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Effect of Advance Organizer Teaching Strategy On Students' Academic Performance in and Attitude Towards Chemistry In Ekiti State Secondary Schools

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Abstract:

The study examined the effect of using advance Organizer on secondary school students' performance in and Attitude towards Chemistry in Ekiti State. The pre-test, post-test control group quasi-experimental design was adopted for this study. The population for the study comprised of 19,603 Senior Secondary Schools Two (SS2) students in 189 public Secondary Schools in the three senatorial districts across the sixteen (16) Local Governments Areas (LGAs) of Ekiti State. The sample for this study consisted of 144 SS2 chemistry students found in intact classes of the schools selected for the study. The two instruments used for study were Chemistry Performance Test (CPT) and Chemistry Attitudinal Scale (CAS). The instruments were subjected to content and face validity. The reliability of instrument was determined through the test re-tests method and reliability coefficients of 0.87 and 0.85 were obtained for CPT and CAS respectively which were believed to be high enough to adjudge the instruments as internally consistent, stable and reliable enough for use. The experimental procedure use in the study was in three stages: the pre-treatment stage (one week), the treatment stage (four weeks) and post treatment stage (three weeks), making a total of eight weeks for the study. The results of the data collected from both pre-test and post-test were collated and analyzed using descriptive and inferential statistics. Each of the hypotheses was tested at 0.05 level of significance. The findings revealed that the use of an advance organizer had positive effect on students' performance, and attitude towards learning of Chemistry.

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Introduction

The purpose of Education is to learn and learning involves acquiring knowledge which should be retained. Retaining the acquired knowledge and using it to perform a task is what is most important about learning. The method of teaching a particular subject can affect the performance and attitude of students referred to Learning outcomes. Learning outcomes can be defined as a comprehensive measurement of both academic performance/achievement and attitude of students towards learning. This is why a teacher must select good teaching strategies that bring out the essence of the lesson especially in chemistry, which is the focus of this paper. Results of different studies have shown that teaching methods is one factor responsible for the high failure rate (Atomatofa, 2007). Researchers have emphasized that the purpose of a good teaching strategy is to create specific learning experience that brings about criterion performances not only for the purpose of test but for change in behavior outside the class (Akeji, 2001).

Therefore, there have been strives over the best teaching methods to use to enable students gain understanding of scientific concepts. Most Chemistry students in the senior secondary schools see chemistry as abstract and do not seem to clearly understand scientific concepts. They come to class with concepts that are sometimes wrong and there is need for the science teachers to introduce aids like organizers before the lesson to serve as anchors and help in correcting such pre-concepts or alternative concepts so as to remove their wrong belief and consequently improve their performance and attitude towards learning of chemistry considering its relevance in our society.

The relevance of chemistry in our daily and national life as well as in the industry is enormous as many of our day-to-day activities revolve around Chemistry. It is one of the basic requirements for admission into all science- based courses in tertiary institutions. It is a pre-requisite to study of medicine, pharmacy, textile and clothing, agriculture and all fields of engineering. Studying Chemistry therefore assists the development of knowledge, skills and attitudes, which enrich people's lives and allows them to be scientifically capable members of the society. Despite the key role of chemistry as the central science that forms the basic foundation to many disciplines and in improving the quality of life, the student's enrolment and performance in chemistry has not reached the expectation of chemistry teachers in Ekiti State and as a result, serves as a gate-way limiting access to science fields. For a student to be enrolled in these courses mentioned above, his or her academic performance in chemistry must be encouraging. Research showed that the performance of students in chemistry in external examinations is yet to meet the expectations of the science educators and chemistry teachers in particular. This is shown in the analysis of WAEC results of chemistry students in Ekiti State from Ekiti State Ministry of Education, Science and Technology, Ado Ekiti between 2013 and 2018. This showed that there was an erratic performance of students in chemistry as presented in table 1.

Table 1: Analysis of WAEC Results in Chemistry in Ekiti State from 2013-2018

Years	Candidates Registered	A1-C6	%	D7-F9	%
2013	5043	3817	75.7	1093	21.7
2014	5829	3477	59.7	2352	40.3
2015	6072	4580	75.4	1492	24.6
2016	5258	4471	85.0	787	15.0

2017	5258	4894	93.1	364	6.9
2018	5155	3964	76.9	1191	23.1

Source: Ekiti State Ministry of Education, Science and technology

Table 1 above shows the analysis of students' performance in Chemistry at West Africa Certificate Examination (WAEC) in Ekiti State from 2013 – 2018. The table showed the performance of students with grade A1-C6 recorded a fluctuating performance in Chemistry with highest of 93.1% in 2017. But there was a noticeable decline in the performance of students with grade A1-C6 from 75.7% in 2013 to 59.75% in 2014. Meanwhile, in 2016, the performance of students with grade A1-C6 stood at 85.0% but dropped to 76.9% in 2018. From the above analysis, it shows that, the performance of students in Chemistry had improved; however, it was erratic performance.

Efforts made through research had been in the areas of likely to discover the causes of the persistent student fluctuating performance in chemistry which include students' perception that the learning of chemistry is abstract, teaching methods, school environment, quality of chemistry teachers, teaching aids among others. This statement was supported by Adeyemi (2010) who posited that students' achievements in chemistry are influenced by classrooms, libraries, quality and quantity of chemistry teachers, the availability and non-availability of facilities, teaching aids, School management, teaching method, environment and the location of the School. According to WAEC chief examiners' report (2015); students under achievement in chemistry can be attributed to ineffective ways of teaching chemistry with lack of familiarity with common chemistry laboratory equipment or apparatus and poor knowledge in the fundamental principles and procedures for practical Chemistry. Fabunmi, (2004) opinioned that there are also indications that the amount and quality of Chemistry learning that take place in the school depends on the teacher factors such as qualification, motivation and teaching experience. The teaching of chemistry involves the use of various methods and techniques. This includes lecture, discussion, demonstration, experimental, inquiry among others. From the experience of the researcher, the lecture method also known as chalk and talk method is the most popular conventional method of teaching chemistry in our secondary schools in Ekiti State. In light of this the teacher should develop a strategy in conjunction with the conventional method to improve students' 'academic performance' in and attitude towards chemistry in Ekiti State

Academic performance is defined as the student short term success or accomplishment in chemistry characterized by teacher's made performance tests in course work and in examinations of students. Popoola (2010) defined academic performance as an expression used to present students' scholastic standing and which is a function of various factors such as method of teaching, teachers qualifications, students home background, school environment, attitude, interest, among others In relation to educational research, academic performance of a student can be regarded as the observable and measurable behaviour of a student in a particular situation. In chemistry, students' academic performance consists of his scores at any particular time obtained from a teacher- made test. Abu-Rabia(2013) defined performance test as the type of mental test in which the subject is asked to do something rather than to say something. Attitude towards chemistry denotes interest or feelings toward studying chemistry. It is the Students' disposition towards like or dislikes chemistry. Students' beliefs and attitudes have the potential in either to facilitate or inhibit learning

(Yara, 2009). A student who performs well in such test or any other test is likely to have good retentive memory.

According to Bybee (2009), students' prior conceptions, ideas and experiences which they carry to the class room influence the way they learn new concepts and skills. Research shows that good performance could be as a result of good retention which could be done by subsumers. The subsumer here is the Advance Organizer (AO). Advance Organizer is the information that is presented prior to learning which can be used to organize and interpret new incoming information. This study is based on the Ausubellian theory of advance organizers propounded by David Ausubel. The theory of advance organizer focuses on meaningful verbal learning. This theory emphasizes and contributes to the aspects of cognitive learning that encourages rapid learning and retention abilities. This teaching strategy was first introduced and used by Ausubel in 1960. He defines an advance organizer as a cognitive instructional strategy used to promote the learning and retention of new information. In explaining meaningful learning, Ausubel introduced the concept of a subsumption model as a pedagogic device in which central and highly unifying ideas are stated in terms already familiar to the learner, to which the learner can relate new ideas by subsumption. The introduced subsumers thus become Advance Organizers or anchoring foci for the reception of new material. A primary process in learning is subsumption in which new material is related to old and relevant ideas in the existing cognitive structures (Adebola, 2011).

The organizer is introduced in advance of learning itself, and is also presented at a higher level of abstraction. A few studies have been conducted on the effects of advance organizers on learning and learners performance. According to Adebola, (2011), Students learn best when they possess an integrated package of skills and beliefs that support learning. Atomatofa (2013) find out if the students taught lessons on gravitation, weightlessness and space travels did better when given organizers before the lesson than their counterparts not given any organizers in both attainment and retention test and found out that those given advanced organizers did better than those not given organizers in both attainment and delayed retention of the concepts taught. Zaman, Choudhary and Qamar (2015) posited that Advance Organizers strategy is more effective in teaching and learning at secondary level. Learners performed better when taught by Advance Organizers as compared to learners taught by traditional method. The performance of the learners in control group also improved in academic achievement in chemistry but average performance was lower as compared to the performance of experimental group. Owoeye (2016), posited that Advance Organizers teaching strategy is more potent in improving students' academic performance in Biology in secondary schools than the conventional method in vogue in the nation. He also revealed that there was no significant difference in the academic achievement of male and female students in Biology in each of the experimental and control groups before and after the treatment.

Okey and Avwiri (2014) found no significant differences in performance of mathematics students taught using advanced organizers and those taught without advanced organizers on the concept of electro magnetism. Usman, Choundhary and Qamar (2015) also indicated that there was no significance difference between the mean scores of post-test of students taught with advanced organize and those taught using conventional method. However these researches showed that there are still conflicting results of findings in the use of organizers.

Therefore, in the present study, teaching of Chemistry was done using an Advance Organizer in order to find out if there will be any effect on students' performance, attitude and retention in Chemistry in Ekiti State.

Statement of the Problem

The problem of science teachers trying to get students to clearly understand scientific concepts and for the concepts to get retained in their memory has bothered most science educators. The researcher observed that there is a persistent low and erratic performance of students in Chemistry in Ekiti State in recent years. This informed the use of advance organizer for teaching chemistry besides conventional classroom learning but the researcher noted that there are still contrary findings as regards the use of advance organizer. Hence the researcher sought to find out if the use of advance organizer will have any significant effect on Secondary School students' performance in and attitude towards Chemistry in Ekiti state, Nigeria.

Purpose of the Study

The main purpose of this study is to investigate the effect of using advance Organizer on students' academic performance in and attitude towards learning of Chemistry in senior secondary school in Ekiti state, Nigeria.

Research Questions

The following research questions were raised to guide the study:

1. Will there be difference in the performance of students in chemistry that are taught using advance organizer and those taught using conventional method?
2. Will there be difference in the attitudes of the students to chemistry after being taught using advance organizer strategy?

Research Hypotheses

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

1. There is no significant difference in the pre-test mean scores of students in the experimental and conventional groups
2. There is no significant difference in the performance mean scores of students who are taught using Advance Organizer and those who are taught using Conventional Teaching Method
3. There is no significant difference in the performance mean scores of male and female students in Chemistry who are taught using advance organizer and those who are taught using conventional method.
4. There is no significant difference in the attitude of students taught chemistry using advance organizer and those exposed to conventional method.
5. There is no significant difference in the attitude to chemistry of male and female students exposed to advance organizer and those exposed to conventional method.

Research Method

The pre-test, post-test control group quasi-experimental design was adopted for this study. In this study, there are two instructional groups (i.e. one experimental and one control). This is represented as follows:

Experimental Group (E): O_1 X O_2 O_{R1}

Control Group (C): O_3 X_C O_4 O_{R2}

Where:

O_1, O_3	=	Observations before treatment (pre-test),
O_2, O_4	=	Observations after treatment (post-test)
O_{R1}, O_{R2}	=	Observations (retention)
X	=	Treatment (advance organizer)
Xc	=	Treatment (conventional method).

Population

The population for the study comprised of 19,603 Senior Secondary Schools Two (SS2) students in 189 public Secondary Schools in the three Senatorial Districts across the sixteen (16) Local Government Areas (LGAs) of Ekiti State, Nigeria as at the time of this study (Source: Ekiti State Ministry of Education, Science and Technology, 2018). The population involved both male and female students.

Sample and Sampling Technique

The sample for this study consisted of 144 SS2 chemistry students found in intact classes of the schools selected for the study. The sample was selected using multistage sampling procedure. The first stage involved the selection of one LGA from each of the three Senatorial Districts in Ekiti State through simple random sampling technique. The second stage involved the selection of one LGA from the three LGAs earlier selected through simple random sampling technique. The third stage was the selection of two schools from each of the selected LGAs using purposive sampling technique. Intact class was used in each of the schools selected for selection of students.

Research Instruments

The instruments used for this study was Chemistry Performance Test (CPT) and Chemistry Attitudinal Scale (CAS). Chemistry Performance Test was used to measure students' performance in Electrolysis. The instrument consist of 20 items of multiple choice objectives with four options from the past Senior Secondary School Two (SS2) unified examinations of the State. The CPT used as pre-test and post-test was also used as retention test but scrambled. The students were not pre-informed about the retention test taken three weeks after post-test. Chemistry Attitudinal Scale (CAS) was developed by the researcher to measure the attitude of students towards the learning of Chemistry. The instrument had two sections i.e. A and B. Section A consisted of the personal data of students (i.e. gender and name of school) while section B consisted of 30 items intended to measure students' attitude towards chemistry learning. The responses were scored as follows: Strongly Agreed (SA) 4 points; Agree (A) 3 points; Disagree (D) 2points and Strongly Disagree (SD) 1 point

The packages used for this study includes

- Content materials (CM) consisting of the electrolysis
- The Organizer consisting of advanced organizer (for the experimental group).

The content materials was given to all the students (both experimental and control groups) during the lesson to study for their perusal after the class treatment. The Advance Organizer consisted of short passages on topics that serve as prior or advanced knowledge to the

intended topic. Here, the students in experimental group were given passages on behaviours of ions in solutions which make students to be familiar with various terms required in understanding of electrolysis.

Validity of the instruments

Face and content validity were ensured by experts in Tests and Measurement, two experienced Chemistry teachers who are WAEC and NECO examiners.

Reliability of the instruments

The reliability of each of the instruments was determined by test re-test method. This was done by administering each of CPT and CAS on 20 students from SSSII Chemistry class from a school different from the schools used for the study. The scores obtained from the separate responses were correlated using Kuder-Richardson 21 formula and the Reliability coefficients of 0.87 and 0.85 were obtained for CPT and CAS respectively which were believed to be high enough to adjudge the instruments as internally consistent, stable and reliable enough for use.

Experimental Procedure

The experimental procedures were in three stages: the pre-treatment stage (one week), the treatment stage (four weeks) and post treatment stage (three weeks), making a total of eight weeks for the study. At the pre-treatment stage, permission was obtained from the authority of each of the schools that was used for the study. The researcher discussed the purpose of the study with the Chemistry teachers in the schools that were used as research assistants. The research assistants were trained on the roles they were expected to play in the course of the study. The pre-test was administered at this stage. At the treatment stage which lasted for four weeks, the experimental and control groups were exposed to treatment. At the post-treatment stage, the post-test was administered to students in both the experimental and the control groups. The content of the CPT used in pre-test was reshuffled and used as the post-test test to find out their level of performance in Chemistry. The entire tests administered were collected and given to the researcher for data analysis. Data collected was analyzed using descriptive statistics of frequency count, mean and standard deviation to answer the research questions. T-test statistics was used to test hypotheses 1 and 2, while hypotheses 3 4 and 5 were analyzed using Analysis of Covariance (ANCOVA). Each hypothesis was tested at 0.05level of significance.

Results

Below is a presentation of the results of findings in this study. The results shows both the descriptive statistics that determined the answers to the research questions as well as the inferential statistics that gave room for testing of the various hypotheses:

Table 2: Pretest and posttest descriptive data for both groups

Groups	Post-test mean	Pre-test mean	Tests diff.
Experimental group	54.57	18.70	35.87
Control group	35.11	21.77	13. 34

The table shows that posttest mean and pre-test mean scores for experimental group and control group respectively. Since the mean difference of average performances of the students in experimental (35.87) was higher than those in conventional method group (13.34) and that there are differences in posttest and pretest means of the students in both groups with the advanced organizer group having the higher means in pretest, posttest test. The pretest scores of subjects in the two groups were 18.70 for the Experimental group and 21.77 for the Control group. The advanced organizer group had the higher mean difference of posttest (Experimental group 54.57, and Control group 35.11)

Research question 1: Will there be difference in the performance of students in chemistry that are taught using advance organizer and those taught using conventional method?

From the table 2 above, it is seen that there are differences of posttest means in the performance of students in Electrolysis of Chemistry when exposed to advanced-organizers and No-organizer with posttest means of 54.57 and 35.11 respectively. The advanced-organizer group had the higher mean while the control group had the lower mean. it implies that the use of advance organizer had positive effect on enhancing students' performance in Chemistry.

Research Question 2: Will there be difference in the attitudes of the students to chemistry after being taught using advance organizer strategy?

Table 3: Mean scores and standard Deviations (SD) of Students Attitude towards Learning of Chemistry

Group	N	Pre-Attitude		Post-Attitude		Mean Diff.
		Mean	SD	Mean	SD	
Experimental	71	68.82	10.37	102.60	9.31	33.78
Control	73	72.60	9.31	98.82	10.37	26.22

Table 3 indicates that attitudinal mean score and standard deviation for experimental group and control group were 102.60(9.31) and 98.82(10.37) respectively. Since the mean score of attitude of the students in the experimental group was higher than those in conventional method group, it implies that the use of advance organizer had positive effect on enhancing students' attitude towards learning of Chemistry.

Hypotheses Testing

Hypothesis 1: *There is no significant difference in the pre-test mean scores of students in the experimental and conventional groups*

Table 4: t-test Analysis of difference in the pre-test mean scores of students in the experimental and conventional groups

Group	N	Mean	S.D	T	df	Sig.
Conventional	73	21.77	17.39	1.159	142	.248
Advance Organizer	71	18.70	14.09			

Table 4 shows that t-calculated was 1.159 while the corresponding p-value was 0.248 (t=1.159, p=.248).The pre-test mean scores and standard deviation for conventional and advance organizer group were 27.77(17.39) and 18.70(14.09) respectively. Since the p-value of 0.248 was greater than 0.05 level of significance. This implies that, there is no significant difference in the pre-test mean scores of students in the experimental and conventional groups. The null hypothesis was not rejected.

Hypothesis 2: There is no significant difference in the performance mean scores of students who are taught using Advance Organizer and those who are taught using Conventional Teaching Method

Table 5: **Analysis of Covariance (ANCOVA) of Difference in the performance Mean Scores of Students**

Source	SS	df	MS	F	Sig.
Corrected Model	37946.404	2	18973.202	327.872	.000
Covariates (Pre-test)	24305.101	1	24305.101	420.011	.000
Treatment	17251.193	1	17251.193	298.114	.000
Error	8159.346	141	57.868		
Total	333938.000	144			

Table 5 shows that F-calculated for the treatment was 298.114 and the corresponding p-value was 0.000. Because the p-value of 0.000 was less than 0.05 level of significance, there is significant difference in the performance mean scores of students who are taught using Advance Organizer and those who are taught using Conventional Teaching Method (F=298.114, p<0.05). The null hypothesis is rejected. There is no significant difference in retention ability of students exposed to advanced organizer and those not exposed to Advance Organizer.

Hypothesis 3: There is no significant difference in the performance mean scores of male and female students in Chemistry who are taught using advance organizer and those who are taught using conventional method.

***T*able 6: Analysis of Covariance (ANCOVA) of difference in performance by Gender**

Source	SS	Df	MS	F	Sig.
Corrected Model	38177.102	4	9544.275	167.324	.000
Covariates (Pre-test)	23766.842	1	23766.842	416.665	.000
Treatment	15702.822	1	15702.822	275.292	.000
Gender	106.615	1	106.615	1.869	.174
Treatment * Gender	116.017	1	116.017	2.034	.156
Error	7928.648	139	57.041		
Total	333938.000	144			

Table 6 shows that F=2.034, p=0.156 at 0.05 level of significance. This implies that interaction effect of treatment and gender was not statistically significant. The null hypothesis was not rejected. Similarly, the main effect of gender was not statistically significant (F=1.869,

p=.174). However, the main effect of treatment was statistically significant (F=275.292, p<0.05). Therefore, there is no significant difference in the performance mean scores of male and female students in Chemistry who are taught using advance organizer and those who are taught using conventional method.

Hypothesis 4: There is no significant difference in the attitude of students taught chemistry using advance organizer and those exposed to conventional method.

Table 7: Analysis of Covariance (ANCOVA) of difference in the attitude of students taught chemistry using advance organizer and those exposed to conventional method

Source	SS	Df	MS	F	Sig.
Corrected Model	515.295	1	515.295	5.296	.023
Intercept	1460348.350	1	1460348.350	15009.759	.000
Treatment	515.295	1	515.295	5.296	.023
Error	13815.643	142	97.293		
Total	1474199.000	144			

Table 7 shows that F-calculated for the treatment was 5.296 and the corresponding p-value was 0.023. Because the p-value of 0.023 was less than 0.05 level of significance, there is significant difference in the attitude students who are taught using Advance Organizer and those who are taught using Conventional Teaching Method (F=5.296, p<0.05). The null hypothesis was rejected.

Hypothesis 5: There is no significant difference in the attitude to chemistry of male and female students exposed to advance organizer and those exposed to conventional method.

Table 8: Analysis of Covariance (ANCOVA) of difference in the attitude to chemistry of male and female students exposed to advance organizer and those exposed to conventional method

Source	SS	Df	MS	F	Sig.
Corrected Model	1535.967	3	511.989	5.602	.001
Intercept	1377842.230	1	1377842.230	15076.074	.000
Treatment	520.906	1	520.906	5.700	.018
Gender	874.874	1	874.874	9.573	. 057
Treatment * Gender	130.897	1	130.897	1.432	.233
Error	12794.970	140	91.393		
Total	1474199.000	144			

Table 8 shows that F=1.432, p=0.233 at 0.05 level of significance. This implies that interaction effect of treatment and gender was not statistically significant. The null hypothesis was accepted. Similarly, the main effect of gender (F=9.573, p=.057 was not statistically significant at 0.05 level of significant. The main effect of treatment (F = 5.700, p<0.05) was statistically significant at 0.05 level of significant. Hence, there is no significant difference in the attitude

to chemistry of male and female students exposed to advance organizer and those exposed to conventional method.

Conclusion

Based on the findings from this study, it could be concluded that the two groups (advance organizers and conventional group) has uniform knowledge of Chemistry before their exposure to treatment. The use of advance organizers however, yields considerable improvement on students' performance in and attitude to towards chemistry. Gender was no factor to determine students' performance in and attitude towards chemistry.

Recommendations

Based on the findings and conclusion from the study, the following recommendations were made:

- Advance Organizers should be employed for the teaching of Chemistry in secondary school as innovative instructional strategy to bridges what students already know and what they are to learn. This will allow for teaching - learning interaction effectiveness.
- Chemistry teachers should be encourage to use Advance Organizers instructional strategy in the classroom regularly to aid knowledge transfer and cross fertilization of ideas among Chemistry students.
- Chemistry students should be introduced to Chemistry Advance Organizers assignment in order to address Chemistry phobia and development positive attitude in students as well as improve students' self-learning.

Contributions to Knowledge

- This study has been able to prove that advance organizers can be employed in Chemistry classroom instruction in Ekiti State secondary schools; this will improve students' performance in and attitude towards Chemistry without gender preference.

References:

Adebola, S.F (2011). The Effects of Behavioural Objectives on Students' Achievement in Senior Secondary Mathematics Instruction when used as Advance Organizers. *American Journal of Scientific and Industrial Research. Accessed on: http://www.scihub.org/AJR on 6/7/2011*.

Adeyemi, B.(2010). Teacher Related Factors as Correlates of Pupils Achievement in Social Studies in South West Nigeria*. Electronic Journal of Research in Educational Psychology, 8(1),* 313-332.

Akeju, O. A. (2001). Relative effectiveness of teacher demonstration and structural inquiry and gender on subjects learning outcomes in chemistry practicals. *University of Ibadan Education and Information* Effects of advanced organizers on attainment and retention of students' concept of gravity in Nigeria *Studies Abstract, 2000–2002.*

Atomatofa, R. (2007). *Relative effects of inquiry, discussion and lecture methods of teaching integrated-science on students' achievements.* Unpublished master thesis, Delta State University, Abraka, Nigeria. Ausubel. D.P. (1960). The use of Advance Organizers in the Learning and Retention of meaningful Verbal Materials. *Journal of Educational Psychology, 51, 2672*

Atomatofa, R. (2013). Effects of advanced organizers on attainment and retention of students' concept of gravity in Nigeria. .*International Journal of Research Studies in Educational Technology*, 2(1), 1-10.

Ausubel. D.P. (1960). The use of Advance Organizers in the Learning and Retention of meaningful Verbal Materials. *Journal of Educational Psychology, 51, 2672*

Bybee, (2009). The Acquisition and Retention of Knowledge: A Cognitive View. Kluwer Academic Publishers

Ekiti State Ministry of Education, Science and Technology (2015). Summary of WAEC Results in Chemistry in Ekiti State between 2013-2017.

Fabunmi, M. (2004). The Role of Gender in Secondary School Students'Academic Performance in Edo State, Nigeria. *West African Journal of Education (24)1*

Okey, I. F.&Avwiri, E.(2014). Effects of use of advance organizers on students' performance and retention of the concepts of electromagnetism. *Journal of Medical and Applied Biosciences*, 6(2) 60-75.

Owoeye, P.O (2016).Effects of advance organizer teaching strategy on students' academic performance in biology in senior secondary school in Ekiti state, Nigeria.*International Journal of Multidisciplinary Research and Development*, 3(6), 226 – 230

Popoola, A.A (2010). Teacher's Mathematics Anxiety as a Correlate of Pupil's Attitude to Mathematics*. Researcher in Curriculum Studies.* (RICS), 3(2).WAEC (2015). Chief examiner's report. Lagos: WAEC Press Ltd

Yara, P.O. (2009). Relationship between Teachers' Attitude and Students Academic Achievement in Mathematics in some selected Senior Secondary Schools in Southwestern Nigeria. *European Journal of Social Sciences. 11(3), 364-369.*

Zaman, T. U., Choudhary, F. R., & Qamar, A. (2015). Advance organizers help to enhance learning and retention. *International Journal of Humanities Social Sciences and Education, 2(3), 45-53.*

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