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Effect of Examination and Teaching Curriculum-based Scheme of Work On Secondary School Students' Interest and Achievement in Chemistry

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Abstract

In this study, quasi experimental design was used to ascertain the effect of scheme of work on the interest and achievement of secondary school students in chemistry. Two research questions and two hypotheses guided the study. The population of the study comprised of 2,980 SS1 chemistry students in all the 30 secondary schools in Nsukka education zone, Enugu State, Nigeria, with a sample size of 120 chemistry students from six secondary schools randomly selected from all the secondary schools in the zone under study. Two schemes of work, one derived from the National Curriculum for Teaching Chemistry; and the other based on the National Examinations Syllabus for Chemistry were used for treatment. A validated achievement test and an interest scale questionnaire were used for data collection. The reliability indices of the instruments were 0.76 and 0.74 respectively. Mean and Standard deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. The research findings showed that scheme of work affects the interest and achievement of students in chemistry. When properly derived from the teaching syllabus, the scheme of work has a positive effect; whereas when it is derived from the examinations syllabus, it impacted negatively on students' interest and achievement in chemistry. Based on these findings, some recommendations were made.

Keywords: chemistry, scheme of work, students' interest and achievement

Introduction

Chemistry taught in secondary schools depends on approved curriculum for the subject. A curriculum is a well-defined and prescribed course of studies, which students must complete for them to pass a given level of education (Musingafi, Mhute, Zebron & Kaseke, 2015). A typical curriculum includes the educational objectives, instructional content, materials, resources and procedure; and processes for measuring and evaluating achievement of educational objectives and outcome. Chemistry plays a key role in the overall development of individuals. It helps them to solve their daily needs such as clothing, feeding, transportation, etc. The knowledge of chemistry equips students for scientific and technological development.

Chemistry is one of the core science subjects that is needed for further study in science-related courses such as pharmacy, medicine, engineering etc. For this reason, Chemistry is regarded as the central science that forms the basic foundation to many disciplines and in improving the quality of life. Despite this important role of chemistry, the interest and achievement of secondary school students in the subject have for years remained a matter of serious concern, as these students no longer have the zeal and enthusiasm to study chemistry. Most secondary school students studying chemistry do so simply because it is a prerequisite to their future career (Okorie & Ezeh, 2016). Students' lack of interest in chemistry stem from many factors, including certain activities of the school system, especially their teaching-learning process in chemistry education (Ogunsaju in Emendu & Okoye, 2015).

Experiential evidence and research (Udoh in Opara & Waswa, 2013) show that students do not study chemistry with deep interest and understanding rather they learn the subject just to pass required examinations. There is too much emphasis now placed on passing examination and possession of secondary school certificate as the ultimate goal of a secondary school education. This misconception has made many schools to abandon the normal school teaching processes, i.e. teaching from scheme of work derived from the teaching syllabus properly drafted from approved curriculum. In Nigeria, it is the statutory responsibility of the Nigerian Educational Research and Development Council (NERDC) to approve the curricula of various subjects studied in Nigerian secondary schools.

It is from the National curriculum that the State Ministry of Education and examination bodies draw or derive the syllabi for teaching and examinations respectively. The syllabus is a more focused outline of the objectives and contents to be covered in a certain period, at a specific level, for a particular subject. It therefore means that there are two types of syllabi, namely Examination Syllabus and Teaching Syllabus. Examination syllabus is a mere outline of topics meant to guide the private study of external examination candidates while the teaching syllabi are usually all inclusive, comprising of extra-curricular activities like games and sports as well as assessment guides, (NERDC, 2012). Teaching syllabus is used to prepare the scheme of work.

The scheme of work is a more detailed description of the learning content within the overall teaching syllabus. It is an interpretation of the teaching syllabus specifications that can be used for monitoring implementation of the original curriculum plan. The classroom teacher prepares the scheme of work by breaking down the teaching syllabi into smaller contents or topics that could be taught in each term of the school year, thereby ensuring that the teaching syllabus is implemented in a structured and timely manner. The scheme of work describes the content and learning experiences that should be treated every term of the academic year, (Okai in Musingafi et al, 2015). From this scheme of work, the teacher prepares the unit plan showing clearly what resources, class activities and assessment strategies will be used to ensure that the learning objectives are successfully met. The unit plan is then used to prepare the lesson plan. The lesson plan is a detailed description of the course of instruction for one lesson, (NERDC, 2012).

Currently, many teachers use the examination syllabus to prepare scheme of work for instruction, which does not necessarily consider the spiral arrangement of concepts in the teaching syllabus; and their interrelatedness, with emphasis on arousal and sustenance of students' interest in chemistry. For instance, in the WAEC syllabus, the first topic is 'structure of atom' and the last topic is 'chemistry, industry and the environment' (WAEC, 2013); and also in the JAMB syllabus, the first topic is 'separation of mixtures, and purification of chemical substances' and the last topic is 'chemistry and industry' (Chemistry Syllabus from JAMB, 2016). The selection of all these first topics and their arrangement in the examination syllabi pay no attention to the interest of the beginning chemistry students, who at that level find the concepts abstract.

The NERDC approved chemistry teaching curriculum has as its first topic what these examination (WAEC & JAMB) syllabi have as their last topic, which is 'chemistry and industry' and one of its recommended teaching activities is: 'identify chemical industries in the locality and explain how these chemical industries have influenced lives and national economy especially in Nigeria, (NERDC, 2009). This topic obviously brings out the curious part of the students as they explore the industries in their locality and this makes them to be interested in the subject of discussion. But the classroom teacher in a bid to make the students pass examination neglect this important aspect of education in chemistry; in chemistry schemes of work available in most schools, the topic 'chemistry and industry' is always treated last, confirming the fact that most teachers, rather than use the teaching syllabus in writing out the scheme of work use examination syllabus.

This practice by the teachers has made the students to be too examination-conscious, to the extent that they end up cramming and merely memorizing chemistry facts, with no meaningful learning. Consequently, the students perform poorly in the various chemistry examinations, especially in those areas

of the subject, where mere recalling of facts is of no relevance, but their application is rather emphasized. For this reason, students loose interest in the subject and find it boring, difficult and abstract. Interest has a lot to do if there is going to be a meaningful improvement in the teaching and learning of chemistry. Piaget (1964), considers interest a decisive factor in the learning process. When students are interested in what they are doing, they do it effectively and this leads to greater achievement.
Most classroom teachers prepare the scheme of work with two major points in mind:

- Helping the students to pass examination.
- Covering the syllabus.

This makes the teachers rush important concepts, neglecting the fact that the students are not just learning to pass examination, but to be functional members of their society and this can only be achieved if the students' interest and curiosity are highly aroused and sustained. The aim of this study is to ascertain the effect of scheme of work on the interest and achievement of secondary school students in chemistry.

Literature Review

Studies allude to certain secondary school classroom teachers' activities as a significant factor in students' underachievement in chemistry examinations, (Nnach, 2011; Korau in Nbina, 2012; Ale in Ekpete & Festus, 2012; Adamu, Boris & Kenni, 2013; Okorie & Akubilo, 2013; Ojukwu, 2016). Teachers are 'the drivers of the education system and managers of the classrooms' (Okorie & Akubilo, 2013), and have the sole responsibility of implementing the curriculum at the classroom level (NERDC, 2012). They prepare the scheme of work with which they teach and manage the affairs of the class. A successful formal teaching-learning process requires proper selection and arrangement of the teaching items and materials, selection and sequencing of learning content and methodologies thereof take place in the curriculum, syllabus, scheme of work and lesson plan stages (Musingafi, Mhute, Zebron & Kaseke, 2015). To successfully carry out this responsibility, the classroom teachers have to be professional, keep abreast of the innovations in chemistry teaching approaches or methodology and must possess adequate knowledge of the curriculum, (NERDC, 2012).

It is doubtful if NERDC's recommended approach to the teaching of chemistry is obtainable in our secondary schools' chemistry classrooms and laboratories. This is because in a study carried out to ascertain how knowledgeable teachers are about the chemistry curriculum, which they implement in schools, Okorie & Akubilo (2013) showed that about 20% of the teachers are not knowledgeable about the various dimensions of the new chemistry curriculum. The authors assert that lack of the knowledge of curriculum on the part of teachers, which very often is given as one of the contributing factors to students' under achievement in chemistry may after all be unfounded, as most teachers (80%) are knowledgeable about the curriculum.

The questions that arise then are: Do the teachers apply their knowledge of the curriculum effectively in the classroom? Why has students' achievement and interest in chemistry remained poor? Students' poor achievement and poor interest in chemistry are often linked to the traditional approach to teaching, which places emphasis on coverage of content mapped out in the school syllabus and scheme of work during the stipulated period in the school calendar (Opara & Waswa, 2013). The researchers confirmed that teachers rush through the scheme of work to enable them cover the topics in the curriculum within the given period. In this situation, the teachers act as agents of knowledge transmission and fail to transfer ownership of learning to their students. Unfortunately, teachers have adhered to this approach, which has resulted in students learning chemistry without conceptual understanding.

Learning belongs to the students who are expected to construct meaning out of learning materials, information or experience made available to them in a learning environment. Construction of meaning requires that the learner should be involved in both intellectual and physical activities carried out in an atmosphere that is conducive and devoid of unnecessary tension and anxiety, which could constitute a distraction to learning (Okorie, 2015). Classroom lessons should be organized to include concrete explorations and inquiry to elicit learners' potential to think creatively, to participate actively, creatively and reflectively. Social interaction among students and with teachers should also be encouraged as part of the teaching-learning process.

Teachers' adherence to the teaching method of rushing through the scheme of work in order to cover the topics in the curriculum has been explain by Ojukwu (2016), who asserts that society has placed too much emphasis on students' performance in examinations. Consequently, teachers not only rush through the scheme of work so as to cover the curriculum, but also teach the students from the examination syllabus all in a quest to make them pass examination; neglecting the fact that as Dewey (2009) observed, whatever is uppermost in the child's mind constitutes to him for the time being the whole universe.

Thus, examination achievement motivation appears to drive students' studies in most instances. Perhaps it was for this reason that Ulrich (1991), argued that the prevailing concepts of achievement motivation were insufficient from an educational point of view because they implied that the best form of motivation a student can have is to strive for high performance, no matter what area. The content to be learned has been overlooked. Specific emphasis on students' performances neglects the possibility that students develop interest in, and come to like their subjects and learn because they value the process of being engaged in certain fields of knowledge.

Ulrich (1991) shows that interest as a factor and the quality of experience in learning situations in high school classrooms are significantly correlated with involvement, enjoyment, concentration and activation, which lead to a better performance of students. This is in consonance with William's (1899) assertion that a very simple abstract programme for the teacher to follow in keeping the attention of the child is to begin with the line of his native interests, and offer him objects that have some immediate connection with these; next, step by step, connect with these first objects and experiences the later objects and ideas, which the teacher wishes to install. There is the need to ascertain how effective the scheme of work used by the classroom teacher is in enhancing or otherwise students' interest and achievement in chemistry. This then is the literature gap which this study hopes to fill.

Statement of the Problem

The interest and achievement of secondary schools' students in chemistry have fallen to a very low level. Students no longer have the zeal and enthusiasm to study chemistry. The rate at which students are dropping chemistry shows that there is a great problem of lack of interest in the subject. The secondary school scheme of work in chemistry is suspected to be one of the major factors that contribute to students' poor performance in the subject. This is because, most classroom teachers rather than use the teaching syllabus use the examination syllabus in drafting out the scheme of work. Even in few cases where teachers use the teaching syllabus in drafting out the scheme of work, they are so obsessed with covering all the contents of the syllabus during teaching, to the extent that they fail to carry the students along during the lesson. In such situations, students understand little or nothing about what goes on in chemistry classrooms; many of them avoid chemistry classes, others manage to go through the boring teaching-learning process and resolve to cram or memorize all that they can, so as to pass chemistry examinations. This is the root cause of the alarming failures evident in both external and school chemistry examinations.

There is, therefore, the need in this study to ascertain the effect of scheme of work on the interest and achievement of secondary school students in chemistry. The question that arises then is: what is the

effect of scheme of work on the interest and achievement of secondary school students in chemistry? Providing answer to the question is the problem of this study.

Purpose of the Study

Generally, the purpose of this study was to ascertain the effect of scheme of work on the interest and achievement of secondary school students in chemistry. Specifically, the study sought to:

1. ascertain the effect of scheme of work derived from teaching curriculum on students' achievement and interest in chemistry;
2. ascertain the effect of scheme of work derived from examination syllabus on students' achievement and interest in chemistry;

Significance of the Study

The outcome of this study should be of interest to chemistry teacher, who could fine it significant and generally helpful as a guiding tool that directs the teacher in the preparation of standard chemistry scheme of work derived from a standard teaching syllabus, designed to stimulate, develop and sustain students' interest and achievement in the subject. For researchers in pedagogy, and chemistry education particularly, this study could be a source of method, materials and reference for studies on similar topics.

Scope of the Study

This study was conducted, using SS1 chemistry scheme of work on Chemical Industry in Nsukka Education Zone of Enugu State, Nigeria. The rationale for using SS1 scheme of work is because this is the students' first contact with chemistry and at this stage, the students either develop genuine interest in chemistry, which leads to greater achievement in chemistry or the students barely manage to scale through chemistry.

Research Questions

The following questions guided this study:

1. What is the mean achievement score of students taught using chemistry scheme of work derived from the teaching syllabus and that of those taught using chemistry scheme of work derived from examination syllabus?
2. What is the interest mean score of students taught using chemistry scheme of work derived from teaching syllabus and that of those taught using chemistry scheme of work derived from examination syllabus in chemistry?

Hypotheses

The following null hypotheses (H0), were formed for the study and were tested at 0.05 level of significance:

H0 1: There is no significant difference between the mean achievement score of students taught using chemistry scheme of work derived from teaching syllabus and that of those taught using chemistry scheme of work derived from examination syllabus.

Ho 2: There is no significant difference between the interest mean score of students taught using chemistry scheme of work derived from teaching syllabus and that of those taught using chemistry scheme of work derived from examination syllabus.

Methodology

Quasi Experimental design was used in this study. This design was found appropriate for the study because it involves the use of non-equivalent treatment groups, in this case, six intact classes of SS1 students from six different secondary schools were used; three classes served as treatment groups and the other three as control groups. The population of the study comprised of all the teachers and all the 2,980 SS1 chemistry students in all the 30 secondary schools in Nsukka Education Zone. The students were within the age bracket of 14-17 years. Both private and public schools were used in this study, so as to have a solid base for conclusion at the end of the study. The study was carried out in Nsukka Education Zone. Nsukka is one of the seventeen Local Government Areas in Enugu state, Nigeria. The area was chosen because it is the home of many prestigious private and public secondary schools. These schools are expected to produce secondary school leavers with very good background in chemistry, who go further to study chemistry-related courses and become graduates who will contribute to the economic growth of the country. The sample of the study was made up of 120 chemistry students and their teachers from six secondary schools chosen randomly from all the 30 secondary schools in Nsukka Education Zone. Two co-educational schools, two girls only schools and two boys only schools, in each group of two; one is a public school while the other is a private school, making a total of three private schools and three public schools. Also in each group of two, one served as the treatment group while the other served as the control group. SS1 students were chosen for the study because they are still in the early stage of their study of chemistry; their interest in chemistry and understanding of its concepts can easily be ascertained. Validated achievement test and questionnaires were used for data collection. An achievement test of ten (10) questions with options A-D on the topic 'chemical industries', the students' interest questionnaire titled: Secondary School Chemistry Interest Evaluation Questionnaire for Students, contained statements about student's interest in chemistry.The questionnaires consisted of structured questions which made it easy for the respondents to indicate their degree of agreement or disagreement by a tick (√) in the appropriate column. The instrument is a four point Likert-scale with the following options and values: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, Strongly Disagree (SD) = 1. The internal consistency of the students' interest questionnaire was determined using Cronbach Alpha method and that of the achievement test was determined using Kuder Richardson20 method. The reliability of the students' interest questionnaire was 0.76; that of the achievement test was 0.74. In other to differentiate between the interest mean scores of students taught with a scheme of work derived from a teaching syllabus and those taught with a scheme of work derived from an examination syllabus, pre- and post- interest questionnaires were administered separately for the control and treatment groups. The entire questionnaires were collected from the respondents as soon as they finished with their responses; these were also collected and analyzed. Mean and Standard deviation was used to answer the research questions 1and 2. The Analysis of Covariance (ANCOVA) was used to test the null hypotheses at 0.05 level of significance.

Control of Extraneous Variables

The following measures designed to get reliable results were carried out:

1. Different schools were used for control and treatment groups.
2. Regular chemistry teachers of the schools used in the study were trained on how to administer the research instruments. In the schools used as control, the teachers were trained to be as fast as they can so as to cover the whole contents of the lesson plan, within the stipulated time; the main focus was on covering the contents of the lesson plan. In the schools used as experimental group, the teachers were trained to spend enough time in explaining the concept to students, get them involved and make them participate actively in the teaching and learning process, the main focus here was on making the students to be interested in what is happening in the classroom.

3. In order to ensure that the students were not familiar with them, the achievement test questions used for pretest were reshuffled before re-administering them as post-test.

Experimental Procedure

The students were given the chemistry achievement test to attempt, this was to ascertain their previous knowledge on the topic 'chemical industries', these test questions were collected by the researchers and packaged separately as 'pre-test'. The students' mean score in the pre-test was noted. The students' questionnaire were also administered to them to determine their previous level of interest in chemistry, it was also packaged separately as pre-treatment interest. The students' mean score in the pre-treatment interest test was noted. The students were then exposed to a 40-minute lesson on the topic 'chemical industries' by their chemistry teachers. The chemistry teachers followed the lesson plan already prepared by the researchers. The treatment group was taught using a lesson plan from a scheme of work properly drafted from the teaching syllabus while the control group was taught with a lesson plan from a scheme of work carefully drafted from the examination syllabus.

After the lesson, the post achievement test was administered to the students, the questionnaire was also re-administered, and these instruments were collected by the researchers and packaged as post-treatment achievement test and post-treatment interest test respectively. The students' mean score in these respective tests were noted.

Results

The findings of this study are presented in a tabular form based on the research questions and hypotheses that guided the study.

Research Question 1: What is the mean achievement score of students taught using chemistry scheme of work derived from the teaching syllabus and those taught using chemistry scheme of work derived from examination syllabus?

		Pre-test		Post-test		
Method	**N**	**Mean**	**SD**	**Mean**	**SD**	**Mean Gain/loss**
Experimental group	60	52.67	19.29	68.50	17.64	+15.83
Control group	60	54.00	18.61	60.33	22.62	+6.33

Table 1 shows that Pre-test Achievement Mean and Standard deviation scores for students taught chemical industry using chemistry scheme of work derived from the teaching syllabus (experimental group) are 52.67 and 19.29 respectively, while those taught chemical industry using chemistry scheme of work derived from examination syllabus (control group) are 54.00 and 18.61 respectively. This shows that both groups were almost at the same achievement standing prior to experimental treatment. However, Post-test achievement Mean and Standard deviation score for experimental group are 68.50 and 17.64 respectively, whereas the Post-test Mean and Standard deviation scores for control group are 60.33 and 22.62 respectively. This shows that the group taught using chemistry scheme of work derived from the teaching syllabus (experimental group performed better with Mean gain score of 15.83 than the control group taught using chemistry scheme of work derived from examination syllabus.

Research Question 2: What are the interest mean scores of students taught using chemistry scheme of work derived from the teaching syllabus and those taught using chemistry scheme of work derived from the examination syllabus?

		Pre-interest		Post-interest		Mean
Method	**N**	**Mean**	**SD**	**Mean**	**SD**	**Gain/loss**
Experimental group	60	29.03	27.43	57.10	22.64	+28.07
Control group	60	30.46	19.50	47.90	18.23	+17.44

Table 2 shows that Pre-Interest Mean and Standard deviation scores for students taught chemical industry using chemistry scheme of work derived from the teaching syllabus (experimental group) are 29.03 and 27.43 respectively, while those taught chemical industry using chemistry scheme of work derived from examination syllabus (control group) are 30.46 and 19.50 respectively. This shows that both groups were almost at the same level of interest prior to experimental treatment. However, Post-interest Mean and Standard deviation score for experimental group are 57.10 and 22.64 respectively, whereas the Post-Interest Mean and Standard deviation scores for control group are 47.90 and 18.23 respectively. This shows that the group taught using chemistry scheme of work derived from the teaching syllabus (experimental group) showed more interest in chemistry and its related activities with a mean gain score of 28.07 than the group taught using chemistry scheme of work derived from the examination syllabus (control group).

Hypothesis 1: There is no significant difference between the mean achievement scores of students taught using chemistry scheme of work derived from teaching syllabus and those taught using chemistry scheme of work derived from the examination syllabus.

Table 3: **Analysis of Covariance (ANCOVA) of Students Mean Achievement Scores in Chemical industries based on Method.**

Tests of Between-Subjects Effects

Dependent Variable: Post-test achievement

Source	**Type III Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Corrected Model	2051.09[a]	2	1025.54	2.47	.08
Intercept	51942.25	1	51942.25	125.28	.00
Pre-test achievement	50.25	1	50.25	.12	.72
Method	2020.84	1	2020.84	4.87	.03
Error	48508.07	117	414.59		
Total	548500.00	120			
Corrected Total	50559.16	119			

a. R Squared = .041 (Adjusted R Squared = .024)

Table 3 above indicates that F-ratio (4.87) with associate probability (sig(2-tailed) (p = 0.03) under method is less than the significant level (0.05) in the postulated hypothesis. Hence, the null hypothesis was rejected while the alternative hypothesis was accepted. Therefore, there is a significant difference between the mean achievement scores of students taught using chemistry scheme of work derived from teaching syllabus and

those taught with chemistry scheme of work derived from examination syllabus with high mean gain score of 15.83.

Hypothesis 2: There is no significant difference between the interest mean scores of students taught using chemistry scheme of work derived from teaching syllabus and those taught using chemistry scheme of work derived from examination syllabus.

Table 4: **Analysis of Covariance (ANCOVA) of Students Interest Mean Scores in Chemical Industries based on Method.**

Tests of Between-Subjects Effects

Dependent Variable: Post-interest

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	3513.32[a]	2	1756.66	4.20	.02
Intercept	110900.14	1	110900.14	265.37	.00
Pre-interest	974.12	1	974.12	2.33	.13
Method	2633.17	1	2633.17	6.30	.01
Error	48894.67	117	417.90		
Total	383158.00	120			
Corrected Total	52408.00	119			

a. R Squared = .067 (Adjusted R Squared = .051)

Table 4 above indicates that F-ratio (6.30) with associate probability (sig(2-tailed)(p = 0.01) under method is less than the significant level(0.05) in the postulated hypothesis. Hence, the null hypothesis was rejected while the alternative hypothesis was accepted. Therefore, there is a significant difference between the interest mean scores of students taught using chemistry scheme of work derived from teaching syllabus and those taught with chemistry scheme of work derived from examination syllabus with high mean gain score of 28.07.

DISCUSSION OF THE RESULTS

The results of this study showed a significant difference between the mean achievement scores of students taught using chemistry scheme of work derived from the teaching syllabus and those taught with chemistry scheme of work derived from examination syllabus. The group taught using chemistry scheme of work derived from the teaching syllabus (experimental group) performed better with high mean gain score of 15.83 than the group taught using chemistry scheme of work derived from examination syllabus (control group). This finding is in line with that of Ekpete & Festus (2012), which indicated that acceptable methods of instruction are capable of changing students' performance and attitude towards chemistry. Musingafi et al (2015) asserted that a successful formal teaching and learning process requires proper selection and arrangement of the teaching items and materials, selection and sequencing of learning content and methodologies thereof take place in the curriculum, syllabus, scheme of work and lesson plan stages. Therefore, when students are taught with a chemistry scheme of work properly drafted from the teaching syllabus it leads to students' high level achievement in chemistry.

This present study also shows a significant difference between the interest mean scores of students taught using chemistry scheme of work derived from teaching syllabus and those taught with chemistry scheme of work derived from examination syllabus. The group taught using chemistry scheme of work derived from the teaching syllabus (experimental group) showed more interest in chemistry and its related

activities with high mean gain score of 28.07 than the control group taught using chemistry scheme of work derived from the examination syllabus. This result agrees with that of Okoye (2016),which showed that students' interest in school subjects are important determinant of academic success second only to intelligence level. It is also in agreement with Ulrich (1991) finding that interest was significantly correlated with involvement, enjoyment, concentration and activation, which lead to a better performance of students.

In teaching and learning chemistry, it is the responsibility of the classroom teacher to break down chemistry concepts and terminologies to practical and real life experiences that will arouse the students' interest and spur them into action in chemistry activities. Thus, they will be deeply involved in the activities, absorbed in the experience and continue in it, leading to high academic achievement.

IMPLICATIONS OF THE FINDINGS

The findings of this research showed that students' interest in chemistry appreciated when the classroom teacher teaches with a scheme of work carefully drafted from the teaching syllabus while the reverse was the case when the examination syllabus was used; also, as the students' interest increased, their achievement generally improved and vice versa. The educational implication of this is that, if the chemistry classroom teachers could just shift their attention from being too examination conscious while teaching the students to motivating and encouraging them to be interested in chemistry, their performance in chemistry will be improved. Also, if the students are made to understand that their knowledge of chemistry does not end with just passing WAEC and JAMB examinations, but that they are learning to be functional members of the society, they will put more interest and effort in studying chemistry. This way, the school can produce more secondary school leavers with good chemistry background who can apply the knowledge gained from chemistry in their everyday lives.

REFERENCES

Adamu, A.S, Boris, O. O.& Kenni, A.M. (2013). Trends in Students' Achievement in Senior School Certificate Examination (SSCE) in Chemistry between 2000 and 2012. *International Journal of Science and Research*, 6(2), 393-395.

Chemistry Syllabus from JAMB.(2016). *JAMB Syllabus*. An online material retrieved on3rd December, 2016, from: https://myschool.com.ng/school/classroom/jamb-syllabus/

Dewey, J. (2009). *The Child and the Curriculum*. An online material retrieved on 4th January, 2016, from: www.gutenberg.org

Ejidike, I. P. & Oyelana, A.A. (2015). Factors Influencing Effective Teaching of chemistry: A Case Study of some Selected High schools in Buffalo City Metropolitan Munipality, Eastern Cape Provience, South Africa. *International journal of Education Science*, 8(3), 605-617.

Ekpete, O.A. & Festus, C. (2012). Improving Students' Performance and Attitude towards Chemistry through Problem-Based-Solving Techniques (PBST). *International Journal of Academic Research in Progressive Education and Development*,1(1),167-174.

Emendu, N.B. & Okoye, C. M. (2015). Identifying Problems Associated with Studying of Chemistry in Anambara State, Nigeria. International journal of Scientific and Research Publications, 6(5), 1-7.

Federal Republic of Nigeria (1984). *National Policy on Education*. 2nd Ed. NERDC Press, Yaba, Lagos-Nigeria.

Federal Republic of Nigeria (2004). *National Policy on Education*. 4th Ed. NERDC Press, Yaba, Lagos-Nigeria.

Musingafi, C.C, Mhute, I, Zebron, S. & Kaseke, K.E. (2015). Planning to Teach: Interrogating the Link among the Curricula, the Syllabi, Schemes and Lesson plans in the Teaching Process. *Journal of Education and Practice*, 9(6), 54-59.

Nbina, J.B. (2012). Analysis of Poor Performance of Senior Secondary Students in Chemistry in Nigeria. African Research Review. *An International Multidisciplinary Journal Ethiopia*, 4(6), 324-334.

NERDC. (2012). *Teachers Guide for the New Senior Secondary School Chemistry Curriculum*. Lagos: NERDC Press.

NERDC.(2009). *National Curriculum for Chemistry*. Lagos: NERDC Press.

Ojukwu, M.O. (2016). Perception of Students on Causes of Poor Performance in Chemistry in Eternal Examinations in Umuahia North Local Government of Abia State. *International Journal of Education & Literacy studies*, 4(1), 67-73.

Okorie, E. U. & Akubilo, F. (2013).Towards Improving Quality of Education in Chemistry: An Investigation into Chemistry Teachers' Knowledge of Chemistry Curriculum. *International Journal of Emerging Science and Engineering*, 9(1), 30-34.

Okorie, E. U. (2015, November). Effects of Instructional Software Package Method of Teaching (ISPMT) on Students' Interest and Achievement in Chemical Bonding, *Education*, 5(6): 158-165. DOI: 10.5923/j.edu.20150506.02

Okorie, E.U & D. N. Ezeh (2016). Influence of Gender and Location on Students' Achievement in Chemical Bonding. *Mediterranean Journal of Social Sciences*, Doi:10.5901/mjss.2016.v7n3p309,Vol 7 No 3, pp.310 -318

Okoye, F. N. (2016). Effects of Cooperative and Competitive Instructional Techniques on Students' Achievement and Interest in Geometry in Aguata Education Zone in Anambra State. Unpublished Masters Degree Project. Department of Science Education, University of Nigeria, Nsukka.

Opara F. and Waswa P. (2013). Enhancing Students' Achievement in Chemistry through the Piagetian Model: The Learning Cycle. *International Journal for Cross-Disciplinary Subjects in Education*, 4(14), 1270-1278.

Piaget, J. (1964). Part 1: Cognitive Development in Children. Piaget Development and Learning. *Journal of Research in Science Teaching*, 2, 176-186.

Ulrich, S. (1991). Interest, Learning and Motivation. *Educational Psychology*, 26 (3&4), 299-323.

WAEC. (2013). WAEC Syllabus. An online material retrieved on 3rd December, 2016, from: https://www.myschoolgist.com.ng/ng/waec-syllabus-by-subject-2013/

Williams, J. (1899). Theory of Interest. An online material retrieved on 18th February, 2017, from: https://www.uky.edu/~eushe2/Pajares/interest.html