EFFECT OF EXPOSITORY TEACHING STRATEGY ON QUANTUM PHYSICS STUDENTS' ACADEMIC ACHIEVEMENT IN FEDERAL CAPITAL TERRITORY ABUJA, NIGERIA

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ABSTRACT

This study investigated the effect of expository teaching strategy on Quantum Physics students' academic achievement in Federal Capital Territory Abuja (FCT), Nigeria. Pretest-posttest control group quasi experimental research design was used for this study. The target population of the study consists148 Senior Secondary Schools in FCT with a population 4353, comprised of 2450 male and 1903 female students as documented on FCT 2018. For the purpose of this study, a sample of 96 (female 39 and male 57) students from three different schools were taken in FCT. The instrument used for data collection was Physics Achievement Test (PAT) developed by the researchers. The PAT comprised 30 multiple choice items. Validation index result of 0.80 was obtained. The internal consistence of the PAT was established through split test-retest method with the index of 0.89. The statistical tools that used in this study include mean scores, standard Deviation and ANCOVA. Findings from the study revealed that there was significant difference between students who were taught using expository teaching strategy (ETS) and those taught using conventional teaching strategy. The students performed were taught using expository teaching strategy (ETS) performed better than those taught using conventional teaching strategy on senior secondary school Physics.

Keywords: *Expository teaching strategy, academic achievement.*

INTRODUCTION

Science teaching in Nigeria secondary schools started when the grammar schools in Nigeria were established. Physics is one of the science subjects taught at the senior secondary school level of the Nigeria Educational-System. Physics as one of the science subjects remains one of the most difficult subjects in the school curriculum (Isola, 2010). Physics is an exact and a core science subject in Nigerian secondary schools. Its teaching often requires creativity and improvisation. To make Physics concepts comprehensible to students, Physics teachers must employ creative teaching methods and be prepared to respond to queries and explain concepts in an atypical manner (Nbina, 2012). Nbina (2012) further pointed out that the widespread poor achievement and the negative attitude towards chemistry from secondary school students have largely been ascribed to lack of proper teaching strategies. Teachers who adapt appropriate improvisation materials in teaching chemistry will likely be more successful in imparting Physics knowledge to the novice Physicians in their classes.

Physics is a branch of Mathematical science, and it is the study of the composition, properties and behaviour of matter. Since it's a physical science, its teaching has to be physical and real (Baja, 1988). The teaching of Physics is made interesting with the use of teaching aids which include flash cards, pointer, computers, improvised materials and overhead projectors among others. The knowledge of this subject is control to vocations in health services, pharmaceuticals, petroleum and petrochemical industries, food processing, teaching services and extractive industries, which is relevant for economic development. The teaching of this subject should aim at developing in the students those manipulative and experimental skills necessary to make them competent and confident in the investigations of the material resources around them. However, as important as this subject is to all science related vocations, the achievement of students in it at the senior secondary school certificate levels has not met the desired needs of the nation hence the need for this investigation.

Quantum physics proves to be a special area in physics teaching and learning because of its abstract formalism, the differences to classical physics, the nearly complete absence of real experiments suitable for school and the strong traditions in teaching partly due to the long unclear history of interpretation. In addition, in quantum physics as a vivid research area with numerous experiments concerning its fundamentals, there is an exceptional discrepancy between concepts revealed by recent research and the more traditional views of teaching at school. Many courses at school (and at university) start with the photo effect in order to introduce light as particle and in the sequence guiding the students towards quantum objects and the double slit experiment. Quantum physicist's the physics that explains how everything works: the best description we have of the nature of the particles that make up matter and the forces with which they interact. Quantum physics underlies how atoms work, and so why chemistry and biology work as they do. Teacher education lies in the triangle between the professional knowledge teachers are expected to acquire at university, their own experiences from the physics lessons they attended themselves at school and the demands of school curricula, lesson plans and school authorities (Etkina 2010). In order to devise their teaching teachers, have to combine their content knowledge, the pedagogical knowledge and the pedagogical content knowledge. This is seen through the glasses of personal convictions, teaching habitudes and cornered by the school curriculum. During this learning path students tend to retain classical notions; they might still think:

"finally, the electron must take some path or other" (Fanaro *et al.*, 2009)

The term teaching strategies refers to the general principles pedagogy and management strategies used for classroom instruction, your choice of teaching method depends on what fits you, your educational philosophy, classroom demographic, subject areas and school mission statement. Teaching theories primarily fall into two categories or "approaches", namely: teacher-centered and student-centered. Teaching method is an important tool that a teacher uses to carry out his basic function of teaching. Teaching method can be used to enhance better teaching and learning environment. A favorable learning environment of course, promotes learning outcome, unfortunately, on the area of achievement of senior secondary school student in physics, there has been poor achievement. This was revealed by the senior secondary students' poor achievement. Owolabi (2008) discovered that students expressed mathematical errors in solving numerical problems in Physics. There is gradual decline in secondary students' mathematics which had led to reduction in pursuit of career in Physics. This indicates that students' achievement in mathematics was not impressive. Learning in basic science is step and their subjects are connected hence, it is vital to acquire the necessary rudiments in junior secondary years so as to promote senior secondary period. Consequently, it is necessary to consider the teaching methods. According to Flint (2009) eight general methods can be used in teaching and these include guided discovery, games simulations, laboratory approach, investigation, problem solving.

Academic achievement of male and female students in Physics is crucial for students' admission into scientific and technological professions. That is why it has been made as a compulsory subject in all secondary schools in Nigeria. Over the years' education has focused on access and parity, which is, closing the enrollment gap between girls and boys while insufficient attention has been paid to retention and achievement or the quality and relevance of education. Academic achievement has become an index of student future in this highly competitive world. Academic achievement has been one of the most important goals of the educational process. It is also a major goal, which every individual is expected to perform in all cultures. Academic achievement is a key mechanism through which secondary school students learn about their talents, abilities and competencies which are an important part of developing career aspirations. Anikweze (2010) described the achievement test as the test of ability designed to measure what the individual has learned to do as a result of planned instruction. Academic achievement refers to the outcome of education. It is the extent to which a student, teacher or institution has achieved the educational goal. The meaning of academic achievement can be appreciated in how well one does in school and how students in particular deal with their studies. It is however important to note that all students are required to maintain a satisfactory academic record and meet the obligations of the courses for which they enroll. Considering government's huge investment in education, its output in terms of quality of students has been observed to be unequal it's expenditure. Consequent upon the observed deterioration in the academic performance of secondary school students in public secondary schools, one wonders if the high failure rates and the poor quality of the students are not a reflection of the consequences of their unhealthy and discouraging disposition toward their academics. In other words, the widely acclaimed deteriorated standard of education in Nigeria, to a large extent, depends on factors resident in students and their peers (John, 2013).

Expository teaching strategy is basically direct instruction. A teacher is in the front of the room teaching and students are taking notes. Students are being told (expository learning), what they need to know. However, expository instruction goes beyond just presenting students with the facts. It involves presenting clear and concise information in a purposeful way that allows students to easily make connections from one concept to the next (Maheshwari, 2013). The structure of an expository lesson helps students to stay focused on the topic at hand. Often times, when students are discovering information on their own, they can get distracted and confused by unnecessary information and have difficulty determining what's important. This is why expository instruction is one of the most common instructional strategies. Most educators believe students learn new concepts and ideas better if all of the information they need to know is laid out before them.

Expository teaching is a teaching strategy where the teacher presents students with the subject matter rules and provides examples that illustrate the rules. Examples include pictorial relationships, application of the rules, context through historical information, and prerequisite information. Examples are provided to give contextual elaboration and to help students see the subject matter from many different perspectives.

In expository teaching teacher gives both the principles and the problem solutions. In contrast to his role in discovery learning, the teacher presents the student with the entire content of what is to be learned in final form; the student is not required to make any independent discoveries. The usual verbal instruction of the lecture hall exemplifies expository teaching. It is sometimes called deductive teaching because the teacher often begins with a definition of concepts or principles, illustrates them, and unfolds their implications. Maheshwari (2013) believes that the reason for the lack of research in is that expository teaching has been identified with rote learning. The students, presumably, can only memorize the lectures by constant review and repetition. Indeed, it is possible to present a body of material so poorly that unless the students commit it to rote memory (as in the case of nonsense syllables), they have no way of remembering it. Expository teaching, however, can present a rich body of highly related facts, concepts, and principles which the students can learn and transfer. Textbooks are examples of expository teaching, and, as you very well know, they can vary in their methods of teaching subject matter and in their organization of that subject matter. Tileston (2010) explained that the teacher who solely adopts the expository strategy of teaching may intentionally make the students more relax and they will not

actively participate in the teaching and learning process. He points out that, what they termed "authentic pedagogy" which is a combination of constructivism with the mastery of discipline content. Ibe (2013) found out that teaching methods have statistically significant effect on students' performances in Biology. Students taught with guided-inquiry teaching method out-performed students taught with expository teaching method in Biology. The female students out-performed the males in the RMBT. The female students have higher interest levels in the RMBT than the males. The former research with the present study has similarities on the aspect of gender. Chiwe (2006) the results showed that the guided inquiry method was significantly better than the expository method in enhancing cognitive achievement in biology for students of all levels of scientific literacy, especially the high ones. Students of different levels of scientific literacy; showed positive attitude to biology, when the two methods were used. The interactive effects of teaching methods and scientific literacy levels, on both achievements in and attitude to biology, were not significant.

Poor achievement in Physics could be attributed to many factors ranging from the attitude of students towards the subject, methods of teaching the subject, lack of instructional materials, lack of motivation on the part of the teachers, lack of Basic Sciences background at the primary school and teacher's strategy which was considered as an important factor. This implies that the mastery of Physics concepts might not be fully achieved without the use of instructional materials. The teaching of Physics without instructional materials may certainly result in poor academic achievement. Onasanya and Omosewa (2011) stressed that a professionally qualified science teacher no matter how well trained, would unable to put this idea into practice if the school lacks equipment and instructional materials for him to translate the competence into reality.

The need for academic achievement can never be neglected since academic gains indicate success and progress in education will find this investigation useful in different ways. Physics students' academic achievement would improve and students would be motivated to work harder to a greater height in their academic. They would as well discover that sex is not a barrier to a high academic achievement and would despite their sexes sit up to challenge one another academically. The achievement and failure of students in Physics, aside other variables, strongly depend on the teachers' teaching style. This factor has contributed in no small measure towards the massive failure of students in both internal and external examination. The massive failure of learner therefore informed the need for this research to find out an inspiring teaching method which will produce more positive result with respect to gender equality. The achievement of students in the Physics has worsened over the years due to the fact that most of the students were not exposed to the right attitude to learning especially in the Federal Capital Territory, Abuja. The thrust of this research therefore was to investigate the effect of expository teaching strategy students' achievement on quantum Physic in Federal Capital Territory, Abuja.

Objectives

The objective of this study was to investigate the effect of ETS on Physics student achievement in Federal Capital Territory. Specifically, the study intends to:

1. determine the mean achievement scores of students taught quantum Physics with expository strategy and that of conventional strategy
2. examine the achievement gains scores of male and female students taught quantum Physics with expository.

Research Questions

For the purpose of this study, the following research questions are raised to guide the study:

1. what is the mean achievement scores of students taught quantum physics with expository strategy and that of conventional strategy?
2. what are the achievement gains scores of male and female students taught Physics with expository strategy?

Hypotheses

The following null hypotheses are formulated and tested at the 0.05 level of significance:

1. There is no significant difference between the mean scores of posttest and pre-test of student taught quantum Physics expository strategy.
2. There is no significant difference between the achievement gain scores of male and female students taught quantum Physics with expository strategy.

Theoretical Framework of the Study

This study is anchored on the following theories:

Bruner (1966) learning discovery theory.

Bruner proposes that learning is a highly complex activity which involves three major processes, namely, acquisition of information, manipulation or transformation of this information into a form suitable for dealing with the task at hand and testing and checking the adequacy of this information. Need to be given opportunity to discover and invent things. This allows teachers to extend their lesson to a wider range of students and increase participation through individualized process. Through this method, students are able to make personal connections to their own interests and are encouraged to express their own opinions. Hence the teacher should allow the students to acquire skills that will make them learn on their own. The poor achievement of students in Physics has continued to be a major cause of concern to all, particularly those in the mainstream of science education in Nigeria. Learning is only meaningful to the extent to which the learner can integrate existing learning or knowledge with new ones (Eriba *et al.*, 2015). This theory emphasizes how prior knowledge affects the learning process of new learning task. To make learning more meaningful, lively, understandable and real, appropriate instructional methods must be applied.

METHODOLOGY

Pretest-posttest control group quasi experimental research design was used for this study. Due to the nature of the problem under investigation, the researcher chose pretest-posttest control group design among other experimental designs (single group, parallel group, rotational and factorial designs). The design was provided for academic ability equivalence of the two groups prior to the treatment. The target population of the study consists148 Senior Secondary Schools in FCT with a population 4353, comprised of 2450 male and 1903 female students as documented on FCT 2018. For the purpose of this study, a sample of 96 (female 39 and male 57) students from three different schools were taken in FCT. A multistage stratified sampling technique was adopted for this study. In the first stage, three area councils were selected from the six area councils using simple random sampling technique. Simple random sampling technique was used in order to give every area council equal chance of being selected for the study. The names of the area councils were written on piece of papers, folded and put in a container, shuffled and the researchers drew the area councils with replacement (i.e. balloting with replacement) and in the second stage, two senior secondary schools were drawn from the three (3) area councils chosen for the study using purposive sampling technique. Purposive sampling technique was used in order to select schools with large population of SSII students were selected from each school making a total of 96 students which were used for the study.

The instrument used for data collection was the Quantum Physics Achievement Test (QPAT) developed by the researcher. The QPAT comprised 30 multiple choice items. Each comprised a stem and 4 options, the stem formed the questions while the option was the possible answers. A question has a predetermined key and the correct answer while the other opinions are distractors.

Table 1: Specification for Quantum Physics Achievement Test

Content	Period	Cognitive Objection						
		Know 10%	Comp 10%	Appl 30%	Anal 20%	Synth 20%	Eval 10%	Total 100%
Quantum Mechanic	3 (25%)	1	0	2	1	1	0	5
Quantum Measurement	4 (33%)	1	1	1	1	1	1	6
Wave Guide	2 (27%)	0	1	1	1	1	0	4
Quantum Harmonic Oscillator	3 (25%)	1	1	1	1	0	1	5
Total	**12 (100%)**	**3**	**3**	**5**	**4**	**3**	**2**	**20**

K = Knowledge, C = Comprehension, A = Application, A = Analysis, S = Synthesis, E = Evaluation.

After preparing the table of specification, the researchers wrote the items in line with the table of specification, the items were appraised to remove vague items and modify some mistakes made. The instrument was validated by two experts in the Department of Science Technology and Mathematics Education, Faculty of Education, Nasarawa State University, Keffi, Nigeria. They rate each item in the QPAT in terms of relevance clarity, accuracy and consistency in supplying needed data, comprehensiveness of the scope and appropriateness for the stated purpose using the 5-point scale shown below. Validation index result of 0.80 was obtained. QPAT was pilot tested by administering the A and B multi choice items with 4 opinions each to 30 Physics students with comparable academic ability in another school different from the schools for the experiment. The test was marked and the score were used to determine item analysis. Thus by considering the psychometric characteristic the 30 test item were reduce to 30 items for the main study. The scores also enable the researcher to establish the reliability of the instrument. Test-retest method was used to calculate the reliability coefficient. The internal consistence of the instrument was established at 0.88 index. This reliability coefficient is very high according to Ugodulunwa and Ugwuanyi (2003) guideline for interpreting correlation coefficients with ranging from value of (r:) 0.80 to 1.00 interpreted as very high 0.60-0.80 as high 0.40-0.60 as medium. 0.20-0.40 as low and 0.00-0.20 s very low.

The statistical tool that was used in this study includes mean score, standard Deviation and ANCOVA. The statistical techniques to be used in this study include: Score transformation, raw scores of the instrument was transformed to a standard score that establish the equivalence of ELS group prior as the treatment. Mean scores and standard deviation was calculated from post QPAT and was used to carry out t-statistical computation. ANCOVA was used to test the hypotheses by means of analyzing the pretest and posttest scores. The test of statistical significance was set at an alpha level of 0.05 for acceptance or rejection of null hypotheses.

Analysis of Data

Research Question 1: what is the mean achievement scores of students taught quantum Physics with expository strategy and that of conventional strategy

Table 2: Means and Standard Deviations of ETS of Pretest and Posttest

Variable		Pretest	Posttest
ETS Grp	Mean	8.02	32.32
	N	47	47
	Std. Deviation	3.544	9.106

Table 2 shows that students taught physics with expository strategy have scores of 8.02 and 32.23 with standard deviations of 3.544 and 9.106 respectively, and their mean gain score was 24.3. The mean gain score difference between the two groups was 24.3 in favour of the conventional method group. This implies that students who were taught physics with expository strategy achieved better than those who taught Physics with conventional strategy.

Research Question: 2 what are the achievement gains scores of male and female students taught quantum Physics with expository strategy?

Table 3: Means and Standard Deviations of Male and Female Students

Gender		Pretest	Posttest
Male	Mean	7.52	30.33
	N	46	45
	Std. Deviation	3.114	8.417
Female	N	51	51
	Std. Deviation	4.048	9.476
Total	Mean	8.02	32.32
	N	96	96

Table 2 shows that male students exposed to pretest and posttest scores of 7.52 and 30.33 with standard deviations of 3.114 and 8.417 respectively. That of female students that were not exposed had pretest and posttest scores of 8.02 and 32.32 with standard deviations of 4.048 and 9.106 respectively. The mean gain score difference between male and female students of expository strategy was24.3 in favour of the female expository strategy. This implies that female students who were taught physics using expository strategy achieved better than male students who were taught using expository strategy.

Testing of Hypotheses

Hypothesis: 1 There is no significant difference between the mean scores of posttest and pre-test of student taught physics expository strategy.

Table 3: ANCOVA show the Significant Difference in the Mean Gain Scores of Students Taught with ETS

Source	Type III Sum of Squares	N	df	Mean Square	F	Sig.
Intercept	1478.891	2	1	1478.891	34.297	.000
Pretest	568.147	1	1	568.147	13.176	.000
Group	166.999	1	1	166.999	3.873	.051
Error	5045.005	90	90	43.120		
Total	160060.000	94	94			
Corrected Total	6835.467	96				

Table 3: Shows that the result of the ANCOVA test of significant difference between the mean gain scores of students taught with expository strategy of pretest and posttest. The significant factor in students' achievement in Physics for F (20.762) at p = 0.000. Thus, the null hypothesis of no difference was rejected. This is because the exact probability value of .000 is less than the level of significance of 0.05. Therefore, there was significant difference in the mean gain scores of students taught with expository strategy of pretest and posttest.

Hypothesis 2: there is no significant difference between the achievement gain scores of male and female students taught quantum Physics with expository strategy.

Table 4: ANCOVA of Mean Posttest Scores on Gender on the Using ETS

Source	Type III Sum of Squares	N	df	Mean Square	F	Sig.
Intercept	6372.047	2	1	6372.047	85.711	.000
Pretest	302.439	2	1	302.439	4.068	.049
Gender	212.452	1	1	212.452	2.858	.097
Error	3940.198	1	91	74.343		
Total	63062.000	90	94			
Corrected Total	4560.214	96				

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Table 4 Shows that the result of the ANCOVA test that compared the mean achievement scores of male and female students taught Physics students between expository strategy. The significant difference between in students' taught Physics using expository strategy for F (4.170) at p = 0.000. Thus, the null hypothesis of no difference was rejected. This is because the exact probability value of .000 is less than level of significance of 0.05. Therefore, this implies that there was a significant difference in the mean achievement scores of male and female students taught Physics using expository strategy.

DISCUSSION OF FINDINGS

The first finding of the study revealed that there was significant difference in the mean gain scores of students taught with expository strategy of pretest and posttest. This finding goes in line with the work of Ibe (2013) who found out that teaching methods have statistically significant effect on students' performances in Biology. Students taught with guided-inquiry teaching method out-performed students taught with expository teaching method in Biology. The female students out-performed the males in the RMBT. The female students have higher interest levels in the RMBT than the males. Second finding from the study revealed that there was significant difference in the mean achievement scores of male and female students taught Physics using expository strategy. This finding support the work of Chiwe (2006) who found out that the guided inquiry method was significantly better than the expository method in enhancing cognitive achievement in Biology for students of all levels of scientific literacy, especially the high ones. Students of different levels of scientific literacy; showed positive attitude in Biology, when the two methods were used. The finding also agreed with the research work of Ibe (2013) where the result revealed that female students performed better than male students and female students have higher interest in Biology than male students. Expository strategy on the other hand, possesses the quality of fast and efficient information delivery. It is relatively easy to organize and often requires little teachers' preparation. In ETS it is possible for the teacher to motivate students with enthusiastic and lively discussion and the lesion can be regulated according to the student's responses.

CONCLUSION

The need for academic achievement can never be neglected since academic gains indicate success and progress in education will find this investigation useful in different ways. Physics students' academic achievement would improve and students would be motivated to work harder to a greater height in their academic. They would as well discover that sex is not a barrier to a high academic achievement and would despite their sexes sit up to challenge one another academically. The achievement and failure of students in Physics, aside other variable, strongly depend on the teachers' teaching style. Some of the methods used by teacher are didactic and the students become very passive. It is the teacher who asks questions, rarely the pupils and very infrequently does a student's schooling allow him to discover problems. This factor has contributed in no small measure towards the massive failure of students in both internal and external examination.

In view of the above mentioned, there was significant difference between male and female physics students who were taught using expository strategy. By implication, there was gender disparity in the level of academic achievement of student taught using expository strategy. This study finally concluded that use of expository strategy should be embraced by all teachers. Physics should be made interesting to students, and one of the ways to motivate learners to want to learn is through the use of expository teaching strategy.

RECOMMENDATIONS

Based on the conclusions of this study, the following were recommended:

1. Physics teachers should measure the outcome of teaching in the degree of shock; rather than that of teaching search for at least some anecdotal evidence that Physics students are experiencing how quantum Physics presents to us an alternative worldview, which challenges some of the fundamental assumptions underlying classical physics to enhanced students' achievement.
2. Training and retraining of physics and science teachers should be encouraged by the heads of schools, by allowing male and female students to have the available opportunities to attend Physics class.

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REFERENCES

Bruner, J. S. (1966). Towards a Theory of Instruction. Cambridge: Harvard University Press.

Chiwe, N. (2006). The study was designed to investigate the relative efficacy of the guided inquiry and the expository teaching methods on the achievement in and attitude to biology of students of different levels of scientific literacy. *International Research in Educational,* 45(3):216-229.

Eriba, E., Otor, J. O and Clementina, N. I. (2015). Influence of Improvised teaching Instructional Materials on Chemistry Students' Performance in Senior Secondary. *International Research in Education,* 3(1): 111 – 118.

Ibe, H. N. N (2013). Effects of guided-inquir and expository teaching methods on senior secondary school students' performances in Biology in Imo State. *Journal of Education Research and Behavioral Sciences,* 2(4): 051 – 057.

Isola, O. M. (2010). Effects of standardized and improvised instructional materials on students academic achievements in secondary school physics. M. Ed. Thesis, University of Ibadan, Ibadan.

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RECOMMENDATIONS

Based on the conclusions of this study, the following were recommended:

1. Physics teachers should measure the outcome of teaching in the degree of shock; rather than that of teaching search for at least some anecdotal evidence that Physics students are experiencing how quantum Physics presents to us an alternative worldview, which challenges some of the fundamental assumptions underlying classical physics to enhanced students' achievement.
2. Training and retraining of physics and science teachers should be encouraged by the heads of schools, by allowing male and female students to have the available opportunities to attend Physics class.

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REFERENCES

Bruner, J. S. (1966). Towards a Theory of Instruction. Cambridge: Harvard University Press.

Chiwe, N. (2006). The study was designed to investigate the relative efficacy of the guided inquiry and the expository teaching methods on the achievement in and attitude to biology of students of different levels of scientific literacy. *International Research in Educational,* 45(3):216-229.

Eriba, E., Otor, J. O and Clementina, N. I. (2015). Influence of Improvised teaching Instructional Materials on Chemistry Students' Performance in Senior Secondary. *International Research in Education*, 3(1): 111 – 118.

Ibe, H. N. N (2013). Effects of guided-inquir and expository teaching methods on senior secondary school students' performances in Biology in Imo State. *Journal of Education Research and Behavioral Sciences,* 2(4): 051 – 057.

Isola, O. M. (2010). Effects of standardized and improvised instructional materials on students academic achievements in secondary school physics. M. Ed. Thesis, University of Ibadan, Ibadan.

John, A. (2013). Impact of instructional materials on Student's Achievement. *Research Review, An International Multi-Disciplinary Journal.*

Maheshwari, V. K. (2013). Expository Teaching – A Direct Instructional Strategy. http://www.vkmaheshwari.com/WP/?p=92 8

Nbina, J. B. (2012). Analysis of Poor Performances of Senior Secondary Students in Chemistry in Nigeria. *International Multi-Disciplinary Journal Ethiopia,* 6(4): 324 – 334.

Omosewo, E, O. and Anasanya, S.A. (2011).Effect of improvised and standard instructional materials on secondary school teachers' academic performance in physics in Ilorin, Nigeria. *Singapore Journal of Scientific Research*, 1(1): 68-76.

Omosewo, E. O. (1999). Relative effects of planned post laboratory discussion on students achievement in physics. *Journal of Education Foundations,* 4(2): 116-121

Owolabi, (2008). Assessment of classroom Environments in reformed calculus education. *Learning Environments Research*, 5(1): 51-76.

Tileston, D.W. (2010). *Ten best teaching practices: How brain research earning styles and standards define teaching competencies.* Corwin Press. Inc. 152 p.

Ugodulunwa, C. and Ugwuanyi, C. L. (2003). Understanding educational evaluation. Fab Anieh (NIG) Ltd