology (in favour of males).

### Research Question 3

What is the interaction effect of gender and strategies on the mean achievement scores of students in Biology?

**Table 4:** Mean and Standard Deviation of the Interaction Effect of Gender and Strategies on the Mean Achievement Scores of Students in Biology

Variable			Pretest		Posttest		Adjusted Mean
Strategies	Gender	N	$\bar{x}$	SD	$\bar{x}$	SD	
Concept mapping(CM)	Male	30	11.90	2.09	32.40	5.56	32.32
	Female	32	11.00	1.93	28.53	3.10	28.62
Conventional method(COM)	Male	35	11.80	2.23	25.66	4.63	25.59
	Female	43	11.19	1.89	23.30	6.37	23.36

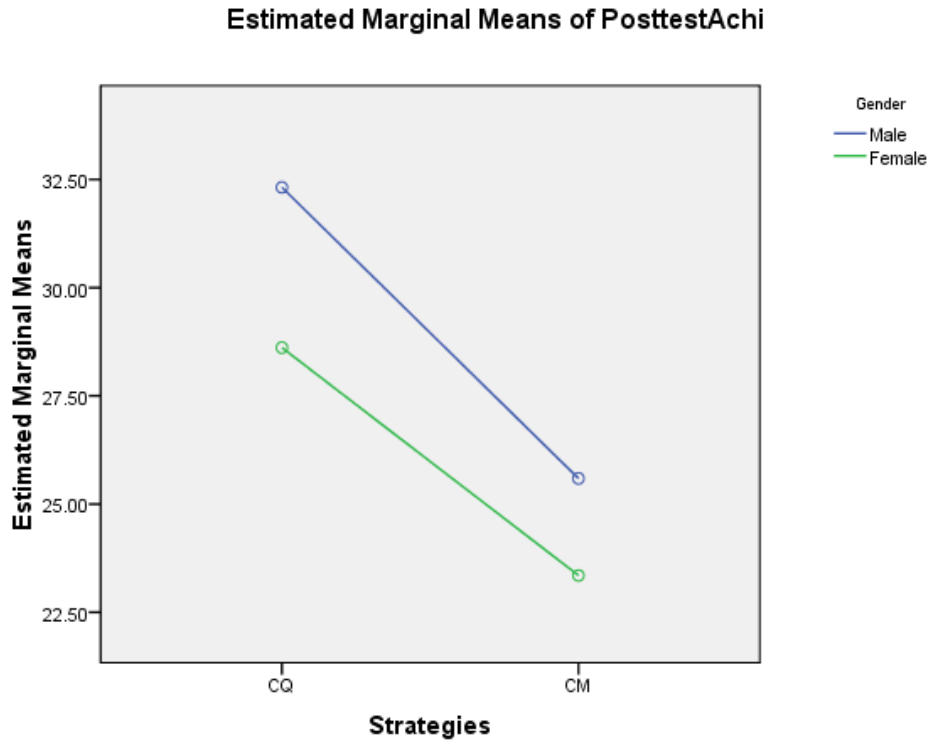
**CM = Concept mapping, COM = Conventional method.**

Results in Table 4 show the interaction effect of gender and strategies on the mean achievement scores of students in Biology. The result shows that the male students taught with Concept mapping as scaffolding had a pretest achievement mean of 11.90 with a standard deviation of 2.09 and a posttest achievement mean of 32.40 with a standard deviation of 5.56. The female students taught using concept mapping as scaffolding had a pretest achievement mean of 11.00 with a standard deviation of 1.93 and a posttest achievement mean of 28.53 with a standard

deviation of 3.10. The result in Table 4 also shows that the male students taught Biology using conventional method had a pretest achievement mean of 11.80 with a standard deviation of 2.23 and a posttest achievement mean of 25.66 with a standard deviation of 4.63. The female students under conventional method had a pretest achievement mean of 11.19 with a standard deviation of 1.89 and a posttest achievement mean of 23.30 with a standard deviation of 6.37. The results in Table 4 equally revealed a higher adjusted mean score of 32.32 for the male students taught Biology using concept mapping as scaffolding while their female counterparts had adjusted mean score of 28.62. The Male students who were taught biology with conventional method had adjusted mean score of 25.59 while their female counterparts had adjusted mean score of 23.35. The result in Table 4 is indicative that there is interaction effect of gender and strategies on student's mean achievement score in Biology.

**HO3:** There is no significant interaction effect of gender and strategies on the mean achievement scores of students in Biology.

The data and result associated with this hypothesis were also presented in the ANCOVA of Table 2, where an F – ratio of 0.69 with associated probability value of 0.41 was obtained. Since the associated probability value of 0.41 was greater than 0.05 set as level of significance, the null hypothesis (Ho3), therefore, was not rejected, indicating that there was no significant interaction effect of gender and strategies on the mean achievement scores of students in Biology.



**Figure 1:** Interaction effect of gender and strategies on student’s mean achievement score in Biology.

The result in Table 2 and 4 is indicative that there is interaction effect of gender and strategies on student’s mean achievement score in Biology but the interaction was not significant. Figure 1 shows no point of intersection between the levels of strategies and gender. Therefore since the lines in figure 1 did not intersect, it means there exist an “ordinal interaction”.

**Discussion:**

Students in the experimental group that is those students taught selected biology topics using concept mapping as scaffolding performed better than those taught using conventional method (Lecture method). The active involvement of students in the construction of the concept mapping may have helped in enhancing

and facilitating students' achievement in biology than the conventional method. The students were always active trying to identify the key concepts and to link the various concepts together to arrive at a meaningful learning. The teacher was also able to use concept mapping to identify the fast and slow learners, he used their anchoring ideas as a scaffold to help the slow learners learn meaningfully and equally be active participants in the teaching- learning process. The ability of a learner to learn well depends on his /her ability to connect or integrate previous knowledge with the new ones and apply it to real life situations. Teaching with concept mapping therefore enabled them to be at their best, leading to better achievement.

The results of this study were in line with the views of Ezeugo & Agwagah (2002) who found that students exposed to the concept mapping techniques achieved more in Algebra than those who were not. The finding also agree with that of Karakuya (2010) who observed that drawing concept map instruction was more effective than the traditional instruction in improving physics achievement of the participating students. Hence, the overall findings support the ascertainment that concept mapping makes a difference in student's learning (Imoko, 2005, Able & Freeze, 2006). Thus, teachers that incorporate concept mapping in their class will likely have higher student's achievement than their more 'traditional' counterparts (Booth & Brinkerhoof, 2013).

In the case of gender, the findings of this study revealed that male students have a higher mean score than their female counterparts. The findings of this study are consistent with Aiyedun (2014) who found that male students' average achievement was slightly higher than their female counterparts in Mathematics. However, the findings of this study are consistant with Ezeudu (2013) who found that male and female students have equal achievement in organic chemistry. The findings also indicated that there is interaction effect of gender and strategies on students' mean achievement scores in Biology but the interaction was not significant. Since there was no point of intersection between the levels of strategies and gender, it means there exist an "ordinal interaction".

**CONCLUSION:**

Learning is more meaningful when the learner is actively involved in the teaching-learning process and when the learner can integrate the new learning/knowledge into the already existing concept and apply it in everyday activities. Concept mapping makes learning to be easier, helps in the retention of knowledge, leads to academic achievement and above all involves hands-on and minds-on activity. The teacher should then plan classroom activities properly using concept mapping to make learning more meaningful.

**Recommendations:**

Teachers should encourage students to be actively involved in teaching-learning process by providing instructional strategies/materials that will challenge them to be actively involved during teaching, this will engage the students in hands-on, mind- on activities to drive home the lesson

- The Ministry of Education should through seminars, workshops, and conferences equip serving Biology teachers with requisite knowledge, skills, and competences on the use of concept mapping as instructional scaffolding strategies for teaching and learning. This when done would promote effective teaching and learning towards a better academic achievement.

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## **INNOVATIVE EDUCATION: A PANACEA FOR PEACE, SECURITY AND ECONOMIC DEVELOPMENT**

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### **Abstract**

*This paper examines the relationship between innovative education, peace, security and economic development with a view to identifying prospects and challenges. In doing this, there was a conceptual overview of innovative education, peace, security and economic development. There was also a detailed discussion on some identified security challenges like food scarcity, ethnicity, religious intolerance, Kidnapping, amongst others. An analysis of the current educational system revealed some deficiencies that make new ways of doing things imperative, for better results. It is recommended that if our education system is to assume its rightful position in sustaining peace and security for economic development there should be innovations in teacher capacity building, integration of ICT, entrepreneurship education, value are orientation, etc.*

### **Introduction**

The role of education in the overall growth and development of individuals and the society in which they live cannot be gain said. It is in view of this that the National Policy on Education (2014) view education as an instrument “par excellence” for national development. It also emphasized education from the point of the overall philosophy of Nigeria, which are to: (a) Live in unity and harmony as one indivisible indissoluble democratic and sovereign nation founded on the principles of freedom, equality and justice. (b) Promote inter-African solidarity and world peace through understating. It also stated the national goals as the foundation of the National Policy on Education, viz: (a) A free and democratic society. (b) A just and egalitarian society. (c) A great and dynamic economy. (d) A land full of bright opportunities for all citizens.

It stressed further that the national philosophy of education is based on the: (a) Development of the individual into a sound and effective citizen. (b) Full integration of the individual into the community and (c) Provision of equal access to education opportunities for all citizens of the country at all levels of education, within and outside the formal school system.

The national educational goals, derived thereof include the: (i) Inculcation of national consciousness and unity. (ii) Inculcation of the type of values and attitudes for the survival of the individual and the Nigeria society. (iii) Training of the mind in the understanding of the world around and (iv) Acquisition of appropriate skills and the development of mental, physical and social abilities and competencies as equipment for the individual to live in and contribute to the development of the society. To attain the above goals, instructions at all levels of education should aim at inculcating the following values: (a) Respect for the worth and dignity of the individual; (b) Faith in man's ability to make rational decisions (c) Moral and spiritual principle in inter-personal and human relations; (d) Shared responsibility for the common good of society; (e) Promotion of the physical, emotional and psychological development of all children and (f) Acquisition of competencies necessary for self-reliance.

In view of the foregoing, the question that readily come to mind is how realistic have we as a nation pursued these laudable goals in our educational system? To what extents have our current educational practice enhanced the achievement of peace, security and economic development? bearing in mind that its products are robbers, kidnappers, and terrorists, including those that kill and maim in the name of religions and ethnicity. These questions beget more questions than answers and there is need to view our educational system in another perspective. Introducing new ideas and ways of doing things ie innovative education.

### **Conceptual Framework**

#### **Innovative Education**

The word innovative is derived from the word innovation which Hornby (2006) used to refer to a process of introducing new things, ideas or ways of doing something for better results. It involves making changes to products, processes or services already established by introducing something new. Being innovative involves looking beyond what is or current ways of doing something to identify better ideas of tomorrow and putting them into practice. Over the years there have

been many changes in the way education is designed and delivered in parts of the world, all aimed at achieving a better result.

There is no gainsaying that information communication technology (ICT) has been a significant factor behind changes and has played immeasurable roles in innovative educational design and delivery. There is no doubt that the emergence of smart phones, eBook, internet, computing solar electricity, cell phone , language laboratory, close circuit television (CCTV), video cassette recorder (VCR), interactive white board, social networking media, etc, have changed the way we learn and communicate in terms of personal interaction.

The question is with the current challenges in the education sector, ranging from inadequacy of teachers in terms of number and training, inequality of educational opportunities, poor infrastructure, negative value orientation, poor condition of service, etc, what could be done to ensure that education remains relevant, and lives up to the challenges of the current realities? The answer lies with the willingness of the stakeholders in the education sector to see it from a new perspective - to innovate, hence the concept innovative education.

## **Peace**

The word peace is derived from a Latin word “Pax” which literally means a pact, a contract, an agreement to end war or any dispute and conflict between two people, nations or antagonistic groups. Though there is no universal definition of peace, it has generally been construed to refer to the absence of war, fear, conflict, anxiety, suffering and violence. Suffice it to say the absence of hostility, existence of healthy or newly healed interpersonal or international relationships, prosperity in matters of social or economic welfare, establishment of equality and a working political order, that serves the true interest of all (Eze 2015).

In his own contribution Johan Galtung, in Ibeanu (2016) a Norwegian peace theorist distinguished three types of violence that can help elucidate the concept of peace. These are: (i) **Direct Violence:** which manifests by physical emotional, and psychological violence; (ii) **Structural Violence:** which comes in form of deliberate policies and structure that can cause human suffering, death , and harm and (iii) **Cultural Violence:** Which involves cultural norms and practices that creates discrimination, injustice and human suffering (Ibeanu, 2006).

Ochuba and Okoli (2015) also identified three types of peace, namely: (a) **Positive Peace:** which connotes a situation where there is absence of war and direct violence, and the practice of social justice, good governance, protection of human security and the rules of law. (b) **Negative Peace:** this refers to the absence of direct violence, even where other forms of visible threats exist, like in a case where a despotic king rules a seemingly peaceful empire, but his rule is tolerated even when person's interest, dignity or self-esteem is not protected. (c) **Active Peace:** this theory posit that peace is a part of a triad which includes justice and wholeness (or well-being) which also tallies with the scholarly interpretations of the early Hebrew word shalom ie salvation, justice and peace.

In view of the foregoing, peace should be seen beyond the narrow perspective of absence of war, fear, anxiety, suffering and violence. In a broader perspective, Ibeanu (2006) used peace to refer to a process involving activities that are directly or indirectly linked to increasing development and reducing conflict, both within specific societies, and in the wider international community. Also the definition of peace could be philosophical like when viewed as a natural, original, God-given state of human existence, or sociological like when used to refer to a condition of social harmony in which there are no antagonisms. Politically it could be used to refer to the institutionalization of political order or structures in a way that makes justice possible. Against this background Ibeanu stressed that it would be wrong to categorize a country experiencing pervasive structural violence as peaceful. Suffice it to say that, although, war may not be going on in a country but the experience of pervasive poverty, oppression of the poor, police brutality, intimidation of ordinary people, oppression of women, or monopolization of resources and power, indicates that there is no peace.

### **Security**

Hornby (2006) defined security as the safety of a state on organization against criminal activity such as terrorism. It stressed further that it means measures taken to ensure such safety ie activities involved in protecting a country, building or person against attack, danger, etc. In the same vein Akin (2008) used it to refer to the situation that exists as a result of the establishment of measures for the protection of persons, information and property against hostile persons, influences and actions. It embraces all measures designed to protect and safeguard the citizenry and the resources of individuals, groups businesses and the nation against



sabotage or violence occurrence. Iheoanunekwu, Ugbuta and Nwoko (2015) posit that security demands safety from chronic threats and protection from harmful disruption, and involves stability and continuity of livelihood (stable and steady income), predictability of daily life (Knowing what to expect), protection from crime (feeling safe) and freedom from psychological harm (safety or protection from emotional stress) which results from the assurance or knowing that one is wanted accepted, loved in one's community and people around him. They further opined that security does not mean the absence of threats or security, but the ability to rise to the challenges posed by them with expectancy and expertise.

Security is the bedrock for healthy existence, progress and growth in a nation. People bring out their best efforts to render services to their communities and society if there are no threats to life and property. Suffice it to say that at present, security is a global phenomenon that focuses on a nation, its constituent states, political chieftains, citizens' lives, property and general wellbeing. Ihebereme (2013) posited that ensuring security in a nation has gone beyond military power as the increasing spate of kidnapping, assassination, terrorism, religious rivalries, rituals, kidnappings, etc, have gone out of proportion. To be truly secured, a nation has to explore other alternative security thinking, which involves a multi-dimensional way of curbing the numerous challenges and threats. She contend that any nation seeking to achieve security without addressing problems of acute food shortage, population explosion, low level of production and per capital income, low technological development, inadequate and inefficient public utilities and chronic problem of unemployment, has a false sense of security.

### **Economic Development**

Ochuba and Okoli (2015) used economic development to refer to efforts that seek to improve the economic well-being and quality of life for a community, by creating and/or retaining jobs and supporting or growing incomes and the tax base. They distinguished between economic growth and economic development. Economic growth refers to the increase of a specific measure such as real national income, gross domestic product, or per capita income. National income or product is commonly expressed in terms of a measure of the aggregate value-added output of the domestic economy called gross domestic product (GDP). There is economic growth when the GDP of a country rises.

On the other hand, economic development implies much more, as it refers to improvements in a variety of indicators, such as literacy rates, life expectancy, and poverty rates. GDP is a specific measure of economic welfare that does not take into account important aspects such as leisure time, environmental quality, freedom or social justice.

In the broadest sense, Ochuba and Okoli (2015) highlighted three major areas of economic development which include policies and programmes: (1) that governments undertake to meet broad economic objectives such as price stability high employment, expanded tax base, and sustainable growth. Such efforts include monetary and fiscal policies, regulation of financial institutions, trade and tax policies. (2) To provide infrastructure and service, such as highways, parks, affordable housing, crime prevention, and educational programmes and projects. (3) explicitly directed at job creation and retention through specific efforts in businesses finance, marketing, neighbourhood development, small business start-up and development, business retention and expansion, technology transfer, work force training and real estate growth.

### **Peace and Security challenges in Nigeria**

Nigeria as a nation is currently going through monumental challenges in nation building. The national security is in jeopardy and its peace process is threatened. Insecurity comes in different colouration and magnitudes, some of which are highlighted and discussed below:

**Food scarcity:** the fact that most of our manpower in the rural areas is continuously drifting to the urban area in search of white collar jobs that often does not exist coupled with the aging farming population not being replaced by young farmers has led to less production of farm products with the consequent effect of higher prices. There is little or no commercial farming in Nigeria and there is increased curiosity over the crisis that is ravaging the food sector of the economy. One should not forget that a hungry man is an angry man.

**Ethnicity:** Ugadu (2015) posited that ethnicity is the first security risk in Nigeria. Ikime (2006) in support of this argument opined that it was the emergence of the colonial states which transformed the hitherto to autonomous political entities into component parts of a whole and that in the struggle to gain advantages within the colonial States, ethnic identification became more explicit. This has been aggravated by the failure of the state to perform its core duties of maintaining law

and order, justice, and providing social services to the people. The emergence of ethnic militia like Odua People's Congress (OPC), Bakasi Boys, Indigenous People of Biafra (IPOB) and different groups of Niger Delta Militants, are attributable to this.

**Religious intolerance:** the 1999 constitution of the Federal Republic of Nigeria section 38 (1) recognized Nigeria as a secular state but this is far from the reality. Arinze and Omenka (2012) chronicled the religious intolerance so far in the country to include the 1980 Maitasine Muslim riot in Kano, which killed about 4,177 persons, in 1981, another religious crises took place at Bulunkutu-Maiduguri with more than 400 people killed. The 1982 and 1984 Kano religious uprising which claimed the lives of about 2,113 and 400 people respectively. Another riot occurred in Kano in 1984 with about 700 lives lost. In 1986 former Head of State General Ibrahim Babangida, registered Nigeria as a member of the Organization of Islamic Conference (OIC). In the same year, Muslim fanatics attacked Christians who were on palm Sunday procession, wounded many people and burnt churches. In 1987, another conflict erupted in Kafanchan, spreading to Kaduna, Kano, Katsina, Zaria and Funtua, claiming thousands of lives and properties, In 2,000, Kaduna went into flames following the adoption of sharia law in the State more than 3,000 persons were killed. It should be noted that this has continued up till today and the above is by no means a comprehensive account of religious uprising and intolerance representing insecurity in Nigeria.

**Inter-communal conflicts:** a cursory look at the nook and crannies of the six geopolitical zones of the country depicts evidence of inter-communal conflicts that have threatened national security and economic development. There are recorded cases of Ogbunka/Owerri-Ezukala and Aguleri / Umuleri crises in Anambra State. In Enugu State we have the recurring Oruku/Umuode and Ikem/Neke uprising. Also in Ebonyi State the Ezza/ Ezilo crises remains a night-mare.

**Constitutional imbalance:** Ikime (2006) observed that this imbalance is a part of our colonial heritage, noting that in 1939, the British broke the southern Nigeria of 1914 into two-Western and Eastern Nigeria, having the North intact. He stressed that this conferred on the North a favoured status as reflected in the independence constitution in which out of a total of 312 seats in the Federal House of Representative, the North was given 174, East 73, West 62 and Lagos 3. This conferred on the North a clear majority and the North could form the government

at the federal level without seeking alliance with the South. The East and West were to become fierce competitors in national politics, a situation which the North exploits to a great advantage at crucial moments up till today.

**Unemployment:** Nigeria as a country is experiencing high rate of unemployment as secondary and university graduates stay for many year without getting any job related to what they studied in school. The National Bureau of Statistic (The Vanguard, 2016) recorded that the country's unemployment rate rose by 13.3 percent in the 2<sup>nd</sup> quarter, to 13.9 percent in the 3<sup>rd</sup> quarter of 2016. The report states that the number of the unemployed in the labour force increased by 555,311 persons, during the period under review. There is no gainsaying that the large scale unemployment among the youths is promoting the development of street youths which encourages criminal behavior.

**Kidnapping:** this has become a major security challenges as many have lost their lives in this process, while many expatriates have left the shores of the country, for fear of being caught or losing their lives. Victims of kidnapping ranges from expatriates, business moguls, bank executives, civil servants, students, etc. This often leaves the relations of the victim in perpetual agony and fear that can be better imagined than experienced.

**Electoral violence:** this includes acts of violence, perpetuated in the course of political activities including pre, during and post-election periods and may include thuggery, disruption of political meetings or voting or the use of dangerous weapons to intimidate voters or to cause bodily harm to any person, connected with the electoral process. Elections in Nigeria have been marked with violence from the general election of 1959 and 1964 which led to massive violence in western Nigeria, the 1983 Ondo State riot that followed the announcement of Akin Omoboriowo of the NPN as the winner, to that of 2007, and 2011 in the North.

**Bokoharam:** there is no doubt that the BokoHaram trend has mixed conceptions among the citizenry as to whether it is political or religious. Be it as it may, it's activities are evidenced in the bombing of police Headquarters at Abuja, police stations and schools at Maiduguri, churches at Suleja, Kaduna, etc, some newspaper publishing offices at Abuja, amongst others. Millions of people have been displaced from their homes while many who were not fortunate enough lost their lives.

**Fulani herdsmen:** this is another ugly trend that has reared its head and is rampaging virtually the whole states in Nigeria. There is no gainsaying that the

menace of the Fulani hardmen is multi-faceted. It is economic, religious and political. The attacks on Nimbo in Enugu State and Zaki Biam in Benue State are still fresh in our minds.

**Examination malpractice:** this trend is an ill wind that has engulfed the entire educational system from primary to tertiary level. Ihebereme (2013) observed that this menace has so internalized among pupils and students to the extent that they regard it as a normal process of passing examination. There is no gainsaying that this harmful evil foster corruption in the wider society as those who obtained their certificate through dubious means are likely to adopt the same way when employed in any establishment. In the other hand all those expelled for involvement in examination malpractice resort to armed robbery, drug trafficking, prostitution, political thuggery, etc.

### **Innovative education: a panacea for peace, security and economic development**

Innovative education connotes the introduction of new things, ideas or ways of doing somethings in our education system for better results. Garba (2010) has lamented that the current education system is deficient in providing the necessary impetus for economic development, since same problems keep escalating despite various efforts by the government. This is indicative of the fact that there is something fundamentally wrong in our ways of doing things and there is need for innovation to get it right.

Okeke in Orikpe (2013) used education to refer to the process by which individuals are assisted formally through proper direction and guidance to develop their capacities, for their own benefits and that of the state. If a nation bequeaths the right type of education there will be a positive change in the behavior patterns of the citizens. Orobosa in Orikpe (2013) opined that education is to a nation what the mind is to the body. A diseased mind is handicapped in the coordination and direction of the bodily activities, so also a faulty education system cannot create a well-informed citizenry with the appropriate attitudes, skills, abilities and competencies to appreciate and understand one another and contribute to the nation's economic growth. Also it is meaningless to conceptualize economic development in the absence of peace and security. In other words insecurity is a threat to the economic development of a nation in whatever dimensions it is viewed.

In view of the foregoing there is an urgent need for innovation in our educational system to suit the requirement of the present reality.

### **Recommendation**

The following recommendations are made

**Teacher capacity building:** there should be innovation in status and training of teachers who are to key operators in the education industry. It is agreed that no education system can rise above the quality of its teachers, and if it is so, a lot must be done about his professional training and development. There is need for adequate training and retraining of teachers through seminars, conferences, workshop and in service programmes.

Also there is need for innovation in the process of admitting of students in teachers training institutions. Kollawole in Ugwu (2017) observed that the system where any applicant, particularly, those who failed to meet the admission requirements in their first choice of course finally find solace in education, without the commitment of becoming teachers in future has to stop immediately. There is no gainsaying that this encourages brain drain in the system.

**Integration of information, communication, and technology (ICT):** innovation in our education system should involve the incorporation of ICT if it is to be qualitative and responsive to emerging global issues, as well as to the current national security and economic reform agenda. Etiesike (2015) opined that the digital age in which we live in is an era where several technological resources have permeated every aspect of human endeavour, especially education and are advancing the teaching learning process. She stressed further that in the education sector, these technologies have been found quite useful in the field of instructional delivery, student/staff assessment and audit research, administrative performances, and so on. Some of these innovative educational technologies are language laboratories, closed circuit television (CCTV), video cassette recorder (VCR), interactive whiteboard, internet and social networking media, mobile devices, etc.

**Entrepreneurship education:** innovation in our education system makes it imperative that entrepreneurship education should be incorporated to make it more functional, relevant, practical and comprehensive as to ensure the acquisition of

appropriate skills. Entrepreneurship has the capability of fostering economic growth, increasing productivity and creating new technologies, products and service. It develops in a learner the desired skills for self-reliance and easy adaptation to the world of work, thus producing not job seekers but job creators and employers of labour.

**Infrastructural development:** innovation in the education sector should be geared towards ensuring that schools are well equipped as to have the necessary facilities. The argument here is that institutions should be adequately equipped to deliver on their mandate or be closed down until they meet up with the minimum standard set for such institutions.

**Guidance and counselling:** innovation in education should be pursued bearing in mind that much talk about science and technology without directing the mindset of our youths towards skill acquisition will not translate into reality. This makes guidance and counselling imperative with emphasis on educational, vocational and personal-social counselling.

**Value re-orientation:** innovative education should address the negative value orientation of our youths. This can be achieved through the homes, churches, schools and mass media to make the youths imbibe the right attitude to work, right habit and determination to succeed in an honest way. It should also foster the sense of brotherhood among people of different caste, greed and sex. Nigeria is a multi-ethnic, multi-cultural state, and innovative education should make citizens appreciate socio-political and cultural achievements of other ethnic groups.

### **Conclusion:**

Effective education is imperative for the overall growth and development of individuals and Nigeria as a nation. Innovative education holds the key to peace, security and economic development of Nigeria as a nation. To ensure the inculcation of national consciousness and unity right attitude and values, acquisition of appropriate skills and competences necessary for self-reliance there is need to look beyond our current educational practices for better results. There is need for innovation in the areas of teacher capacity building, teacher recruitment and retention, integrations of ICT, guidance and counselling, etc., if our educational system is to address the various peace and security challenges in Nigeria and pave way for the much needed economic development.

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## INNOVATIVE METHODS OF TEACHING BASIC SCIENCE IN SECONDARY SCHOOLS

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### **Abstract**

*The teacher's method of teaching may promote or hinder knowledge based on the success or failure of the method. This paper advocates use of innovative methods to teach basic science in secondary schools. Theoretical background of the paper is the inquiry-based teaching which is the constructivist theory that advocates active participation of the students unlike the 'talk and chalk' method of teaching where learners are spoon-fed with information instead of discoveries for themselves. The conventional teaching methods were reviewed and compared with the innovative methods. Some of the innovative ways of teaching basic science in Secondary schools include; multimedia learning process, live specimen, field trips, role playing, and activity-based teaching. Advantages of innovative methods over traditional methods were highlighted. It is recommended that science teachers should adopt meaningful innovative strategies of teaching, capable of stimulating students' interest.*

**Keywords:** Innovative teaching, constructivism, conventional teaching.

### **Introduction**

Education is a light that shows mankind the right direction to surge. The purpose of education is not just making a student literate but encourages rationalized thinking, knowledgeability and self-sufficiency. Science education has been recognized worldwide as a pre-requisite in science and technological development. Science education encourages students to think and act as responsible scientists by providing opportunities for them to acquire and understand relevant concepts. (Ebeh, 2014).

In Nigeria, pupils start learning sciences in primary school as primary science. In the junior secondary schools, it is learnt as basic science, while

successful senior secondary students are allowed to study the separate science subjects namely; Biology, Chemistry and Physics (Ugwu, 2012). It is apparent that the teaching of basic science at this level is very crucial and requires good teaching methods by the teacher. Hence, the teachers' method of teaching may promote or hinder knowledge based on the success or failure of the method. Fafunwa (1983) discloses that poor methods of teaching science tend to defeat the objectives and kill innovation, relegate open mindedness, experimentation and individual ingenuity of the students. Ezenwa, (2002); and Etukudo, (2005), argue that science education is still poorly delivered both in primary and secondary schools.

The science teachers need to adopt teaching methods that can help engage students to understand the importance of science. In most schools in Nigeria, science teaching is often based on outdated models that are long known to be ineffective. Additionally, science teachers rarely employ innovative teaching approaches and as a result, many students never develop passion for science. These collectively contribute to low student's enrolment in sciences and the generation of poorly qualified teachers and scientists.

Curson, (2001) maintains that too many students and abstract theory is a valley of dry bones, but as soon as the theory is exemplified by use of some practicals, the dry bones put on flesh and blood and come to life. This problem indicates that educational system is too theoretical and not sufficiently related to our way of life.

One of the challenges any teacher faces is capturing the students' attention and putting across ideas in such a way that it stays with them long after they have left the classroom. For this to happen, classroom experience should be re-defined and innovative ideas that make teaching methods more effective should be implemented.

### **Concept of Innovative Teaching**

Innovation simply means new or development that brings about improvements. Innovation connotes a device, programme, method, process or production which can be utilized to bring about improved condition (Nnadi, 2017). Innovation can also be defined as a deliberate introduction of something new as a way of solving individual or group problems, or a way of accomplishing goals (Amidon, 1995).

Innovative teaching is a proactive approach to integrate new teaching strategies and methods into a classroom. The primary motive of innovative teaching is to encourage students to engage more in the learning process. In aiming for innovation in teaching, teaching strategies employed should be different from what has been formerly obtainable (Amidon, 1995).

Technology plays a key role in innovative teaching. Innovative teachers use new technology to enhance or expand upon the students' experience. The transition from traditional blackboard and overhead projector instruction into computer-aided presentations were all innovative techniques. The teacher plays a great role in innovative teaching as he serves as a guide or consultant as students participate. Therefore, innovative teaching involves creativity on the part of the teacher. A primary motive of innovative teaching is encouraging students to engage more in the learning process. When students interact with teachers and peers, they gain more practical experience and retain more information from a class.

According to Mkpa, (1987), the desire to innovate may be associated with a number of purposes such as;

- the need to cope with pressure from social change,
- the need to make use of research findings geared towards improved teaching and learning
- the need to explore opportunities with potentials for improved education,
- the need for education that is more relevant to the contemporary situation in the nation.

Innovative strategy like play way method stimulate the students and make them actively get involved in playing with scientific concepts and principles. It is a means of subjective and emotional development of a child, that is, development in terms of intellect, skills and feelings. Play way method is structured on activity-based learning. It encourages creative skills and self-expression. Girija and Neelam, (2015) outlined the uses of play-way method of teaching as follows; it

- makes learning easy and enjoyable;
- gives each child equal opportunities for full participation;
- develops not only knowledge but also skills;
- brings satisfaction at the cognitive level;
- gives the students better retention of knowledge;
- paves ways for self-discipline;
- provides more opportunities for learning;

- helps students to connect with their teachers easily; and
- facilitates holistic development (cognitive, linguistic, aesthetic, social, emotional, fine and gross motor skills).

### **Theoretical Background**

The theoretical basis of this study is the constructivist theory propounded by Jean Piaget (1896-1980). Constructivism encourages active learning by doing, and active participation of the learner. It stresses on developing the conceptual understanding and analytical abilities of the learner through doing authentic science-based guided inquiry and hand-on activities which enhances students' self-worth and confidence, and consequently improves their school-wide academic achievement.

Constructivism allows students to direct the great majority of their activities and engage in what Bereiter and Bird (1985) perceive as Collective knowledge building through inquiry. Inquiry-based teaching however requires highly structured instructional strategies as Cozzens, (1997) remarks, teachers who are knowledgeable about both scientific content and pedagogy. The theory suggests that humans construct knowledge and meaning from their experiences.

The constructivist theory is founded on the behavioural learning perspective where learning outcome is dependent on what a learner does in the course of learning. A major feature of this theory is that students take part in hands-on activities, that is, it is student-driven rather than teacher-driven

### **Review of Conventional Teaching Methods**

Teaching method comprises the principles and methods used for instruction to be implemented by teachers to achieve the desired learning by students. Oshodi (2005) sees teaching method as a combination of all human and materials resources by a teacher to promote affective teaching and learning. The success or failure of a lesson depends inter alia on a teacher's choice of method.

Traditional or conventional teaching method is the long-established customs of teaching that teachers prefer to use in their teaching. In the eyes of reformers, traditional teacher-centered methods focus on rote learning and memorization and must be abandoned in favour of students centered and task based approaches to learning. It is important to note that no single method is appropriate

to all subjects, but is the existing need that determines the method to embark on. Some of the conventional teaching methods used in teaching include,

- **Lecture method**

This is the traditional "chalk and talk" method of teaching, where the teacher is the sole repository of the knowledge which he passes onto the learner whose duty is to make the expected response after the lesson. Lecture method of teaching is discouraged in teaching secondary students especially at junior level, because it could be boring. In line with this, Onwukwe (2010) opined that oral presentations to large groups of passive students contribute very little to real learning.

#### **Advantages of Lecture Method**

Some of the advantages of lecture method of teaching as outlined by Bajah, (1993), include;

- It enhances listening skills in learners.
- It enables the teacher to present a vast amount of information in shorter time.
- It is very useful for teaching large class size.

#### **Disadvantages of Lecture Method**

- It does not allow for individual differences.
- It does not encourage learning by participation.
- It does not explore the potentials in children because it is not child centered.
- Students learn from memorization rather than by understanding.
- Teaching and learning are concentrated more on the theoretical method rather than practical (Bajah, 1983).

- **Discussion method**

This method of teaching involves learners pooling together their ideas, analyzing, interpreting and weighing such ideas on given issues before arriving on a conclusion. Daluba, (2013) explained that the method is often used in large classes by sectioning the class into small groups to complement the lecture method. Students participate more in this method than in lecture method.

### **Advantages of discussion method**

Some of the advantages of discussion method as outlined by Daluba, (2013), include;

- It affords students to display their talents.
- It helps in sharpening critical and quantitative thinking skills.
- It motivates students to prepare for a class in which they are expected to participate actively in.
- It helps students to express themselves.

### **Disadvantages**

- It is time consuming.
- Some students may not function effectively in the class due to shyness.
- The teacher needs to be a good facilitator (Daluba, 2013).

- **Demonstration method**

Demonstration is a method of teaching that demands the learner to see, pay attention and follow laid down procedures or steps. Mundi, (2006) describes it as a display or an exhibition usually done by the teacher while the students watch with keen interest. It is effective for illustrating concepts in class but can result in passive learning if careful attention to engage students is not taken.

### **Advantages of Demonstration method**

Some of the advantages of demonstration method as outlined by Mundi (2006) include;

- It makes for immediate feedback to the learner.
- It gives a real-life situation of course of study as students acquire skills in real-life situations using tools and materials.
- It helps to motivate students when carried out by skilled teachers.

### **Disadvantages of demonstration method**

- It is not suitable for a large classroom as some students may not be able to see the demonstration.
- Sometimes the teacher may be fast and some students may not follow-up with teacher's demonstration.

### **Some Innovative ways of Teaching Basic Science in Secondary Schools**

Some innovative ways of teaching basic science in Secondary schools include; multimedia learning process, live specimen, field trips, role playing, and activity-based teaching on science principles.

#### **I. Multimedia learning process**

Multimedia learning process is the type of learning that involves combination of various digital media types such as text, images, audio and video, into an integrated multi-sensory interactive application or presentation to convey information to an audience (Wideman, 2003). These digital media are the improved technological advances created to ease the fear of the students and the possible misconceptions they may have about science before entering the classroom. This innovative strategy also helps students to comprehend and retain more information as they make use of game and simulations. The teacher uses multimedia to modify the contents of the materials using different media elements. These media elements can be converted into digital form, modified and customized for the final presentation.

The basic difference between the use of multimedia method and the traditional method of teaching is that in the traditional strategy, the teacher is the only center of attention, while multimedia method offers an interactive learning process that can effectively retain student's attention. Some of the multimedia tools include;

- a. Movie-based multimedia tools using window movie maker:** This can be used in teaching of life science through making movies of important life by engaging students to find out already produced movies of relevant topics from the internet and present in the class. In doing this, students are meant to study science with ease. Wideman (2003), reported that teachers using this method reported a high level of professional and personal satisfaction derived from teaching in what they found to be a more meaningful and effective manner.
- b. Visual aids:** Preventing boredom associated with textbook and blackboard learning can be accomplished through creative visual aids to enhance learning and spark curiosity. Short films, animations infographics, are good learning tools. Visual laboratories allow students to connect scientific experiments to situations in the real world. It allows students to experience hundreds of different laboratories and do not limit the student to the few physical laboratories they would experience otherwise (Gluck, Dilihunt, and Gilmore,



2014). Science students can also learn by visiting the websites like chem Teacher, Bio Teacher, digital library and gain information than textbooks.

- c. **Live specimen:** Laboratory or live specimen of insects and small animals bring a biology class to life and provide hand-on education. Adequate time should be allotted to demonstrate as many scientific experiments as possible and provide real examples for science lessons.
- d. **Microsoft PowerPoint,** which is slide-based and can be prepared with many of the popular multimedia elements like graphs, sound and video. This is useful in teaching of the numerate science as it can present graphs and charts in colorful picture that will catch students' attention. By using computer and computer based programs, we can meet the demanding needs of diverse learners in the classroom.

## **II. Role playing and Scenario based teaching**

Role-plays are activities designed to allow the participants (students) assume characters that help them perform certain roles in an imaginary social set up (Onwukwe, 2010). The role playing approach will help the students understand how the academic materials will be relevant to his everyday tasks. It also allows students to voice his opinion and ensures that a clear and educative conclusion is reached. Onwukwe, (2010) conducted a research on combined effects of play-simulations and teaching with analogy on secondary school students' achievement in chemistry, and discloses that students taught using play-simulation and teaching with analogy achieved significantly higher than those in control groups. Role-playing therefore, helps students to transform information into experience.

## **III. Activity-Based Teaching**

This is the practical based study of the theories in the subject (Shankar and Chaudhary, 2015). Activity based can be done using resources such as indoor laboratory or field laboratory. Indoor laboratory can be set up in schools with very minimal resources especially for the life sciences. Examples of such resources are small sized aquariums, different collection of samples of animals like toad, fish, insects, lizards and others. Field laboratory can be in form of field experiments like ecological studies of animals in their habitats, and weather monitoring. Another form of field experiment is the field trip. Some lessons are best learnt when they are taught outside the classroom. The science teacher can organize field trips that

are relevant to the lesson either by visiting a factory, zoo, fish pond or just a walk outside the classroom.

### **Advantages of Innovative methods over traditional methods**

- a. They increase the critical thinking of the students and help them to draw their own conclusion.
- b. They motivate the students to learn.
- c. Good for students with low attention span as they effectively retain students' attention.
- d. They create long lasting memory and correlation of concepts.
- e. Enables students to see the practical applications of the concepts they have been taught.
- f. They are more student-centered than traditional methods as the students do most of the work while the teacher more or less supervises.
- g. There is organization of work and allow students to bring out their creative ability.

### **Disadvantages**

- a. Innovative methods can be time consuming to set up and execute.
- b. Multimedia using ICT introduces new modalities of students' work and presentation that are increasingly difficult to assess.
- c. The method is very expensive to implement as resources are needed for these method to be effective unlike in the traditional methods.
- d. Students may be carried away or lose focus in this method especially in play or on activity based teaching.

### **Problems Associated with the use of Innovative methods to Teach Basic Science in Secondary Schools.**

There are some challenges facing the use of innovative methods to teach basic science in secondary schools. Some of the instructional technology used for learning may neither be adequate nor available, example, resources like films, slide, tape, television and many others. Omwenga, (2001), observes that while many teachers complain about lack of instructional resources, they are guilty of not using what is available. Many of the instructional resources used in innovative teaching do not have personnel to cope with the use. Meanwhile, Omwenga, (2001),

enumerates some of the problems associated with the use of innovative methods as follows:

- Scarcity of instructional facilities in the school;
- Lack of trained personnel to handle those facilities;
- Lack of sufficient knowledge on the use of innovative strategies;
- Using, adapting, and designing technology-enhanced curricula to meet students needs;
- Expanding content knowledge; and
- Responding to individual students.

### **Conclusion**

To provide open access to science and encourage a broader spectrum of students to pursue studies in sciences, teachers and instructors must begin to address the diversity of learning styles among the students in our classroom (Allen and Tanner, 2004). These mentioned teaching strategies have both advantages and disadvantages, indicating that none is a perfect method. It is important to note that basic science is activity-oriented subject and need active participation of the students. Traditional methods do not allow for active participation of students, thus there is need for innovative methods.

To get the student interested in science, the science teachers should make the teaching a fun not force. Therefore, teaching of basic science in secondary school should not be by force or harshness. Students should be directed by what amuses their minds so that the teacher could be able to discover with accuracy the peculiar bent of the genius of each.

### **Recommendation**

To ensure the implementation of these innovative methods in teaching basic science, it is necessary that;

- Government should provide the necessary facilities and resources needed for implementation of these methods.
- The school management through the government should provide enabling environment for the maximum functioning of the teacher.
- Curriculum designers should integrate some of these innovate strategies like field trip into the basic science syllabus.

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**INFLUENCE OF INFORMATION COMMUNICATION  
TECHNOLOGY (ICT) AS INSTRUCTIONAL TOOL IN TEACHING  
AND LEARNING SECONDARY SCHOOL BIOLOGY IN ENUGU  
SOUTH L.G.A ENUGU STATE, NIGERIA**

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**Abstract**

*This study investigated the influence of ICT as instructional tool in teaching and learning secondary school biology in Enugu South LGA, Enugu State, Nigeria. It employed descriptive survey research design. Three research questions formulated and three null hypotheses, which were tested at 0.05 level of significance guided the study. This study was carried out in Enugu South LGA of Enugu State, Nigeria. One hundred and fifty students were drawn from eleven government owned secondary schools which constituted of co-educational and single sex schools, with population of 1436 SS2 students, using purposive and simple random sampling technique. Instrument for data collection is Instructional Tools in Teaching and Learning Biology Questionnaire (ITLB). The internal consistency of the instrument was determined to be .814 using the Cronbach Alpha Model. Data collected were analyzed using mean and standard deviation for the research questions and t-test for testing the null hypothesis at 0.05 level of significance. The result revealed positive and significant influence on teaching and learning Biology using ICT tools on the students performance. The researchers therefore recommended that Government should provide computer laboratories with internet provider in all schools and that serving teachers of Biology should be given in-service training through seminars and workshops to expose them to the use of ICT as part and parcel of instructional technology.*

**Keywords:** ICT, Instructional technology, Teaching and learning, Biology and Secondary schools.

## **Introduction**

The National Grid for learning, United Kingdom government initiative indicated that teachers must move swiftly to more internets and web based work in schools. According to Busari (2006), the whole world is experiencing the advancement of science and technology. The use of ICT is fast gaining prominence and becoming one of the most important elements defining the basic competencies of the students. According to World Bank, ICT consists of the hardware, software, networks and media for the collection storage, processing, transmission and presentation of information. The use of ICT falls into four (4) major categories: constructing knowledge and problem solving (through the internet-mail, CD – ROMS, databases, videoconferencing); using process skills; aiding explanation of concepts; and communicating ideas -power point, desktop publishing (WAEC, 2012). The use of ICT in teaching and learning is a relevant, innovative and functional way of providing education to learners that will assist in imbining in them the required capacity for reverting the economic recession that has bedeviled the country Nigeria. ICTs have the potential to accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices (Abomi, 2010). The advent of ICT in this 21<sup>st</sup> century has undoubtedly affected the education industry positively especially in science education. Biology as a very important aspect of science has suffered serious setback due to its dynamic nature. The traditional content is being replaced by modern discoveries in cell biology, genetic engineering, biotechnology, etc. (Tella, 2011). Biology teaching and learning can only lead to greater achievement when the students and teachers are exposed to ICT and its application in science education. Meanwhile the achievement of biology students in the subject has remained poor for decades (WAEC chief Examiners Report, 2005).

According to Osuafor (2013), one of the factors that has been identified as influencing outcomes in biology is poor strategy of instruction. It is therefore pertinent that ICT as teaching tools should be applied in teaching and learning biology. Biology teaching can be result oriented when students are ready and teachers disposed to the use of appropriate resources. Despite the importance placed on biology by the society and innovations to improve teaching and learning, the student's achievement in WASSCE and NECO SSCE biology remains a mirage. The researchers are therefore looking at a possibility of ICT application to teaching

and learning biology for this alarming situation to improve so as to make teaching and learning biology more effective and attractive. For the biology teachers to use ICT tools as instructional materials, they must be ICT compliance; be competent in handling the gadgets; be able to prepare the environment where the tools will be used and make sure that the tools will attract the attention of the students, arouse, motivate and provide the rationale for the utilization. Most experts in the field of education agreed that when properly used, information and communication technology ICT hold great promise to improve teaching in addition to shaping work force opportunities. Poole (2006) indicated that computer illiteracy is now regarded as the new illiteracy. This has actually gingered a new and strong desire to equip institutions with computer facilities and qualified personnel necessary to produce technological proficient and efficient students in Nigeria. Asinde (2010) opined that ICT positively affects students academic achievement and retention. Hence there is no doubt that ICT tools can aid the instructional process and facilitate students learning. This is buttressed by the studies by Burnett, (2014) and Fitzgerald and Warner (2006) which found positive effect associated with technology aided instruction. The Federal Government of Nigeria realized the role of ICT in National development consequently, it has but in place a policy document - titled the National Policy for Information Technology, 2001. The policy clearly spelt out the ICT vision, mission and policies for Nigeria. The FRN (2004) acknowledged the importance of using ICT in improving knowledge and thus states in the National Policy that government shall provide necessary infrastructure and training for the integration of ICT in advancing knowledge and skill in the modern world (FRN, 2013). It is therefore assumed that if government policy has been implemented; teachers in our schools system must have acquired ICT skills which will help them for effective instructional delivery as well as facilitating teaching and learning. No wonder Iwiyi (2007) pointed out that computer acquisition and use is an important aspect of the teaching and learning process. If a teacher is to function effectively, and meet the challenges of the 21<sup>st</sup> century and global competitiveness, the teacher education process must make adequate provision of individualized computer training for the would be biology teachers, for a better output.

Education policy documents in many countries have placed emphasis on promoting the use of ICT in teaching and learning after in conjunction with curriculum reform initiative that aim to enhance the development of 21<sup>st</sup> century skills such as collaborative inquiry and collaboration (Law, Lee, Chan and Vuen, 2010). It is on



this premise that the researchers want to ascertain how effective is the application of ICT as instructional tool in teaching and learning as well as students achievement in Biology in Enugu South LGA, Enugu State.

### **Purpose of the study**

The study seeks to determine the influence of ICT as instructional tool in teaching and learning secondary school biology in Enugu South LGA of Enugu State, Nigeria. Specifically the study is to:

1. Find out the level of availability of ICT infrastructure in the secondary schools in Enugu South LGA
2. Find out the extent to which the students have acquired ICT skill
3. Find out the extent to which teachers use ICT as instructional tools while teaching biology
4. Find out the influence of use of ICT tools in teaching and learning biology on the student's academic achievement.

### **Scope of the study**

The research is carried out in Enugu South Local Government Area of Enugu State, Nigeria. The study is delimited to the effect of ICT in teaching and learning of SS Biology.

### **Research Questions**

The following research questions guided the study:-

1. What is the level of availability of ICT infrastructure in secondary schools in Enugu South LGA of Enugu State?
2. To what extent have the students acquired ICT skills?
3. To what extent have the teachers use ICT tools while teaching biology
4. What effect does use of ICT tools in teaching and learning secondary school biology have on the academic achievement of the students?

### **Hypothesis**

The null hypothesis tested at 0.05 level of significance guided the study:

1. There is no significance difference on the achievement of the students with ICT skills and those without.

## Research Method

The study employed survey research design. The study was conducted in Enugu South LGA of Enugu State. This area was chosen because it houses both rural and urban schools as well as co-educational and single sex schools. Simple random and purposive sampling was used to select students from SS2 students. The choice of SS 2 students being that they are supposed to have experienced biology teaching and learning with and without ICT as instructional tools. A total of 150 SS2 students out of a population of 1436 were used for the study. The instrument for data collection is questionnaire (ITLB). This instrument was subjected to face and content validation by experts in Science Education and measurement and Evaluation.

The reliability of the instrument ITLB was determined using Cronbach Alpha Model. A reliability coefficient of 0.84 was obtained. The data obtained were analyzed using means and standard deviation for the research questions and t-test for testing the null hypothesis.

## Results:

- Research question 1:** What is the level of availability of ICT infrastructure in the secondary schools in Enugu South LGA?

Table 1 shows the mean and standard deviation of responses on the level of availability of ICT.

S/N	ICT Resources in School	$\bar{x}$	SD	Decision
1.	Computer sets are available in my school	2.30	0.74	Rarely available
2.	Internet system is available	1.80	0.71	Not available
3.	CD ROMS, flash drives, diskette, digital camera, printer, scanner, project DVD player are provided in my school	2.21	1.08	Rarely available
4.	Televisions and radios are available in my school	2.80	0.98	Available

From the above table the items 1, 2, and 3 have mean rating scores between 1.80 – 2.30 which is below 2.5, the criterion weighted score for available ICT resources. This indicates that modern ICT infrastructure are of very low availability in the schools except item4 which has a mean score > 2.50.

**Research Question 2:** To what extent have the students acquired ICT skills? Deviation of responses on the extent of ICT skill acquisition.

S/N	Skills acquisition	$\bar{x}$	SD	Decision
5.	I can use the internet system of ICT	1.60	0.77	Very low
6.	I can use flash drive, CD ROM and diskette of ICT	1.80	0.71	Very low
7.	I can use computer testing, data processing analysis, data storage and run programmes on the computer	1.57	0.77	Very low
8.	I can use television and radios	2.97	0.92	Available

Table 2 items 5, 6, and 7 have mean and S.D rating scores between 1.57 – 1.80 ..... Which is below 2.5, the criterion weighted mean score for ICT skill acquisition by students. This indicates that students find it difficult to utilize the few available ICT infrastructures in the school for learning evidenced by their mean scores < 2.50 in all items except television and radio with means score > 2.50.

**Research questions 3:** To what extent have the teachers use ICT tools while teaching biology?

Table 3 shows the mean and standard deviation of responses on the extent of use of ICT tools by biology teachers

S/N	ICT Usage	$\bar{x}$	SD	Decision
9.	Biology teacher make use of internet and computer in teaching some topics	1.70	0.88	Very low
10.	Biology teachers come to class with laptops	1.85	0.72	Very low
11.	Biology teachers use projectors and power point while teaching	1.25	0.32	Very low
12.	Biology teacher gives use projects and assignments through the e-mail	1.20	0.30	Very low

Table 3 items 9 – 12 have mean and standard deviation between 1.25 – 1.85 which is below the criterion mean of 2.50. This indicates that biology teachers rarely make us of ICT tools in teaching biology.

**Research questions 4:** What effect/influence does use of ICT tools in teaching and learning secondary school Biology have on the academic achievement of the students?

Table 4: shows the mean and standard deviation scores of responses on effect of teaching biology with ICT tools on students achievements

S/N	Effect of ICT Usage	Mean $\bar{x}$	SD	Decision
13.	ICT appeals to different senses of the body thereby taking care of individual differences in learning	3.12	0.81	Very high
14.	It exposes the biology student to varied and multi-sources of information	3.10	0.83	Very high
15.	It helps every student to learn at his own place	3.03	0.93	Very high
16.	It breaks the high dependence on teachers as the major source of knowledge	3.22	0.80	Very high
		<u>3.1175</u>	<u>0.8425</u>	

Table 4 items 13 – 16 all have mean and standard deviation of 3.03 – 3.22 > than 2.50 criterion mean. This indicates that teacher's use of ICT tools in teaching biology has a very high positive effect on the academic achievements of the students.

Null Hypothesis

Ho<sub>1</sub>: There is no significant difference on the achievement of the students with ICT skills and those without.

Table 5 shows table of t-test

Variable	$\bar{x}$	n	df	S	P value	t- cal	tc	Decision
Values	3	160	159	0.84	0.05	9.277	1.960	Reject Ho <sub>1</sub>

**Decision Rule:** Reject Ho if and only if  $t_{cal} > t_{cv}$  at  $\alpha$  – level of 0.05. Otherwise accept.

Since  $t_{cal} = 9.27 > t_{cv} = 1.960$  we reject the null hypothesis. This indicates that there is significant difference between the mean achievement score of students with ICT skills and those without the ICT skills.

**Discussion:**

The major focus of this study is to find out the effect of Information Communication Technology ICT as instruction tool in teaching and learning secondary school biology in Enugu South LGA of Enugu state, Nigeria. The findings of the study revealed that the level of availability of ICT facilities in secondary schools in Enugu South LGA is very low. This is in line with the finding of Adomi (2010) who discovered that unavailability of ICT components in schools hampers teachers use of the facilities in teaching students. Also Every, Emmanuel, Joseph, Dennis and Asinde (2010) in Arinze, Okonkwo, Iwuno (2012) noted that there is lack or inadequate ICT infrastructure in many secondary schools and then called for improvement.

The level of acquisition of ICT skills by the students showed low level, evidenced by the low mean score except radio and television. This is in line with the finding by Adomi (2012) who attributed the inadequate ICT manpower in schools as a factor which causes low level of ICT skill acquisition by secondary school student. He pointed out that the students can acquire competent ICT skills when the teachers are well grounded to teach them how to use it. Most of the students can actually use television and radio because they are largely available in the homes.

Result from table 3 revealed that biology teachers do not use any educational compact discs during biology lessons. This may be attributed to the fact that schools are poorly equipped with ICT and biology teacher because of ignorance and fear of using ICT, find it difficult to use ICT tools during biology lesson. One cannot give what he does not have. This is in line with the finding of Kola, 2013 who said that majority of Science Teachers are not computer literate and have remained in that condition for long time without seminar, conferences, workshop and refresher course in computer. The result from table 5 revealed that there is positive significant difference between the mean achievement score of students with ICT skills and those without ICT skills. The finding also revealed that the use of ICT tools in teaching and learning secondary school biology improves their academic performance of the student as all the items have a mean score above 2.50. Uacademic performance of the student. It also lent credence to Tella, 2011 who said that ICT has provided opportunity for the learner to use maximum senses to get the information.

### **Conclusion**

The giant stride in the advancement in Information and Communication Technology (ICT) in the 21<sup>st</sup> century is a welcome development. Its application in almost all facets of life especially in education cannot be overemphasized as it has opened up a wide range of limitless knowledge for both the young and the old. It has broken barriers to access to information both locally and globally. For this reason, it bothers on the education sector especially the government owned schools to put in place the necessary ICT infrastructure in schools. It also poses a great challenge to both biology teachers and students to acquire the necessary ICT competence and skills. It is believed that this will bring about much improvement in the academic achievement of biology students, bring a reflexive change in their salve study and learner centered system of education.

### **Recommendations**

Based on the findings of the study the researchers recommended that the government should procure the necessary ICT infrastructure for the schools according to National Policy on Education standard. This will enable the students and teachers benefit maximally in the ongoing technological development and ICT contribution to educational advancement.

Biology teachers should be motivated to develop and use multimedia computers and software relevant to teaching and learning. This can be achieved through provision of soft loan for acquiring personal computer or supply by the government at subsidized rate. The government in conjunction with departments of computer education in universities should embark on mass computer literacy programme especially for biology and other science teachers at all levels. This should be accomplished through in-service training, workshops conferences and seminars so as to harness the benefits of ICT in Science education. Finally government schools should be provided with digital libraries to enhance learning through ICT.

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**AVAILABILITY AND UTILIZATION OF INFORMATION AND  
COMMUNICATION TECHNOLOGY (ICT) RESOURCES FOR  
SCIENCE INSTRUCTION IN SECONDARY SCHOOLS IN DEKINA  
LOCAL GOVERNMENT AREA, KOGI STATE.**

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**Abstract**

*The study surveyed the availability and utilization of ICT resources for science instruction in secondary schools in Kogi East Educational Zone, Kogi state, Nigeria. Six research questions guided the study. Survey research design was adopted for the study and a 59 – item researcher - made questionnaire, with reliability index of 0.71 was validated and used as instrument for data collection. A total of 15 teachers and 150 students in fifteen schools randomly drawn from a population of 3,285 in 54 secondary schools in Dekina local government area of Kogi state participated in the study. Data was analysed using frequency counts, simple percentage, mean and standard deviation. The findings revealed that most of the ICT resources identified were not available in the schools and those available are not utilized by teachers for instructional purposes. Identified factors that constrain the provision and utilization of ICT resources include lack of funds for the procurement of the resources and lack of skills by teachers for their utilization, among others. Measures to facilitate the provision and utilization of ICT resources which include donation of ICT resources by old students of schools and training and re-training of teachers on the utilization of the resources for instruction in schools were identified. Recommendations were made, such as that government should make the teaching of ICT a compulsory part of the secondary education curriculum, equip schools with basic ICT resources and infrastructure so as to provide students and teachers with and practical and functional knowledge of ICT, without which functioning in a knowledge -- driven economy and competing favorably with their peers globally shall be a mirage.*

**Keywords:** Information and Communication Technology, Globalization, Competitiveness, Availability, Utilization.

## **Introduction**

Science instruction is the process of transferring scientific knowledge, skills and attitude through teaching. It can occur in formal and informal settings. The outcome of such teaching transforms not only the individual recipient, but by extension, his society. Science is intricately linked with a nation's development because through science, man has been able to understand his environment, thus, enabling him to manipulate the conditions of his environment to his benefit. There are many branches of science; of which Biology, Chemistry and Physics are prominent in secondary education. The quality of science education received by an individual to a large extent determines the level of impact made by that individual on the society. The quality of science education received is also predicated on the instructional techniques and materials utilized in the instructional delivery process.

The goal of secondary education as enshrined in the National Policy on Education is to provide well trained manpower in applied science, technology and commerce and the sub- professional grades (FRN, 2014). The attainment of this goal can only be engendered by the deployment and use of appropriate men and material resources and techniques. The secondary education that would prepare youths for global competitiveness in the 21<sup>st</sup> century knowledge - based society must be one that is done using innovative techniques and materials. Things must be done differently from what they used to be, to make education not only qualitative, but also, relevant. Relevance here is about giving learners an education that is suitable for the contemporary era.

Input of adequate material resources is undoubtedly one of the indices of quality education. (UNICEF, 2000). Prior to the 21<sup>st</sup> century, teaching and learning was facilitated using technologies which Mangal & Mangal (2013) referred to as 'older educational technologies' The older educational technologies included audio- visuals such as television, audio technologies like audio-taped instructions and graphic visuals, such as posters, maps, pictures,, charts, among others. The dynamism of education continues to open up windows for innovations in terms of teaching technologies and materials in a bid to finding solutions to the myriads of challenges of the 21<sup>st</sup> century which include quality, quantity and relevance of education received, as well as access to education, through the use of modern and newer digital technologies. The contemporary era is characterized by Orders, which are highly entrenched standards and systems of doing things as defined by the international community (Nwokeocha, 2013). Going by the definition of Orders,

the contemporary world standard of educating learners involves the use of information and communication technology resources. Every locality is linked to distant ones by this feature, resulting in globalization. Though globalization, there is an intensification of the world wide social relations which link distant localities in such a way that local happenings are shaped by events happening miles away (Held, 1991). Globalization also gives rise to competitiveness among the nations of the world. There therefore exists the dire need for science education in secondary schools in Nigeria to be made to play by the rules of the game by the integration of Information and Communication Technology (ICT) resources in its teaching, since ICT is the force that drives education globally in the 21<sup>st</sup> century.

Information and communication technology (ICT) resources in education are instructional delivery tools used to explore, investigate, solve problems, interact, reflect reason and learn concepts in the classroom. They are intermediate or mediating resources used in instruction so as to make learning objectives clearer and teaching easier. Integrating these resources in education permits alternative types of educational patterns for facilitating the teaching and learning process (Umoren, 2003), strengthens the relevance of education to the increasingly digital workplace and raises quality by making and converting the teaching and learning process into an engaging, active process connected to real life (Lathwal & Deswal, 2015). These resources according to Aduwa and Imogie (2005) include computers, projectors, internet, satellite, modem, printer, compact-disc plate, flash disk and many more. These different resources are able to work together to form a networked world which reaches every corner of the globe and are the tools for the post industrial age and foundation of the knowledge economy.

Olorundare (2001) listed some potential benefits if utilizing ICTs in instruction by teachers to include;

- It accelerates and deepens students' basic skills, in school subjects especially reading, mathematics and the sciences;
- It challenges students to learn, be independent and hence be responsible;
- Helps update students' academic knowledge and instructional practices;
- Prepares the individual learner to economically survive and become productive in tomorrow's world of work which depends on ICT;
- Teachers are provided with effective and efficient tools to take care of students' individual differences;

- There are opportunities for close cooperation with colleagues in some or other fields and unrestricted access of teacher and students to relevant information and development in subject areas.

Availability of ICT resources is the extent to which ICT resources are provided and available for use in schools. Utilization of ICTs is the process by which teachers make use of ICT resources in the course of teaching.

Advocating the need for the availability and utilization of ICT resources in Nigerian schools, the Honourable Minister for Education of the Federal Republic of Nigeria, Professor Adamu Adamu identified ICT as critical for global competitiveness. Speaking in Abuja on the 1<sup>st</sup> of March, 2017, at the 3<sup>rd</sup> Biennial conference of the committee of Pro chancellors of Nigerian universities, the minister noted that “deployment and use of ICT resources in education is essential for accessing the vast information, knowledge, network and resources available for improved teaching, learning administration and innovation”. He added that ‘with the present drive for global comparability and harmonization of education, ICT deployment is a must in educational institutions in Nigeria’. The intention here according to the minister is to ‘gradually migrate from the traditional to the smart classrooms that are digitalized, to facilitate teaching and learning in a creative manner’.

It is based on the foregoing, that is, the call for the deployment and use of ICT in educational institutions in Nigeria, that this study assessed the availability and utilization of ICT resources for science instruction in secondary schools in Dekina Local Government Area, Kogi state.

### **Purpose of the study**

The study investigated the availability and extent of utilization of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area of Kogi state. Specifically, the study:

1. identified the ICT resources available for science instruction in senior secondary schools in Dekina Local Government Area
2. identified the extent to which the available ICT resources are utilized for science instruction.
3. identified the factors constraining the provision of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area

4. identified the factors constraining the utilization of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area
5. identified measures for improving the provision of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area
6. identified measures for improving the utilization of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area

### **Research questions**

The study sought answers to the following questions:

1. What ICT resources are available for science instruction in senior secondary schools in Dekina Local Government Area?
2. To what extent do teachers utilize the available ICT resources available for science instruction in senior secondary schools in Dekina Local Government Area?
3. What factors constrain the provision of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area?
4. What factors constrain the utilization of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area?
5. What measures could be employed to improve the provision of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area?
6. What measures could be employed to improve the utilization of ICT resources for science instruction in senior secondary schools in Dekina Local Government Area?

### **Methodology**

The study adopted the descriptive survey design. The study was carried out in Dekina local government area, Kogi state, North Central, Nigeria. The sample of the study comprised 165 individuals (15 teachers and 150 students) randomly drawn from a population of 3, 285. The instrument for data collection was a questionnaire titled 'Availability and Utilization of Information and Communication Technology Resources for Science Instruction Questionnaire' (AUICTRSIQ). The AUICTRSIQ contain six clusters, each containing items which sought information aimed at providing answers to the research questions posed in the study. Cluster 1

is a checklist used to identify the various information and communication technology resources available for science instruction. For cluster 2, 3, 4, 5 and 6, a 4-point response option was utilized in eliciting the information required.

The AUICTRSIQ was validated by experts in instructional technology and Science Education. Using Cronbach Alpha, a reliability coefficient of 0.71 was obtained. Data collected were analyzed using frequency, percentage and mean. Research question 1 was answered using frequency and percentages of respondents that accented to the availability or unavailability of each of the identified information and communication technology resources. Mean was used to answer research question 2, 3, 4, 5 and 6. For research question 1, any item for which the percentage of respondents is below 50% was regarded as not available while an item with percentage of respondents above 50% was regarded as available. For research question 2 - 6, four- point response options of Strongly Agree/ Highly Utilized (3.50 – 4.49), Agree/ Fairly Utilized (2.50 – 3.49), Disagree/ Under Utilized (1.50 – 2.49) and Strongly Disagree/Not Utilized (0.00 – 1.49) was used in rating the responses to the questionnaire items. Any item with mean value of 0.00 – 2.49 was regarded as Disagree/ Not Utilized while any item with a mean response of 2.50 and above was regarded as Agree/ Utilized.

## **Results**

### **Research Question 1**

What Information and Communication Technology (ICT) resources are available for science instruction in senior secondary schools in Dekina Local Government Area of Kogi state?

**Table 1:** Frequency and Percentage of Teachers and Students Responses on Availability of Information and Communication Technology (ICT) Resources for Science Instruction

S/n	Item	Available		Not Available	
		Frequency	%	Frequency	%
1	Desktop Computer	149	90.3	16	9.7
2	Printer	111	67.3	54	32.7
3	Television	75	45.5	90	54.5
4	Web camera	24	14.5	141	85.5
5	Scanner	26	15.8	139	84.2
6	Digitizer	18	10.9	147	89.1
7	Cell phone	65	39.4	100	60.6
8	Electronic white board	19	11.5	146	88.5
9	Electronic bulletin board	19	11.5	146	88.5
10	Laptop computer	38	23.0	127	77.0
11	Projector	26	15.8	130	84.2
12	Internet	46	27.9	119	72.1
13	Filmstrips	25	15.2	140	84.8
14	CD player	37	22.4	128	77.6
15	CD plates	69	41.8	96	58.2
16	Audio player	77	46.7	88	53.3
17	Microscope	103	62.4	62	37.6
18	Flash disc	53	32.1	112	67.9

Data in table 1 shows that out of the 18 identified ICT resources for biology instruction, only items 1,2 and 17 (Desktop computer, printer and microscope) with percentage availability of 90.3%, 67.3% and 62.4% respectively were found to be available in the schools for science instruction. This is because they attained the percentage rating of acceptability, where the items are found to reach the bench mark of 50%. This result therefore showed that television, web camera, scanner,

digitizer, cell phone, electronic white board, laptop computer, projector, filmstrips internet, CD player, CD plates and audio player are unavailable in the schools.

### Research Question 2

To what extent do teachers utilize the available Information and Communication Technology resources for science instruction?

**Table 2: Mean Ratings of Responses on the Extent to which Teachers Utilize the Available ICT Resources for Science Instruction in Secondary Schools in Dekina Local Government Area?**

S/n	Item	Mean	Standard Deviation	Decision
1.	Desktop computer	2.93	1.01	Utilized
2.	Printer	2.50	1.14	Utilized
3.	Television	1.33	1.06	Not Utilized
4.	Web camera	1.33	.69	Not Utilized
5.	Image scanner	1.33	.68	Not Utilized
6.	Digitizer	1.31	.68	Not Utilized
7.	Cell phone	1.30	1.18	Not Utilized
8.	Electronic white board	1.22	.63	Not Utilized
9.	Electronic bulletin board	1.15	.48	Not Utilized
10.	Laptop computer	1.33	.74	Not Utilized
11.	Projector	1.41	.79	Not Utilized
12.	Internet	1.75	1.10	Not Utilized
13.	Filmstrips	1.28	.61	Not Utilized
14.	CD player	1.26	1.08	Not Utilized
15.	CD plates	1.18	.91	Not Utilized
16.	Audio player	1.21	.87	Not Utilized
17.	Microscope	2.27	1.16	Not Utilized
18.	Flash disc	1.32	1.08	Not Utilized



The result showed that out of the 18 items identified, only item 1 and 2 with mean score of 2.93 and 2.50 respectively are utilized while item 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 with mean value of 1.33, 1.33, 1.33, 1.31, 1.30, 1.22, 1.15, 1.33 1.41, 1.75, 1.28, 1.26, 1.18, 1.21, 2.27 and 1.32 respectively are not utilized by teachers for biology instruction.

### **Research question 3**

What factors constrain the provision of ICT resources for science instruction in schools in Dekina Local Government Area?

**Table 3: Mean Ratings of Responses on the Factors that Constrain the Provision of ICT Resources in Secondary Schools in Dekina Local Government Area?**

<b>S/n</b>	<b>Item</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Decision</b>
1.	High cost of ICT resources	3.42	.83	Agree
2.	Weak and inadequate ICT infrastructure	3.23	.74	Agree
3.	Negligence of schools by government	2.79	.91	Agree
4.	Poor ICT policy implementation strategy	3.14	1.09	Agree
5.	Lack of funds for procurement of the needed ICT resources	3.17	.99	Agree
6.	High cost of internet services	2.94	1.11	Agree

Result presented in table 3 revealed that high cost of ICT resources, weak and inadequate ICT infrastructure, negligence of schools by government, poor ICT policy implementation strategy, lack of funds for procurement of the needed ICT resources and high cost of internet services with mean ratings ranging from 2.80 to 3.40 are perceived by respondents as factors that constrain the provision of ICT resources for science instruction.

**Research question 4**

What factors constrain the utilization of ICT resources for science instruction in secondary schools in Dekina Local Government Area?

**Table 4: Mean Ratings of Responses on Factors that Constrain the Utilization of ICT Resources for Science Instruction in Secondary Schools in Dekina Local Government Area?**

S/n	Item	Mean	Standard Deviation	Decision
1.	Teachers' lack of enthusiasm, interest and a positive attitude towards ICT use in instructional delivery	2.67	.97	Agree
2.	Lack of appropriate ICT software, hardware and internet connectivity	2.93	.99	Agree
3.	Weak electricity infrastructure and incessant power outage	3.10	.99	Agree
4.	Unavailability of ICT resources like computers and data projectors	3.19	.92	Agree
5.	Fear of technology (Technophobia) among teachers	2.15	.94	Disagree
6.	Teachers' resistance to change	2.53	.89	Agree

Result presented in Table 4 revealed that item 1, 2, 3, 4 and 6 with mean value of 2.67, 2.93, 3.10, 3.19 and 2.53 respectively are perceived as factors constraining the utilization of ICT resources for science instruction, while item5, with mean value of 2.15 is not seen as a factor constraining the utilization of ICT resources for science instruction in secondary schools in Dekina Local Government Area.

**Research question 5**

What are the measures for improving the provision of ICT resources for science instruction in secondary schools in Dekina Local Government Area?

**Table 5: Mean Ratings of Responses on Measures for Improving the Provision of ICT Resources for Science Instruction in Secondary Schools in Dekina Local Government Area**

S/n	Item	Mean	Standard Deviation	Decision
1.	Availability of grants and funds provided by various funding agencies	3.86	.42	Agree
2.	Donation of ICT resources by old students' association of schools	3.25	.86	Agree
3.	Building of functional and well equipped ICT laboratory in schools by government	3.70	.51	Agree
4.	All stakeholders in education should own and contribute to ICT provision in schools	3.53	.68	Agree
5.	Students should pay extra fees in schools for procurement of ICT resources	2.21	1.16	Disagree

Table 5 revealed availability of grants and funds provided by various funding agencies ( $\bar{X} = 3.86$ ), donation of ICT resources by old students' association of schools ( $\bar{X} = 3.25$ ), building of functional and well equipped ICT laboratory in schools by government ( $\bar{X} = 3.70$ ) and that all stakeholders in education should own and contribute to ICT provision in schools as measures for improving the provision of ICT resources for science instruction in schools ( $\bar{X} = 3.53$ ). However, respondents disagreed with the idea that students should be levied for the procurement of ICT resources ( $\bar{X} = 1.16$ ).

**Research Question 6**

What are the measures for improving the utilization of ICT resources for science instruction in secondary schools in Dekina Local Government Area?

**Table 6: Mean Ratings of Responses on Measures for Improving the Utilization of ICT Resources for Science Instruction in Secondary Schools in Dekina Local Government Area**

S/n	Item	Mean	Standard Deviation	Decision
1.	Provision of ICT resources like computers by government for use in schools	3.85	.44	Agree
2.	Training and re- training of teachers on ICT literacy and utilization of ICT resources	3.54	.59	Agree
3.	Provision of digital learning packages containing science instructions for use in schools	3.63	.57	Agree
4.	Inclusion of ICT studies in the secondary school curriculum, thereby making it a compulsory subject of study	3.55	.65	Agree
5.	Ensuring steady supply of electricity or provision of standby generator as alternative in the face of power failure	3.58	.67	Agree
6.	Teachers' willingness to accept ICT innovation and implement the educational policy on ICT in their schools.	3.20	.45	Agree

Table 6 reveals item 1 – 6 as measures for improving the utilization of ICT resources for science instruction. The items have mean rating ranging from 3.20 – 3.85.

### **Discussion of findings**

The study revealed computers and printers as the only ICT resources found in the schools. It would not even be out of place to assert that these technologies were majorly being used in school administration, rather than instructional delivery, as no computer laboratory was seen in the schools. The fact that no computer laboratory was found in the schools suggests that even though computers and printers are available, they are inadequate, since they cannot support individualized instruction which demands a computer to a student, or even one computer to ten students. This finding corroborates those of Ezeoba (2007) and Fakeye (2010) who found out that ICT resources were not available in primary and secondary schools. Negligence of schools by government was identified as a factor militating against the provision of ICT resources in schools. This contradicts the assertion in the National policy on Education (FRN, 2014) that government should provide facilities and necessary infrastructure for the promotion of ICT at all levels of education.

It was revealed that erratic power supply affects the utilization of ICT resources. This finding is in tandem with Adomi (2005), that electricity failure has been a persistent problem militating against ICT application in Nigeria. Fear of technology was not perceived as a factor constraining the utilization of ICT resources. This finding contradicts Dawes (2001) that lack of confidence on teachers' part prevents them from utilizing ICTs in teaching.

On measures that could be employed to improve the provision of ICT resources for science instruction, provision of grants by donor agencies and stakeholders in the education sector, building of functional and well equipped ICT laboratory among others, were accentuated. This is because ICT resources and infrastructure are cost intensive and cannot be procured by teachers and students for use in schools.

Measures that could be employed to improve the utilization of ICT resources include improved power supply, training and re-training of teachers on ICT literacy. Jegede (2001) opined that teachers need to acquire necessary skills that will enable them to be competent in an ICT environment. Edem (2008) also proffered that short computer training and retraining programs should be organized for teachers to update their ICT knowledge and computer skills

### **Recommendations**

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

1. Government should stop the age - long neglect of schools, since it is the responsibility of government to provide her citizens with quality education. Government should invest in Education.
2. The issue of incessant power outage should be addressed with every sense of urgency. ICTs are run and sustained using electricity.
3. Teacher in-service professional development should not be neglected as no nation can grow above the quality of her teachers. This would make them fit to teach the students.
4. Teachers should be motivated to embrace innovations through workshop and seminars.

### **Conclusion**

If the products of the Nigerian educational system will matter in this 21st century, then as a matter of urgency, they should be prepared to compete favorably and survive in the 21<sup>st</sup> century workplace. Meaningful learning experiences must be provided using modern technologies. Knowledge – based economies require innovative education systems. Therefore, secondary educational institutions must embrace the new technologies and appropriate the new ICT tools in teaching in order to improve education quality and outcome, and build human capacity in preparation for work in a globalized and competitive society driven by ICT. The ability to use ICTs effectively and efficiently represent a competitive edge in an increasingly globalizing job market. All hands should therefore be on deck to bring secondary education in Nigeria at par with global best practices

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## **PHILOSOPHICAL RE – EVALUATION OF NIGERIAN EDUCATION FOR INNOVATION AND GLOBAL RELEVANCE**

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### **Abstract**

*This work centres in creating a conceptual framework to anchor education in Nigeria in order to meet up with the global educational challenge. It advocates for a paradigm shift from the colonial educational background that influenced the current educational system in Nigeria to a more viable system of education geared towards enhancing the relevance of the country in the highly competitive global market. Globalization creates new values and brings changes in circumstances. The thrust of this work lies in the expansion of the scope of education in Nigeria as being vital for global participation especially as the drive for competition and marketization cut across borders, thanks to improved communication and transportation. To achieve the purpose for this work, empirical method of analysis was used. This involves discussing the relevance of education generally in the emerging global industry, followed by the analysis of the present state of education in Nigeria that led to this clarion call for change. The work concludes with viable suggestions capable of placing Nigeria on the same educational level with other competing countries in the global field. These suggestions when applied will produce people of competence in the global market.*

**Keywords:** Education. Re- evaluation. Relevance. Innovation.

### **Introduction:**

Education has remained vital in the world discussions as it play major roles in shaping events and things. Different civilizations are offshoot of educational prowess as civilizations supplant each other in accordance with the quality of education in vogue. In an effort to enhance sustenance of values in the face of an often competing ideologies , each epoch was pre-occupied with providing a system of education delivered in ways compatible with and supportive of their world views. The choice of a system over another therefore was dependent on the philosophical background upon which the educational agenda of a people was

anchored. Nyerere (2007) buttressed this position noting that the educational systems in different kinds of societies in the world have been, and are, very different in organisation and in content because the societies providing the education are different, and because education, whether it is formal or informal, has a purpose. A typical example is the Spartan education which had as her purpose, the development of military efficiency to maintain acquired territory. It therefore adopted a militaristic system of education capable of producing warriors, as against the Athenian education which laid great emphasis on democracy, and so needed an education that aimed at holistic formation for participation in the activities of the city – state. The Roman education which though was an offshoot of Greek education was utilitarian in nature as education was to serve a purpose, and not for its own sake. Hence, the essence of ancient Roman education was to transmit virtue in the life of the child, and by so doing they maintained their Roman family education alongside with the newly acquired Greek education.

Apart from individual societies, the educational drive generally at different periods in history, reflected the needs of an epoch. In the medieval period, the aim of education is anchored on religion, and education was to serve as instrument for saving souls. The Renaissance period saw the emergence of a new system of education which aimed at shifting from the highly spiritual and dogmatised medieval education to a rediscovery of man's potentiality in interpretation of reality himself. The stage was set for the modern period with great interest in empirical studies. The industrial revolution that came as a result of scientific and technological discoveries led to mass production of goods and the search for raw materials paving way for inter change of ideas. Education took a more practical step as many educational theories arose advocating for a shift from the rote method of learning to a more practical method of pedagogy. Great educational thinkers like John Pestalozzi, Johann Herbart, and John Dewey among others made their mark.

The contemporary period requires a change in educational agenda as the period is faced even with greater educational challenges consequence upon which the purpose of education needs to change and its recipients range of interests in accordance with practical experience. Of course, practical experience has shown the influence of globalization in all facets of life. Thus in order to meet up with this educational change of direction, education has to become a global agenda. Thus, for proper integration into this global match, relevancy becomes of primary importance to any person or nation.

Thus, in this write up there is need to explore ways of creating that global educational consciousness in Nigeria as well as deriving the benefits of globalizing the nations education agenda.

### **Economic Globalization and the Challenge for Educational Re-awakening**

Globalization generally depicts an evolving world, developing a single economy and culture as a result of improved technology and communication. It simply means a 'one- world' value orientation as against disintegration of societies based on socio – economic and cultural differences. It invokes the idea of a global village which involves an interdependence of countries upon each other, and being closer together courtesy of modern communication and transportation. In this sense, the socio-economic and political drive of the entire world becomes fundamental to all. Every nation/country manifests interest in this global venture either as part of the industrializing developer or as consumerist contributor. This is made possible through high powered information on productive activities and 'marketization' – the opening of national markets to international competition.(Igboamalu,2003) The increasing interdependence of economies should cut across all borders, hinging on the globalization of production, finance, markets, technology, organizational regimes, institutions, corporations, and labour. The resultant effects of this inter- change is that it should make possible the shifting of products, sharing of personnel and ideas as well as creation of jobs to cut across borders.

Globalization has the benefit of among other things to create in the mind of people the confidence of certain unalienable rights and responsibilities towards each other by the mere fact of being co-occupiers of our planet earth. This sets the ground for a valuable, world-wide cross-cultural understanding and the fruitful exchange of products and ideas; fostering cross-cultural awareness and a sense of global civics.

It is pertinent to note that in spite of the seeming tension associated with the cradle of globalisation, it has contributed to the reduction of global poverty and to increase the welfare of both the developed and developing countries as it makes variety of low-cost goods and services from across the globe accessible for all thereby raising the standard of living for some consumers.

Globalization on the political level has led to the rise of organizations designed to promote international cooperation. In order to fit into the global venture, and be among the beneficiaries, requisite educational machinery suitable enough for this global market must be put in place. This of course brings about more robust educational plan aimed at addressing these global challenges. Education in the face of globalization has gone beyond the individual confines of each country to address issues in the competitive global field. Innovations in education have become not just a welcoming development but rather very imperative as modern techniques are on ground to make teaching and learning not only more exciting, but equally more challenging and rewarding.

To grow further in relevance, people continued to expand the scope of education either by upgrading their educational systems which may range from continuous improvement of existing practices, rethinking or even remoulding their educational goals to meet up with global consciousness. While some advocated for a total transformation of means of attaining set educational goals. However, these are ways of appreciating the evolving global phenomenon with the primary motive of building a system of education to cope with these changes. In the face of this global educational challenge, the question is, to what extent has Nigeria as a country gone in addressing this issue? This will lead us to the next discussion.

### **Nigerian Educational Movement**

In order to give consent to brevity, we must spare ourselves the rigours of long history of educational movement in Nigeria. However, suffice it to mention that as no educational system can rise above the quality of its teachers (Aguba, 2006). One cannot talk about education in Nigeria without reference to the cradle of formal education in Nigeria which has its background in Western educational plan for the colonized country like Nigeria. The West introduced the 'Rote method' of learning which formed the background for Nigerian system of education. It laid great emphasis in the three R's - reading, writing and Arithmetic. Prior to the advent of Western education in Nigeria, there was the traditional education which in spite of the fact that it was not done by professionally trained teachers was according to Aguba (2006) both meaningful and effective in that cultural setting. However, the flaw lies in the fact that it served basically as a means of cultural transformation or

agent of socialization. The objective of traditional education lacks only the merit of fitting into the complexities of global world.

Be that as it may, the West educational plan of teaching the three R's – reading, writing and arithmetic indirectly set a shaky foundation as the essence was to train natives to have basic knowledge capable of making them useful as interpreters, messengers, and clerical officers and other menial assignments. Kabiru (NTI, 2010) criticised them based on issues of relevance, comprehensiveness and focus. Since then Nigeria had therefore been making effort to emancipate itself from an educational system that fail to address her challenges. It was the Ashby Commission (1959) that set at the eve of Nigeria independence the platform for the emergence of 1969 National Curriculum Conference which happened to be the first ever indigenous conference on education. It was initiated and planned by Nigerians. It was focused on charting a road map for education in Nigeria. The Commission came out with the first ever National Policy of Education in Nigeria which reflected Federal character of the nation. In the words of Ocho (2005) education came under the control of federal government which now makes laws that affect all levels of education in all states of the federation. Education became really a national responsibility.

This gave rise to new philosophical vision resting on three major principles which was anchored namely on:

- a. The development of the individual into a sound and effective citizen.
- b. The full integration of the individual into the community.
- C. The provision of equal access to educational opportunities for all citizens of the country at the Primary, Secondary and Tertiary levels (Federal Republic of Nigeria, 2004)

Based on this development, the goals of the national education were spelt out. The goals as stated in the nation's first edition of the National Policy of Education (NPE, 1981) are:

1. A free and democratic society
2. A just and egalitarian society
3. A united, strong and self-reliant nation
4. A great and dynamic economy
5. A land full of bright opportunities for all citizens. (National Policy of Education, 2004)

The realization of these noble goals became even at its cradle a wide goose chase as Nigeria toiled from one system to another, from one policy to another in an effort to meet up with the said goals. In fact, Ogunmola (2012) commenting on the fluctuating educational system in Nigeria noted that even the curriculum thing is just a name; they (students) still use the same books and materials. The problem according to Ukachi (2012) is that the government has not been consistent in this policy change, as many schools cannot afford the required restructuring each time a new policy is made. Uzundu (2012) in a more definite reaction observed that we are distracted, confused and disorganized so much that we don't have anything working. Ejiogu (2012) in his own observation noted that Nigeria operate a system where implementation precedes planning

In response to the above observations, a number of factors were identified and fingered as being responsible for the failures of education in Nigeria. However, prominent among them is the political factor. In fact Aguba (2006) called it the most influential factor that determines the quality and quantity of a nation's educational system. He noted that all other factors individually and collectively depend on the political machinery of the state for policy formulation and implementation. There is no gain saying the fact that politics itself has been politicized in Nigeria, and the effects of this politicization is being felt in all fabrics of the country, be it in the area of agriculture, education and other wise. Education which should be the engine house for nation building has suffered tremendous 'politicization'. In the words of Uzundu (2012) the Nigerian educational system has a history of failure because of politics. The appointment of education ministers and key position holders in the educational sector are not done based on merit but on party affiliations, tribe and friendship.... In Nigeria things are taken for granted, and everything is seen as business. In his own view, Dike (2012) noted that Nigeria has toiled with some educational programs which have only served as conduits to transfer money to the corrupt political leaders and their cronies. This opinion is buttressed by the ministerial appointments in Nigeria from 1958 till date. It has been observed that apart from Ajah Nwachukwu who was the longest serving Minister of Education in Nigeria having served from 1958 to 1965 (8yrs), and A.Y EKE who served for five years (1970 – 1975), the rest of education ministers in Nigeria served between one year and three years. Some even served for only a few

months with the shortest in office being as Sunday Afolabi who stayed only for four months in office (September to December 1983).

The effect of these frequent changes bears so much on the nation as such important sector in the nation comes under the whims and caprices of often selected political leaders. One begins to wonder the path of education when excellence is being sacrificed on the altar of mediocrity, tribalism, party affiliation and friendship. Little wonder why good education systems and policies rise and fall with the minister that initiated them. Continuity is never considered as each new political group abandon noble ideas initiated by their predecessors.

However, Nigeria needed to make changes especially in the face of global educational challenge. To achieve this, it must transcend its myopic political struggle in other not to be left behind in this global journey. This requires a redirection of the government's focus from more of social services to that of education.

### **Conclusion**

The world is so dynamic that it requires more than one way approach to solve the myriads of problems surrounding it. Every day, new problems emerge, and people are faced with the task of interpreting and proffering solutions to it. The present evolving issue of globalization poses its own challenges to humanity, and people are not relenting in addressing the phenomenon. The one-world movement as is being promulgated is so overwhelming that relevance lies in being co-operative in this global educational search. No country should allow itself to be left behind education wise. Being aware of the enormous power of education in human development and social integration, the essence of this work is to create the awareness education wise as sound education is paramount in becoming part and parcel of world discussion. By so doing, Nigeria will be relevant in the global market.

### **Recommendations**

Since all are stake holders in this global match, there is need to reposition the subject matter of education in the light of global necessity bearing in mind that problem solving and financial intelligence have become critical areas to direct resources and attention to.

This involves widening the scope of education by adopting modern educational methods and techniques with the hope of developing new strategies to match with the evolving world economy. In the words of Wike (2012) only the implementation of new strategies would lay the foundation for a strong basic education that will put the sector out of its present state of rot. What is needed in Nigeria is re-evaluation of the foundation of education, and re orientation of the concept of education. Major stake holders in education industry must be involved in moving education forward. It is an obvious fact that Nigeria is part and parcel of the global world and therefore must adopt an education reflective of this global phenomenon, contrary to which she is left behind in this competing but all inclusive venture. Below are viable suggestions for achieving this success.

**a. Democratizing Education**

Democratization of education involves the removal of all barriers or hindrances to effective education, be it due to class, religion, ethnic affiliation or other forms of discrimination or domination, and the institution of those mechanisms necessary for equal educative opportunity in accordance with ones nature and interest. A democratized education repudiates the principle of external authority, and thus finds a substitute in voluntary disposition and interest. Hence, Dewey (1915) contends that if education is democratized, the “emancipated individual was to become the organ and agent of a comprehensive and progressive society. The benefits of democratization of education lies according to Dewey (1915) in its beneficial social consequences, as it would erase unjust distinction and prejudices, equipping children with the qualities and capacities required to cope with the problems of a fast –changing world. Nigeria can adopt this procedure so as to ensure that students become voluntary participators and not just ‘on-lookers’ in this global educational venture. The following steps can help to facilitate democratization of education in Nigeria:-

1. The educational institutions should be made to reflect pure democratic settings where all hindrances and barriers to progress as a result of prejudice, class distinctions, ethnic rivalry etc are removed and where people receive the right of equal participation and opportunity. This is contrary to the ‘Quota system’ obtainable in some Universities and other higher Institutions in Nigeria where preference is used in admission of students and recruitment of



staff, very reflective of the ugly face of politics in Nigeria where excellence is sacrificed at the altar of mediocrity.

2. School should be freely available to all from kindergarten to Universities as this will avail all with the opportunity of competing favourably in the global field.
3. Re-evaluating the educational curriculum to reflect this global consciousness. Attempts should be made to use curriculum to develop interest in the global world so as to dispose learners towards integration in the world socio-economic and political interactions.
4. The learners interest should serve as a pivotal point as interests are signs and symptoms of growing powers (Wikipedia. 2012). Here, pedagogy comes into focus as it is only through keen attention on the learners interest, will the educator penetrate the learners life to see the level of the learners readiness.

**b. The Need For Innovative Education**

Today's students want an education that meets their individual needs, and opportunities that connect them to what is happening around the globe. The challenge to be innovative in the educational sector becomes imperative in order to make learning environments more exciting, challenging and rewarding. We need to explore creativity. The use of teaching aids in education cannot be over emphasized as it helps not just in making understanding easier, it equally reinforces the use of skill. Apart from this, it also engages students' other senses since there are no limits to what aids can be utilized when supplementing a lesson. With this, opportunity is created for interaction with the content in a way more comprehensible to them. Teaching aids make teaching and learning more exciting and engaging, that is why it is growing in popularity and advancement. The task of educators is to focus on students growing with technological aids. Today, the lecture method of teaching that leads to rote method of learning is giving way to a more involving technological advanced method as blackboard and chalk are being replaced with LCD Projectors and screens. This demands continuous education of teachers in the area of techno – scientific update so that they can transmit the knowledge to learners.

When learners become acquainted with requisite modern technologies, they will no longer consider themselves as victims of technological advancement but as

fellow beneficiaries in the global market. The concept of global citizenship with equal right of struggle will be fully realized.

**c. Education Beyond The Classroom**

It has been observed that due to over emphasis in certificates, students seem not to care so much in inundating themselves with requisite knowledge as they are with sitting for and passing exams. It is very noticeable that many Nigerians are certificates conscious. As a result of this, anything outside the regular curriculum no matter how educative, and how contributive the knowledge can be in the global field, is not taken seriously. Besides, since premium is always given to the one with certificate, caution is thrown to the field in the pursuit of certificate. This has a devastating effect on globalizing education since class work becomes the central focus, and the almighty teacher who sets the exams, becomes the sole determinant of educational future. The learner propelled by the desire to get certificate may just decide to be attentive without interest. In fact, the shocking thing is that majority considered in Nigeria as having wonderful certificate cannot compete favourably in the global market.

The fact is that the era of formal education being limited only to classrooms is over. Learners must engage and be engaged in new ways of learning with a prospect that goes beyond the classrooms, aim strongly at getting the learners prepared for relevance in the global community. In the modern world of education, people organise conferences, workshops, Seminars and forums aimed at expanding the learners' educational scope. In such academic gatherings, the effect of modern means of communication comes to forefront and opportunity for a wider interaction is created as participants come from various fields of life and backgrounds. This makes it more attractive and compelling to the participating audience than the omnipresent teacher of the rote method of learning, who fills the student with basic information that can be found on a digital encyclopedia. Therefore, in order to be relevant in this global market, resilience to study and docility for new techniques must be evident.

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## **EDUCATION: A TOOL FOR NATIONAL PEACE AND SECURITY**

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### **Abstract**

*Education is a veritable tool for national development. It empowers people and strengthens nations. Peace reflects a state of harmony in societal activities. Security on the other hand shows protectiveness and cover in all activities within the country. No nation can prosper without conceived peace and security. In fact these two societal desirable factors are the wheels of which a nation drives politically, economically, socially, culturally, religiously and technologically. However, the challenges towards achieving sound education in combating all social vices for national peace and security becomes increasingly high when one considers the inhibiting factors mitigating in achieving formal education such as high economy, poverty, illiteracy, and political instability. This paper therefore, recommends the need for government to design strategies to boost the economy, checkmating rule of law, government sensitization of the public through mass media and political parties to pursue the interest of citizens in governance.*

**Keywords:** Education, Peace, Security, Nation

## **Introduction**

Human beings live in groups, and such group constitutes a community. There are of course two types of communities namely, the local community and the international community. The local community refers to a group (or groups) of people living within a particular geographical area or country. On the other hand, the international community is referred to all the sovereign states in the world (Sydney & Ejitu, 2009). Thus, the essence of governance is to create and sustain relationship under which the wants and needs of groups may be satisfied to the maximum extent possible. Indeed, part of the responsibilities of government to their citizens is to reduce areas of disagreement among their component groups, and to correspondingly increase areas of agreement or consensus among them. (Sydney & Ejitu, 2009). To this end, peace and security of life and property are the primary conditions for progress and development of any community whether local or international (Arase and Iwuofor, 2007). To achieve peace and security, educating the minds of citizens of the lasting benefits peace and security will bring in a society is a sine-qua-non for it to be sustained for a reasonable long time among members of a society (Arase and Iwuofor, 2007).

## **The Role of Education**

Different philosophers and educationists have defined education differently. Levine (2002) defined education as ‘the unfolding of what is already clasped in the germ. It is the process by which the child makes internal external. ‘For Amos (2014), education is the manifestation of the divine perfection already existing in man. According to Mahatma Gandhi, “Education is an all-round drawing out of the best in the child and man-body, mind and spirit”. For the purpose of educational statistics, education according to UNESCO, “is understood to involve, organized and sustained communication designed to bring about learning need to be explained. Grace and Kalu (2016) defined education as any purposeful effort that is directed towards the transmission of accumulated knowledge, skills, abilities, attitudes, e.t.c. with the intention of producing humans that can be useful in his or her society.

Education is a veritable tool for national development. It empowers people and strengthens nations. According to Federal Republic of Nigeria in its national policy on education (2013), education is an instrument par excellence for achieving the developmental goals of the nation. Also observed by Adedokun (2011), education

more often than not, holds the key to other conditions such as taking proper decisions about living and skills that can assist one economically, politically and socially in one's society. Anugwom (2009) thus opine that education is the main tool for imparting skills and attitudes relevant to the contribution of the individual to the development of the society. It is a key every individual should possess in order to make significant contribution to national development. In the opinion of Imogie (2002), the prosperity of a country depends not only on the abundance of its revenue and strength of its fortifications, but on the number of its citizens that are enlightened through education.

Thus Nwakwo (1981 as cited by Grace & Kalu, 2016) posit that the role of education in any society is to help transmit to the young the culture of that society''. In performing this notable function, the parents, the teachers and other educational administrators contribute. Therefore, education enables the transmission of accumulated knowledge, skills, abilities, attitudes, e.t.c. with the intention of producing humans that can be useful in his or her society.

The role of education in a society helps the society pursue goals that will benefit the individuals and the society from primary to higher institutions (Grace & Kalu, 2016). To this end the peace and security of a given society will be reasonable assured through the force of education acquired by its citizens which will in turn reflect in the countries circle of activities.

### **Peace and Security in a Nation**

Like most concepts in social discourse, there is no universal definition of peace. However, peace has been generally defined as the absence of war, fear, conflict, anxiety, suffering and violence (David, 2006). But this conception has been criticized by many scholars for being inadequate for understanding the meaning and nature of peace (Ibeanu, 2006). The Norwegian peace theorist, Johan Galtung distinguishes three types of violence that can help to understand the concept of peace namely:

- i) Direct violence manifested by physical, emotional and psychological violence.
- ii) Structural violence which comes in the form of deliberate policies and structures that cause human suffering, death and harm, and

iii) Cultural violence which involves cultural norms and practices that creates discrimination, injustice and human suffering (David, 2006).

In addition Galtung outlines two dimensions of peace. The first is negative peace which is the absence of direct violence, war, fear and conflict at individual, national, regional and international levels; and positive peace which describes the absence of unjust structures, unequal relationships, justice and inner peace at individual level. A more useful conceptualization of peace must therefore see beyond the narrow conception of absence of war, fear, anxiety, suffering and violence. This is why Ibeanu (2006) defines peace as a process involving activities that are directly or indirectly linked to increasing development and reducing conflict, both within specific societies and in the wider international community. Ibeanu points out that there are philosophical, sociological and political definitions of peace. Many philosophers see peace as a natural, original, God-given state of human existence. Sociologically, peace refers to a condition of social harmony in which there are no social antagonisms.

Politically, peace entails political order that is institutionalization of political structures in a way that makes justice possible. As Ibeanu has argued, it would be wrong to classify a country experiencing pervasive structural violence as peaceful. In other words, although war may not be going on in a country where there is pervasive poverty, oppression of the poor by the rich, police brutality, intimidation of ordinary people by those in power, oppression of women, or monopolization of resources and power by some sections of the society, it will still be wrong to say that there is peace in such a country.

The role of education in the issues discussed above is to ensure the following:

1. Harmonizing the minds of educated citizens on equality of humans in societal disorder
2. Sanitizing the minds of students on avoiding being used by politicians in achieving their selfish aims
3. Educating students in higher institutions through citizenship education on the need and benefit of societal peace and unity it brings
4. Producing students from primary to higher institutions to contribute meaningfully to the development of a society; thereby frowning cases of wars, oppression and brutality.

Like peace, the concept of security has undergone fundamental changes in the last two decades. Security has been defined as the condition or feeling of safety from harm or danger, the defence, protection and preservation of core values and the absence of threats to acquire values (Arase and Iwuofor, 2007). But since the end of the cold war, there is the desirability to shift from a state and elite focused view of security to one that places the individual at the centre of the security equation thereby bringing in the concept of human security which combines elements of national security, economic development and basic human rights (Ibeanu, 2006). Insecurity could be construed as a social problem which is predicated on any deviant behaviour in a disapproved direction of such a degree that it exceeds the tolerance limit of the society. It could be seen as a condition which effects large number of people in an adverse manner. In other words, it is a difficulty of misbehaviour which vast majority wants to correct. Insecurity challenge connotes social disorder or social ill that arises when there is deviation from accepted social norms. These are usually threats to established social values, norms and ways and therefore, it is necessary to eliminate them as quickly as possible (Arase and Iwuofor, 2007).

Ibeanu (2006) insinuated that most youths find their satisfaction in the amenities and frivolities of life. This is really the case today. Insecurity via subversion and insurgency can be understood in terms of the youth culture in Nigeria that has bred a trans-regional manifestation of a national security problem.

The role of education in the issues discussed above is to ensure the following:

1. Inculcating the minds of learners on acceptable values in the society which in turn leads to a secure society whether local or international
2. Inculcating the minds of the learners the culture of the society as education is meant to show the essence of school-community relationship
3. Inculcating the beliefs and norms of the society to the learners which in turn leads to a better and safer society
4. Training teachers on various teaching methodologies especially primary and secondary level teachers in order to nurture students on basic societal norms, beliefs and values in the teaching and learning process for a better society.



### **Education for National Peace and Security**

Education is seen as the backbone of development in any nation. It improves the quality of life of a society through refinement of its potentials. Education further enhances the application of man's achievement towards improvement of his environment. In every known great nation, therefore, national development was preceded and accomplished by educational advancement. Today, there is an increasing faith in the casual relationship between education and economic development especially in the developing countries like Nigeria. Education has been seen as a vehicle for economic, social-cultural and political development of nations and individual (Obayan, 2014). Education is a social process in which one achieves societal competence and individual growth. Education is the art of learning about one-self and one's environment for the purpose of self-development (Oyedeji, 2013).

Education is thus a viable tool for national peace and security through this various ways:

1. Harmonizing the various ethnic groups in the society through the force of its educated citizens
2. Promoting unity, progress and societal growth irrespective of various locations of members of its citizens who co-habit peacefully despite their various ethnic group
3. Education leads to National consciousness and call for service in various part of the country thereby leading to safer society for members of its citizens to live and carry out their spheres of activities.

### **Challenges towards Achieving Sound Education for National Peace and Security**

The following constitutes challenges that limit the achievement of sound education for national peace and security:

- 1) **High Economy:** This is the financial power of an individual or family to afford the process of formal education. Once the economy situation is very high, it will affect savings and plans of an individual or family to consider education. To this end all sort of labour or social vices can be pursued by our children and youth to make ends meet thereby, creating an unsafe society.
- 2) **Poverty:** Poverty is a state of acute wants r need, whereby one find it very difficult to even satisfy basic needs. If basic needs are hardly satisfied,

education will be a secondary issue or may not even be an issue because there is no fund. Therefore, our vibrant children and youth will be left to little or no choice than to engage in social vices thereby affecting the peace of the society and making the society an insecure place.

- 3) **Mass Illiteracy:** This is the degree to which majority of people within a society has little access to formal education. This will breed a society where fights, acrimony, anger, violent and brutality are practiced to achieve aims by individuals or groups that form the society.
  
- 4) **Political Instability:** Change of government may lead to change in adaptation of policies in education which may not be favourable to individuals in the society in terms of the cost in acquiring education; and therefore affects their desire to go to school by doing things or engaging in work activities that can contribute to the peace and security of the society.

### **Conclusion**

Education is the main tool for imparting skills and attitudes relevant to the contribution of the individual in the development of the society. It is a key every individual should possess in order to make significant contribution to national development. There is no doubt that education, no matter the level, is capital intensive. Funds are needed to procure and provide teaching and learning equipment, materials, construct buildings and other school plant as well as human and other information and communication technology gadgets. This account for Nigerian government's continuous clarion calls for private participation in providing education for the citizenry.

The above measures will lead to a nation's desire in achieving peace and security because education is an indispensable tool towards realizing that. Hence, once the government and private individuals contribute in education to ensure that the low and average income earners afford education, then the nation's interest or desire for peace and security can be achieved because a good number if not all, will have meaningful job or attitudes and character acquired through education that can make the individuals do or practice things that contribute to the peace and security of the nation.

### **Recommendations**

Based on the challenges that limit the achievement of sound education for national peace and security, the following recommendations are made as the way forward:

- 1) Educational regulatory bodies in primary, secondary and tertiary education should always checkmate their curriculum content in order to ensure that the those who happens to make it to school despite the cost of economy is educated on the need to be job creators rather than job seekers which will help in reducing social vices while persistently seeking for job.
- 2) Government interest in education should be high through policies and implementation of policies that affects education. This will go a long way to reduce the burdens of society in financing education thereby giving way for high demand of education from members of the society so as to engage in activities that contributes to the peace and security of the nation
- 3) Government should diversify the economy to reduce poverty level which will in turn make individuals in the society to desire and be able to go to school and contribute meaningfully to societal development
- 4) Government in power should pursue the interest of citizens in governance to make provision for all to desire and afford education which can serve as an indispensable tool towards achieving peace and security in a nation

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## **INNOVATIONS IN EDUCATIONAL FOUNDATIONS AND ALLIED DISCIPLINES: NIGERIAN EXPERIENCE**

By

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### **Abstract**

*This paper examined the term educational foundations, some of the allied disciplines under it, the purpose of foundation study, the fact that guidance and counselling is an allied discipline under educational foundations. It also looked into the central focus of some of these disciplines under educational foundations including that of guidance and counselling. However, the work is not focused on all the allied disciplines under educational foundation at the same time, but on one of such allied disciplines known as guidance and counselling. This work examines the need for innovation in Guidance and Counselling in Nigeria. It also looks into some of the hindrances that may hamper the introduction of the much needed innovations in Guidance and Counselling in Nigeria. It also proffered some solutions to ameliorate such hindrances, and offered some recommendations that will facilitate the introduction of the innovation in Guidance and Counselling in Nigeria.*

**Keywords:** Innovation, Educational Foundations, Allied Disciplines, Guidance, Counselling, etc.

### **Introduction**

Innovation is a process of creating and implementing a new idea. It is the process of taking useful ideas and converting them into useful products, services or processes or methods of operation. Innovation involves deliberate application of information, imagination and initiative in deriving greater values from resources and includes all processes by which new ideas are generated and converted into useful products. Chand (2015).

In business, innovation often results when ideas are applied by the company in order to further satisfy the needs and expectations of the customers. In a social context, innovation helps to create new methods for alliance creation, joint venturing, flexible work hours and creation of buyers' purchasing power. Chukwu (2014) Innovation can also be described as radical and/or incremental changes in principles, processes, procedures and operations of any service delivery organisation in order to bring about the desired changes. In the Nigerian educational system, this could be in the areas of curriculum content, pedagogical approaches, planning and management of school-based activities, policy formulation, curriculum design and development of infrastructural facilities, management structures, funding strategies and accountability procedures in order to enhance the quality and quantity of the by-products of the system. Unachukwu and Okorji, (2014, P. 619). It ranges from minor variations to radical departure from existing practices to newly developed methods or techniques for an improved service delivery. It rests chiefly on technological advancement and global integration. It involves forecasting and projection born out of critical thinking and creative mind/ ideas. Unachukwu and Okorji, (2014, P. 605).

### **The Term Educational Foundations.**

Educational foundations refers to a broadly-conceived field of educational study that derives its character and methods from a number of academic disciplines, combination of disciplines and area of studies, including history, philosophy, sociology, anthropology, religion, political science, economics, cultural studies, psychology and educational policy studies. As distinct from psychological foundations of education which rely on the behavioural sciences. These standards address the social foundations of education, which rely heavily on the disciplines and methodologies of humanities, particularly history and philosophy and social sciences, such as sociology and political sciences. Oswego (2016).

### **Some of the Allied Disciplines under Educational Foundations**

As we have seen from the concept of educational foundations, it has many allied disciplines under it which include; history, philosophy, sociology, anthropology, religion, political science, economics, psychology, cultural studies, and educational policy studies. Others include gender studies, comparative and international education, educational studies, educational administration and planning and guidance and counselling. ([www.unm.edu](http://www.unm.edu))

However, the allied disciplines and their numbers under educational foundations may differ from one university or higher institutions to another. It may be more on one and be less in number in another.

### **The Purpose of Foundations Study**

The purpose of foundations study is to bring these disciplinary resources to be in developing interpretive, normative and critical perspectives on education, both inside and outside of schools.

The **interpretive** perspectives use concepts and theories developed within the humanities and the social sciences to assist students in examining, understanding and explaining education within different contexts. Foundational studies promote analysis of the intent, meaning and effects of educational institutions, including schools. Such studies attend particularly to the diverse contexts within which educational phenomena occur and how interpretation can vary with different historical, philosophical and cultural perspectives. (www.unm.edu)

The **normative** perspectives assist students in examining and explaining education in light of value orientations. Foundational studies promote understanding of normative and ethical behaviour in educational development and recognition of the inevitable presence of normative influences in educational thought and practice. Foundational studies probe the nature of assumptions about education and schooling. They examine the relation of policy analysis to values and the extent to which educational policy making reflects values. Finally, they encourage students to develop their own value positions regarding education on the basis of critical study and their own reflections. (www.unm.edu)

The **critical** perspectives employ normative interpretations to assist students to develop inquiry skills, to question educational assumptions and arrangements and to identify contradictions and inconsistencies among social and educational values, policies and practices. In particular, the critical perspectives engage students in employing democratic values to assess educational beliefs, policies, and practices in light of their origins, influences and consequences. Particular disciplinary studies in, example, the history, philosophy or sociology of education shall be considered as study in the foundations of education provided the above perspectives are addressed and promoted. (www.unm.edu)

The objectives of such study is to sharpen students' abilities to examine, understand and explain educational proposals, arrangements and practices and to develop a

disciplined sense of policy-oriented educational responsibility. Such study develops an awareness of education and schooling in light of their complex relations to the envioning culture. (www.unm.edu)

### **Central Focus of some of the Allied Disciplines**

Understanding the current status of education and evaluating proposals for improvement require an understanding of the foundation of education. The foundations comprise the set of historical, philosophical, social, legal and cultural assumptions that form a logical base for decisions about schools and schooling. Armstrong, Hanson and Savage (2009)

**Social and Philosophical Foundations:** focus on what is good society and how should education contribute to that society. Both foundations look at what constitute good society, what should be taught to create this good society and who should be taught. Armstrong, Hanson and Savage (2009)

**Historical Foundation:** traces where the current practices and traditions originate and whether they are still important. This is because historical developments have greatly influenced our educational system. Our task is to determine the extent to which these historical influences still have merit. Armstrong, Hanson and Savage (2009)

**Political Foundations:** this deals with who has the power to decide priorities and to influence how schools operate. People who are interested in school reform need to know who has the power to make decisions that will result in desired educational modifications. Armstrong, Hanson and Savage (2009)

**Curriculum Foundations:** it focuses on what is taught and why is it taught. The term "curriculum" is used to describe the overall framework for an instructional programme. It looks at the quality of education through its content, how to keep up-to-date with technological changes and how much content about different cultures should be included. Armstrong, Hanson and Savage (2009)

**Instructional Foundations:** the question here is 'what is good teaching?' The term "instruction" refers to teaching approaches that are used to help learners achieve the overall purposes that are outlined in the curriculum. The issue of good teaching is central to any debate about education but you will find out that not everybody define 'good teaching' in the same way. Armstrong, Hanson and Savage (2009)

**Legal Foundation:** focus on the legal and ethical rights and responsibilities of teachers and learners. Proposals for change have to be taking into account legal



principles that influence the actions of teachers and school administrators. Armstrong, Hanson and Savage (2009)

Guidance and Counselling Foundation: focus on helping the client to understand himself and his environment in order to be able to mobilize his internal resources and with that challenge, confront and uproot his (daily) challenges of life and adjust to a balance person.

### **Guidance and Counselling**

This work is not focused on all the allied disciplines under educational foundations at the same time, but on one of such allied disciplines known as guidance and counselling. In this work, we will give two professional definitions of counselling and one user-centered definition.

Among the early professional definitions was that given by Gusted in 1957. He defined counselling as a learning -oriented process, carried on in a simple, one-in-one social environment in which a counsellor, professionally competent in relevant psychological skills and knowledge, seeks to assist the client by methods appropriate to the latter's need to learn more about himself, to learn how to put such understanding into effect in relation to more clearly perceived realistically defined goals to the end that the client may become a happier and more productive member of his society.

Burks and Steffle (1979) held that counselling denote a professional relationship between a trained counsellor and a client. This relationship is usually person-to-person, though it may sometimes involve more than two people. It is designed to help clients to understand and clarify their views in their life space and learn to reach their self-determined goals through meaningful, well - informed choices and through resolution of problems of an emotional or inter-personal nature.

McLeod (2009) defined counselling from the user-centered perspective as a purposeful, private conversation arising from the intention of one person to reflect on one resolve a problem in living and the willingness of another person to assist in that endeavour.

Uba (1993) held that counselling stresses more rational planning, problem solving, decision-making, intentionality, prevention of severe adjustment problems and support for situational pressures arising in the everyday believes of normal people. Counselling is an inter-personal interaction between the counsellor and client. It is concerned more with the relationship between these two people than with the technique of the counsellor. Actually, the relationship is the primary technique.

Through the quality of this inter- personal relation, the client can explore his or her self and life, develop more through understanding and establish more appropriate behaviour. Irrespective of the theoretical technique, the relationship between the two people remains the principal focus.

The most publicized aspects of the relationship are the facilitative conditions. While being genuinely himself/herself, the counsellor communicates acceptance and emphatic understanding of the client. The genuineness and safety of this relationship permits the client to explore aspects of his or her life that have been of concern; before making a decision. Counselling belongs within the context of helping relationships in which according to Roger(1958) a least one of the parties has the intention of promoting the growth, development, maturity, improved functioning and improved ability to cope with the life of the other.

Counselling may also be described as an encounter through which a client is afforded healing help leading to the dimension or solution of the personal adjustment problems which beset him/her as well as to positive growth and actualisation of his/her personality. It is an encounter between a counsellor and client taking the form of a counselling interview. The counsellor neither commands nor forbids, neither exhorts, advises nor intellectually interprets symptoms. Rather, he or she affords the client an opportunity to explore his or her difficulties and attitudes which surround them. As a result of this exploration, the client gains an understanding of himself/herself which bring his or her behaviour within the sphere of his or her conscious control and enables him/her to take positive steps in new directions in the light of his or her new orientation. Pal (2011)

The counsellor's function in this process is not to offer a solution to the client's problems but to assist the client to see himself or herself more clearly in all his or her positive, negative and contradictory aspects. The self-awareness and self-understanding is the essence of therapeutic insight.

In Nigeria, formal guidance started toward end of 1959 in Ibadan and by July 1972, the idea of school guidance and counselling spread to other parts of the country. In its policy statement for education in Nigeria, the Federal Government demonstrated its awareness of the need for youth to develop skills and competences that will enable them live effective lives. NPE (2013).

**The Need for Innovations in Guidance and Counselling in Nigeria**

Innovation, according to Chukwu (2014), is a process of introducing significantly new practice or ideas which will lead to positive changes in the teaching and

learning process. The ideas or practices could be the method of teaching a subject matter, administrative procedure and instructional materials equipment utilization. David (2011) in Chukwu (2014) asserts that educational innovation is the deliberate identification and application of ideas, information, imagination, and initiative in deriving greater different values and results from educational resources and to generate useful products. Educational innovation is therefore the process of translating an idea or invention into educational process to create values to Nigerian educational system.

### **Historical Perspective and Developmental Pace**

The first reason why innovation is used in guidance and counselling in Nigeria can be traced from the historical perspective and developmental pace. Guidance and counselling came into Nigeria in 1959 as a vocational guidance. It started at St. Theresa's College, Oke Ado near Ibadan by some Irish Reverend Sister. By 1962, it spread throughout Ibadan and became Ibadan Career Council and in 1967, it became Nigeria Career Council and is now known as counselling association of Nigeria (CASSON).

The story of guidance and counselling having vocational origin is not different from that of United States of America. Frank Parsons in 1908 organized the Boston Vocational Bureau to move needed vocational assistance to young people seeking employment and to teachers to serve as vocational counsellors. These teachers were to help select students for vocational schools and to assist students in choosing a vocation wisely and making a transition from school to suitable work.

Today, the members of counsellors in America is approximately put to 601,000 with counselling jobs in 2004 broken down among specialities as follows:

a) Education, vocational and school counsellors	248,000
b) Rehabilitation counsellors	131,000
c) Mental health counsellors	96,000
d) Substance abuse and behavioural disorder counsellors	76,000
e) Marriage and family therapists	24,000
f) Others	25,000

### **Bureau of Labour Statistics, (2004).**

It started as vocational guidance in India in 1952 and among the achievements so far is the establishment of guidance services with a full-time counsellor in 170 multi-purpose schools and the establishment of an occupational information service in 2,500 schools.

With the pace of development recorded in USA and the number of specialties in the area of guidance and counselling, one can admit that we need innovation to be able to have counsellors trained in other fields like rehabilitation, substance abuse and behavioural disorder and marriage and family counsellor. We are aware that Nigerians are facing challenges in many of these areas and should not make counselling only a classroom work.

As we have seen from our Indian counterpart, they have counsellors in their schools as full-time counsellor. This is not same with Nigeria. We need new idea and practice to move forward.

### **National Need - Security Perspective**

There has never been a point in time that Nigeria has experienced security problems and challenges as she is experiencing from all parts of the country now. It is either Boko Haram terrorism, Niger Delta problem or the Fulani cattle rearers. Nigerians and international organisations are doing their best to help the affected people. However, we should calculate the amount of human and material resources that have been wasted so far. Apatu (2012).

We also know that the fattest part of our annual budget is now on security. My point is that we need special counsellors to be trained to handle first the internally displaced persons so that their emotional need may be met also. We need counsellors to help these aggrieved brothers of ours who are Boko Haram members or Niger Delta militants on how to express their anger appropriately. I feel that if Nigeria rely on her gun and soldiers, we may reduce our number unnecessarily and waste on other resources without having peace. Counsellors should be trained to re-orient our children in schools and everywhere on the evil and danger of expressing their anger wrongly. These counsellors will know how to bring up our children in the right attitude that help them to know how best to seek their rights. Okolie and Nnamani (2015)

### **Educational Need**

We are aware that many public and private schools are coming up daily in Nigeria. Nigeria is establishing different school to meet the recent technological development and global challenges. The recent attention being paid to the opening of special universities, to pre-primary education and new courses and departments, may not yield the much desired fruit without the assistance of counsellors and there should be innovation in our counselling system to enable the counsellors gain new

insight on how to help in these new areas to meet the national objectives. If we do not bring in innovation in our counselling system, we may pour old wine in new wine skin. Nigeria should be aware that it has become necessary to post counsellors in our schools and have them as full - time counsellors. Gladding (2013)

### **Health Need**

In the health sphere, we still need innovation in our counselling system. For most adult Nigerians, they believe that the best way to solve the present national economic problem is escapism. Many have turned to uncompromising health behaviour that are ruining their lives. Smoking indiscriminately, drinking alcohol excessively every day, drug-taking and other non-health enhancing practices has become the order of the day. People look at them and laugh. In our feeding system, many children and adult Nigerians prefer foreign processed food to local food. Many of us are still ignorant of the impact of such behaviour. These attitudes have led to the death of many Nigerians. Counsellors require new insight and ideas and practices to help them face this new trend of health problems and rescue our adults and children alike. They should also be helped to know the improvement that has been made in the area of medicine, specialties in medical fields and profession and new technological discovery and equipment. Many counsellors left the medical issues to medical professionals only. Our people need assistance of counsellors for some basic information so that they will not only see one medical doctor that cures every sickness especially in the rural area. Gladding (2013).

### **Social Vices**

The impact of globalization is not always positive. It brings with some social vices. It is now difficult for parents to control the behaviour of the children as it is difficult for modern parents to control themselves too. This is because of some negative influences modern technology, mass media, television, computers, handset, etc. with these, one can assess any type of information at anytime, hear or see what is done anywhere in the world. Ime (2016)

Such influences of globalization and technology have eroded some good culture of ours and have transformed the behaviour of many Nigerians negatively. Therefore, there is need to have innovation in our counselling system so that the Nigerian counsellors will be able to help our people learn how best to overcome this predicament. Gladdings (2013).

### **Career Need**

Gibson (2014) stated that the need for this focus on career counselling became increasingly apparent in the 1980s and early 1990s as career related problems - youth unemployment, under employment, midlife career changes, and discrimination in workplace became major societal issues. The need for planned programs of career assistance for all ages has been further reflected in the establishment of career counselling centers on many campuses, women's career centers and other community centers, focusing on the special career need of the individual moving into the new century. Ime (2016)

Nigerians are facing many career problems which include how to assess the career information in the global market today, how to migrate or move from the white collar job to the new technological changes and how to accept the new field of career know as entrepreneurship after higher education. Nigerian Social Science Education Review. NSSER (2010).

In Nigeria, education is for white collar job and easy way of making money as it was in the colonial days and our oil boom theory has helped us to live in such utopia world till very recently. Now, the truth is clear and the result is mass unemployment. Presently, unemployment is a global problem and many Nigerians have died abroad while searching for greener pastures especially youths. Over 10,000 Nigerians died in this way in 2014. It is now clear to the federal government of Nigeria that she should call for the diversification of the economy. Who will lead Nigerians out of this colonial influence, the impact of technological change in the global labour market and impact of oil boom to the new concept called entrepreneurship? Americans have the same problem of unemployment like many other nations but have reacted to it by seeking the assistance of career centres in schools and communities. Where is Nigeria? Without using counsellor and introducing innovation in our counselling system, the expected magic of transmitting or migrating from old idea of white collar job to new self-reliance or entrepreneurship will be in vain or in a snail speed. Until this is done, many young Nigerians will either continue in the 419 practices or choose any unwholesome way of begging. This is why our streets are filled with men and women who have found a modern way of begging that is unfamiliar to our people.

Therefore, Nigeria should learn to invest in counselling programme, train counsellors in various fields and specialties in order to meet her present unemployment problems and the needed transition to self-reliance. The goal of

education is not white collar job, but self-actualisation that leads to creative thinking and productivity.

### **Barriers**

There are some hindrances that may hamper the introduction of the much needed innovation in guidance and counselling in Nigeria:

- a) Nigerian Guidance- counsellors seem to be in slumber. Inability of Nigerian counsellors to be licensed like their counterparts in many other countries makes it difficult for them to be able to practice elsewhere. It can be seen that other guidance and counselling has not been diversified into specialties to meet the national need and development. Therefore, the Nigerian counsellors should wake from slumber and introduce the necessary change and move the nation forward. We have to bring the expected innovation in counselling and carry counselling in other meaningful areas of the lives of Nigerians beyond school and ensure that it is made full-time business in school. Okonkwo (2005)
- b) Traditional Background: another major barrier to the introduction of the needed innovation to guidance and counselling in Nigeria is our traditional background. In this background, counselling work are presently in the hand of non - professional counsellors such as parents, elders, religious leaders, friends and other helpers who can give any type of advice on the spot. The meaning of professional counselling and methods are not known to many Nigerians. The school counsellor in our schools are often seen as strangers and 'fault finders' from who the students should run away. We have our counselling center in the Godfrey Okoye University and inspite of my constant announcement, only few students come for counselling on their own. Many Nigerians who studied counselling outside the country prefer to stay and practice outside because of this traditional attitude and lack of recognition of professional counsellors. Okonkwo (2005)
- c) Lack of Government Incentive and Understanding of the place of counselling in national development. The worst barrier to be needed innovation in guidance and counselling is the attitude of the Nigerian government. The government seems not to understand the place of counsellor and counselling profession after introducing it into its educational policy to meet the national need in the 6-3-3-4 system. It has not been possible for the government to fund, provide facilities, sponsor seminars, workshops and conferences

effectively for counsellors. The necessary policies that will help in the introduction of innovation in guidance and counselling has to be made by government. It is only such policies that help in the modification and diversification of counselling profession and serve as the source of encouragement to Nigerian counsellors. Okonkwo (2005).

- d) Attitude of Some School Administrators: the problems posed by the negative attitudes of some school administrators and teachers to the introduction of the much needed innovation is not less significant. The problems loom large as to the proper integration of counsellors within the school system. According to one of our early Nigerian counsellor, Anselm Uba, counsellors fought and are still fighting an uphill battle with classroom teachers and the existing structure of education. In Nigeria schools, counsellors attempt to promote voluntary, on-request counselling. When determined by the students, teachers and school administrators seem to be on the quick to notice any infringements on regularly scheduled class time and counsellors are forced to relegate counselling sessions to study; hall time, lunch period or time before or after school. The right of access to students for significant counselling experiences beyond that contained in the recognized school curriculum are not sanctioned by the school authorities or even supported by the majority of the teachers. However, this attitude is changing gradually now, yet one cannot say that the battle is over. Okonkwo (2005)

### **Solutions Proffered**

1. Nigerian Guidance - counsellors should wake-up from their unnecessary slumber to improve counselling services and contribute to national and human development in Nigeria, bearing in mind that everything is not money and the possession of certificate. CASSON should meet the requirement of licensing their professional members as is done in other parts of the globe to meet international requirement and enable their members to work on the national and international levels:
  - a. Make the national objective of guidance and counselling more specific to members.
  - b. Look at new trends in guidance and counselling and make intensive research in those areas and in the areas of national needs in order to contribute meaningfully to national growth and development.



2. Traditional Counselling System: while our traditional counselling system should not be discarded, it should be clear to us and our traditional counsellors that they cannot face adequately the current problems of our modern Nigerians. There is then a need to employ the assistance of professional counsellor to handle some issues beyond the strength of our traditional counsellor.
3. Government - Nigerian government should promote guidance and counselling if she wants really to solve her national problems especially in the areas of behaviour and national security. The issue of fighting against corruption will be useless if left in the hands of the military and parastals, we may either waste all our resources unnecessary on solving the problems or reduce our population unnecessarily. I will say that without assistance of our guidance-counsellors, our effort to solve our two major national problems, namely corruption and insecurity will be a bad dream at last. These counsellors are the people who bring into man the much needed internal transformation that is needed to uproot the deep rooted vices inside some Nigerians. They can as well create new Nigerians by taking the preventive measure. This can be done using some theories including social - learning theory to help young Nigerians to unlearn their bad behaviours. They can as well use cognitive restructuring to help our adults to take a second look on their thinking pattern and retrace their steps for their interest and the interest of the government or our nation. Therefore, the government should promote counselling through employment and funding of counselling programmes and services. Promote research into the areas of national interest as it affects counselling and support researchers through funding and provision of facilities and making necessary policies and laws to guide research and researchers for national interest.
4. School Administrators- the school administrators on their own part should not see school counsellors as parasites. They should understand that there will be no way of solving the problem of indiscipline effectively in our schools without the assistance of good counsellor. Counselling may seem everybody's job but professionalizing it is not so.

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