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Influence of Class Size and Availability of Resources on Students Academic Achievement in Chemistry in Senior Secondary Schools in Abi Local Government Area Cross River State of Nigeria.

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ABSTRACT

This research work investigated the influence of class size and availability of resources on the academic achievement of students in Chemistry in public Senior Secondary School in Abi Local Government Area, Cross River State Of Nigeria. This study was aimed at finding how class size and availability of resources has an impact on academic achievement of students in Chemistry. The researcher made effort to review books, journals and other resources relating to the different headings incorporated in the literature review. The study population for this study composed of 200 students in four public secondary schools in Abi Local Government Area, Cross River State. The instrument used to collect data for this study was questionnaire. The data was analyzed through Statistical Package For Social Sciences (SPSS). The results obtained indicate that a significant relationship exist between class size and availability of resources and academic achievement. The findings revealed a significant difference in the performance of students of experimental and control groups. The average mean scores of these are 45.925 and 31.075, $t\text{-cal.} = 3.90$ and $t\text{-crit.} = 1.96$ which is less than the alpha ($\alpha = 0.05$), therefore, the hypothesis which states that there is no significant difference in the performance of students taught Chemistry in a small class and those with large population is rejected. This means, a small class size has a positive impact on the performance of Students taught Chemistry in Senior Secondary Schools.

Keywords: Influence, Availability, Achievement, Class Size, Academic, Chemistry.

INTRODUCTION

Science plays important roles in the society because it relates to our daily life expectation and career prospect. Both the process and the product of science are required through education and this is a specialized type of education such as science education. No country can be globally recognized without talking about scientific advancements. The importance of science in our society today made the Federal Government of Nigeria, through the Federal Ministry of Education to introduce science subjects in the nation's secondary school curriculum, Chemistry is one of such subjects introduced. The study of Chemistry involves pursuit of truth, a process that instills diligence, patience and objectivity in learners (Opara & Waswa, 2013). Chemistry learning develop the scientific habits in Students, which are transferable to other areas of life. Such habit involves non-reliance on superstition, use of critical thinking and respect for other people's opinion (Yunus & Ali, 2012). Chemistry as a science is a fundamental requirement for most core science based courses (Oloyede, 2010). Improving students academic achievement, Chemistry has been the concern and the reason for educational research and programmes. In addition to the students qualities, other determinants such as home factor, school variables, teacher qualities have been found to impact on students academic achievement, either positively or negatively. The class size and availability of resources are some of the school variables, which include the classrooms, libraries, technical workshops, laboratories, teachers' quality, school management, teaching methods, peers, etc that affect students' academic achievement (Ajayi, 2001 and Oluchukwu, 2000). Hence, these variables remain an important area that should be studied and well managed to enhance students' academic achievement. These factors can adversely affect student behavior and lead to higher levels of frustration among teachers, and poor learning attitude among student. Beyond the direct effects that poor facilities have on students' ability to learn, the combination of poor facilities, which create an uncomfortable and uninviting workplace for teachers, combined with frustrating behavior by students including poor concentration and hyperactivity, lethargy, or apathy, creates a stressful set of working conditions for teachers. Because stress and job dissatisfaction are common pre-cursors to lowered teacher enthusiasm, it is possible that the aforementioned characteristics of school facilities have an effect upon the academic achievement of students in Chemistry.

Statement of the Problem.

Students faces a lot of problem in the course of their educational pursuit. These problems are multifaceted. The research is concerned with the influence of the class size and availability of resources with special reference to student's academic achievement and possible solution to the problem. The alarming poor performance in examination is definitely of great concern to the researcher who sees the study as inevitable. It is noted that students' performance at senior secondary school level at private and public schools differs due to environmental constraints. The high levels of students' academic achievement

may not be guaranteed where instructional space such as classrooms, libraries, technical workshops and laboratories are structurally defective. However, little is known on the impact of class size and availability of resources on students' academic achievement in Senior Secondary School in Abi local Government Area of Cross River State.

Purpose of the Study

The main purpose of this study is to determine the Influence of Class Size and Availability of Resources on Students Academic Achievement in Chemistry in Senior Secondary Schools in Abi Local Government Area of Cross River State.

The Objectives of Study

1. Ascertain the impact of small class size on the academic achievement of Students in Chemistry in Senior Secondary Schools in Cross River State.
2. Determine how classroom building affect the academic achievement of Students in Chemistry in Senior secondary Schools in Cross River State.
3. Determine the impact of adequate class furniture on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State.
4. Ascertain the influence of the availability of resources on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State.

Research Questions

The following questions are raised with regard to this research:

1. What is the influence of small class size on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State
2. What is the effect of classroom building on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State?
3. What is the impact of large class size on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State?
4. What is the influence of the availability/ adequate resources on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State?

Research Hypotheses

The following are the research hypotheses:

1. There is no significant difference in the performances of students taught Chemistry in a small class size and those in a large class size in Cross River State.
2. There is no significant difference in the performances of students taught Chemistry using instructional resources and those taught without instructional resources in Cross River State.

Significance of the Study

It is hoped that this study will be of immense benefit to parents, educators and school administrators to reflect upon various factors that help students in achieving their academic goals. In so doing, they can investigate the possibility of introducing those factors to their school, which may consequently lead to enhancing students' educational outcomes in school. In addition, the fact that this study is conducted in Chemistry in Senior Secondary Schools, it shares quite a lot of similarities with many other subjects.

In this connection, this study provides a valuable reference for other schools to reflect upon the school environment as it affect the academic achievement of students in senior secondary schools.

Also, this work would serve as a stepping stone to other researchers, who are looking for better ways to solve the problem of class size and availability of resources and students' academic achievement in junior and senior secondary school in other subjects in the secondary school levels.

Parents through community efforts will see the need to enhance effective collaboration with government and other agencies to put in place the necessary resources like PTA buildings and other amenities needed for effective learning in secondary schools. Administrator will be committed to promoting a conducive environment through which chemistry and allied subjects will be taught to achieve effective learning process in Senior Secondary Schools.

Operational Definition of Terms

Academy: A school or college for special training.

Student: The word "Student" means any person who is ready to learn and engage in learning activities.

Environment: Environment can be seen as the totality of the natural and artificial (man made) phenomenon having direct and indirect impact on the habitants. It is a place through which learning process is carried out.

Learning: Learning is basically a process of adapting to and improving the environment. What is learned can be measured either by those things that we observe in the behaviour of the individual.

Performance: Is the act of doing optimally to the best of your ability.

Class size: This refers to the population of students in a particular class.

Chemistry: This is one of the science subjects taken in the senior secondary school levels. It deals with the logical manipulations of matter.

RESEARCH METHODOLOGY

Research Design

A quasi-experimental research design, involving a pre-test, post-test and non-equivalent research design groups was used for the study. This type of research design is appropriate for studying how the peculiarities of a class size and availability of resources would affect the performance of different students groups at the secondary school level. In other words, the research design is appropriate to the type of research conducted which is largely an evaluation. The purpose of using this design agreed with Kolo (2003) who says that "experimental is to investigate possible cause and effect as well as relationship between two or more variables by the application of treatment which cannot be resolved by observation or description.

Population

The target population for this study comprised students of public senior secondary schools in Abi local government area of Cross River State. There are total of four hundred and eighty seven (487) public Secondary Schools in Cross River State with seventy two thousand, three hundred and thirty three, (72,333) students. (Cross River Education Board, 2021).

1 Sample and Sampling Technique

Purposive sampling technique was used to select two renovated schools and two dilapidated schools. Thereafter, two large sized classes of SSS III were selected from two of the schools and another two small sized classes from two other schools, given a total of 4 intact classes. Students from these classes formed the sample size for this study which stood at 200. This figure is the representation of the population because Central Limit Theorem in Donald and Edward (1981) suggested that sample size should be greater or equal to 30 because according to them, CLT has taken care of the two most reliable measures of central tendency (Mean and Standard Deviation).

Scope of the Study

The scope of this work is to cover four selected senior secondary schools under Abi Local Government Area of Cross River State.

They are:

1. Agbo Comprehensive Secondary School Egboronyi
2. Community Secondary School Itigidi
3. Bahumono Secondary Grammar School, Ebom
4. Igbo Imabana Government Secondary School, Igbo Imabana

The subjects of this study are Senior Secondary Schools.

Instrument of study

The instrument used for this study was a Senior Secondary Chemistry Achievement Test (SSCAT) and a treatment package. The instrument was adopted from Senior Secondary School Certificate Examination (SSCE) conducted in Cross River State between 2012 and 2021. It contained 20 items which the participants were required to answer within 30 minutes. The purpose of using SSCAT was to determine the performance of the participants in the

examination (SSCE) is usually conducted to assess the performance of students in various disciplines including Chemistry. The treatment package is such that utilized class size and availability of resources classified as conducive and unconducive. The experimental group subjected/accommodated in the conducive class size and availability of resources that is made up of all that is needed for effective learning to take place such as good lightening, adequate class furniture, ventilation, white chalkboard, average population and instructional resources. While the control group are housed in a dilapidated classroom environment that is not very conducive for learning with the students seating on bear floor, in an overcrowded population with rough chalkboard without instructional resources.

Validity of the Instrument

The instrument was scrutinized by the researcher's supervisors and found it useful for the study at hand. Equally, 3 teachers in the school have gone through and made some adjustment on the selection of the items and found it appropriate for this type of study.

Reliability of the Instrument

In order to ascertain the reliability of the instrument, the results of the pilot testing in terms of their general performance were analyzed using Person Product Moment Correlation Coefficient (PPMCC). The choice of this statistic was formed by its appropriateness for the study at hand. James (1997) asserted that PPMCC is used for instrument which does not have yes/no items. He referred to it as the best technique for measuring internal consistency of an instrument. It also provides a unique estimate of reliability for a given instrument. The analysis of PPMCC for the instrument gave 0.944 for the first test and 0.944 for the second test respectively. Based on the standard indices for reliability coefficient (0.05), the coefficient obtained for the instrument (0.944 and 0.944), are an indication of high reliability, pointing to the suitability of the instrument.

Procedure for Data Collection.

The procedure used for collecting data was in four stages.

Stage one

In the first stage, the researcher presented an introductory letter for permission to be granted from the authorities of the schools that were involved for the use of their students and their lesson period once a week for a period of 8 weeks, 4 weeks each in both experimental and control schools.

Stage Two

In this stage, the two groups that are experimental and the control were given the instrument to respond to as pre-test under the same condition. The results were collected with the help of a research assistant.

Stage Three

Eight (8) weeks lesson plans were prepared with topics such as Hydrocarbons , Classification of hydrocarbons and Reactions types of hydrocarbon compounds, Organic Chemistry 1 and General Characteristics Of Organic Compounds. Thereafter, experimental groups were taught by the researcher for a period of 4 weeks in a classroom building with adequate furniture, and small size population using instructional resources. Another 4 weeks were also used in teaching the control group in a dilapidated classroom with over population, without furniture and instructional resources. But, the two groups were taught Chemistry using the same teaching methods.

Stage Four

In this stage, post-test was administered to both experimental and control groups in all the sampled schools. In this case, the participants were given the instrument that contained 20 items to cycle is the correct option from letter A-E within 30 minutes. The results collected were analysed.

Methods of Data Analysis

The data collected from the test administered to both experimental and control groups were subjected to both descriptive and parametric statistics. In this case mean and standard deviation were employed to explain the research questions while t-test was used to test the hypotheses. The researcher used t-test statistic in data analysis because it agreed with the opinion of Jibril and Nwanmou (2012) who suggested that t-test is appropriate when two independent variables have been used in research that is experimental and control groups.

DATA ANALYSIS AND RESULTS

Descriptive Analysis

The descriptive statistics were presented by way of answering research questions as follows:

Research Question 1: what is the impact of small class size on the achievement of students in Chemistry in Cross River State?

Table 1 Descriptive Statistics for Pre-test and Post-test of Experimental Group in Egoronyi.

Group	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	35	20.3000	18.8300	2.34
Post-test	35	39.0000	32.96	4.09

Table 1 showed the descriptive statistics of the experimental group in Agbo Comprehensive Secondary School Egoronyi. Pre-test with 20.30 as mean scores and 18.83 standard deviation while the post-test with 39.00 as mean scores and 32.96 standard deviation. This shows that class with small class size impacted positively on the achievement of students in Chemistry in Cross River State.

Research Question 2: what is the impact of classroom building on the achievement of students in Chemistry in Cross River State?

Table 2 Descriptive Statistics for Pre-test and Post-test of Experimental Group in Community Secondary School, Itigidi.

Group	No. Students	Mean	Std Deviation	Std. Error
Pre- test	35	23.40	7.91	3.7101
Post-test	35	42.70	1.91	0.9521

Table 2 showed the descriptive statistics of the experimental group in Community Secondary School Itigidi. Pre-test with 23.40 as mean scores and 7.91 standard deviation while the post-test with 42.70 as mean scores and 19.1 standard deviation. This shows a clear indication that a classroom building has impacted positively on the achievement of students in Chemistry in Cross River State.

Research Question 3: what is the impact of large class size on the academic achievement of students in Chemistry in Cross River State?

Table 3 Descriptive Statistics for Pre-test and Post-test of Control Group in Bahumono Grammar School, Ebom

Group	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	65	16.62	10.21	12.66
Post-test	65	21.62	15.09	9.62

Table 3, showed the descriptive statistics of the Control group in Bahumono Grammar School, Ebom.

The pre- test showed a mean scores of 16.62 and a standard deviation of 10. 21, while the post-test showed a mean scores of 21.62 and standard deviation of 15.09. This clearly revealed that in large class size brings about poor performance on students academic achievement in Cross River State.

Research Question 4: what is the impact of the availability/adequate resources on the achievement of students in Chemistry in Cross River State

Table 4 Descriptive Statistics for Pre-test and Post-test of Control Group in Government Secondary School, Imabana.

Group	N	Mean	Std. Deviation	Std. Error Mean
Pre-test	65	23.20	19.93	2.97
Post-test	65	36.96	31.37	3.89

Table 4 above showed the descriptive statistics of the control group in Government Secondary School Imabana. Pre-test with 23.20 as mean scores and 19.93 standard deviation while the post-test with 36.96 as mean scores and 31.37 standard deviation. This shows that availability of resources impacted positively on the achievement of students in Chemistry in Cross River State.

Inferential Statistics

Inferential statistics was conducted by way of using appropriate methods to test research hypotheses as follows:

Hypothesis 1: there is no significant difference in the performances of students taught Chemistry in a class with small class size and those taught in a large class size.

Table 5: t-test Statistics for Experimental and Control groups

GROUP	N	X	SD	df	α	t-cal	t-crit	P	Decision
Exp.	35	33.85	12.0	198	0.05	3.9720	1.9611	0.000	Rejected
Control	65	24.53	10.3						

Table 5 showed a significant difference in the performances of students of experimental group and control group. The mean scores are 33.85 and 24.53, $t\text{-cal} = 3.9720$ and $t\text{-crit} = 1.9611$ which is less than the 0.05 confidence level. Therefore, the hypothesis which states that there is no significant difference in the performance of students taught Chemistry in a small class size and those taught in a large class is rejected. This means a small class size has positive impact on the performance of senior secondary students in Cross River State.

Hypothesis 2: there is no significant difference in the performances of students taught Chemistry using instructional resources and those taught without instructional resources in Cross River State.

Table 6: t-test Statistics for Experimental and Control groups

GROUP	N	X	SD	df	α	t-cal	t-crit	P	Decision
Exp.	40.	58.00	19.51	198	0.05	2.7662	1.9614	0.000	Rejected
Control	65	37.62	15.09						

Table 6 showed a significant difference in the performance of students of experimental and control groups. The mean scores are 58.00 and 37.62, t -cal=2.7662 and t -crit=1.9614 which is less than the 0.05 confidence level. Therefore, the hypothesis which states that there is no significant difference in the performances of students taught Chemistry using instructional resources and those without instructional resources in Cross River State is rejected. This means that availability of resource in teaching has impacted positively on the achievement of students in Chemistry in Cross River State.

Summary of Major Findings

The findings of the study are summarized as follows:

1. The study revealed that there is a significant difference in the performances of students taught Chemistry in classroom buildings and those taught Chemistry in dilapidated classrooms in Cross River State. This shows that classroom buildings have positively impacted on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State, ($t = 3.9720$, $p = 0.000$).
2. The findings also revealed that there is a significant difference in the performances of students taught Chemistry in class with adequate furniture and those taught Chemistry in class without furniture. This clearly indicates that class with furniture impacted positively on the performances of students in in Senior Secondary Schools in Cross River State, ($t = 2.7662$, $p = 0.000$).
3. The findings showed that there is significant difference in the performances of students taught Chemistry in small class size and those taught Chemistry in class with large population. This is an indication that small class size has positive impacted on the academic achievement of students in Chemistry in senior secondary schools in Cross River State, ($t = 3.9720$, $p = 0.000$).
4. The findings revealed that there is a significant difference in the performances of students taught Chemistry using instructional resources and those taught without instructional resources. This showed that the availability of resources has impacted positively on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State, ($t = 2.7662$, $p = 0.000$).

Discussion of Findings

The issue of school physical facilities truly is paramount to meaningful implementation of educational programmes as well as actualization of students' educational objectives. Virtually, nothing can be achieved without adequate provisions of the school facilities required in order to facilitate the attainment of educational objectives. The study examined the Impact of Class size and availability of resources on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State.

Research question one indicated that significant difference existed in the performances of students taught Chemistry in classroom buildings and those taught Chemistry in dilapidated class buildings, mean scores 42.6923 and 23.33846. The results showed that students that were taught Chemistry in a classroom building performed significantly better than those in a dilapidated classroom. Decaying classroom buildings such as peeling paints, crumbling plaster, non-functional toilet, poor lighting, inadequate ventilation, and inoperative heating and cooling system threaten the, safety and learning opportunities of students.

Relating this situation to secondary school environment in Cross River State, it is obvious that most of the public secondary schools especially in the rural areas are in poor condition. In most cases, students in the rural areas are learning under trees with the chalkboard hanging on the tree, during the dry season and during rainy season, less or no learning takes place. In few schools where you can have block of classrooms, mostly are in the cities and towns and these structures are built many years ago and because of their long duration without proper maintenance they remained in a dilapidated condition.

Painting colour of these buildings is not recognise any more, leaking roof, open windows damaged floor, rough chalkboard among others. While good school facilities such as building appear to be important precondition for student learning. The above statement agreed with the opinion of Siegal (2004) and Fadipe (2000) who stated that school environment is an essential aspect of educational planning, he went further to explained that unless schools are well situated, buildings adequately constructed and equipment adequately utilized and maintained, much and effective teaching and learning may not take place.

Nwagwu (2006) and Ogusanu (2004) also asserted that the quality of education that children receive bears direct relevance to the availability or lack of physical facilities such as classroom building, library, laboratory, instructional facilities and overall atmosphere in which learning takes places. Also, in the words of Asiabaka (2008) and Abdulkadir (1991) school physical facilities and other elements are determinant in attainment of educational goals. Ajayi (2007) concluded that the quality of education not depend on the teachers as reflected in the performance of their duties, but also in the effective condition of the school environment.

Teacher who has been the main force and the last person that ensure implementation of curriculum according to specification, his success or failure of actualizing instructional objectives depend to a large extent on the availability of good facilities such as good classroom building with adequate furniture, instructional facilities, and staffroom with adequate furniture among others. Bickle (2007) asserted that school physical conditions have direct positive and negative effects on teachers' moral, sense of personal safety, feelings of effectiveness in the classroom and on the general class size and availability of resources. He further stated that where the problems with working conditions are serious enough to impinge on the work of teachers, they result in higher absenteeism, reduced levels of effort, and lower effectiveness in the classroom, lower moral, and reduced job satisfaction and where working conditions are good, they result in enthusiasm, high morale, cooperation, and acceptance of responsibility

Research question two showed a significant difference in the performances of students that were taught Chemistry in a class with adequate resources and those without adequate resources, mean scores 41.6154 and 24.6156 The results revealed that students that were taught Chemistry in a classroom with adequate resources performed significantly better than those in a classroom without furniture.

The physical characteristics of the school have a variety of effects on students, teachers and learning process. For instance, class and staffroom furniture, library and laboratory furniture create conducive learning atmosphere when are available. Students on their part they need class furniture that would make them comfortable to receive lessons in the class to copy note on the chalkboard, to write exam, test, assignment and other class work that help greatly for their academic achievement. Poor facilities such as furniture make teaching and learning difficult.

Surely, the above statement agreed with the argument of Akubue (2006) that conducive class size and availability of resources where all necessary facilities for teaching and learning are made available has the advantage of fostering desirable behavior and attitudes, developing problem solving skills and creative thought, encouraging student's interactions and above all helping students to achieve their educational objectives. Also, in the words of Bandura (1991) school facilities play a vital role in the actualization of educational goals and objectives by satisfying the physical, emotional, cultural, social, educational and psychological needs of students as well as the needs of the society.

Research question three revealed a significant difference in the performances of students that were taught Chemistry in a small class size and those in a class with large population, mean scores 39.0000 and 20.3000

The result indicated that students that were taught Chemistry in a classroom with small class size performed significantly better than those in a class with large population. Overcrowded schools constitute a serious problem in school system. School over population is on the increase as a result of increase in population and demand for education and the less concern from the education stakeholders to make adequate provision of school facilities to cater for the growing need for education and overpopulation of the society.

Therefore, few classes in most of the public schools in Cross River State are not adequate to accommodate the number of students as such the school heads (principals) are left only with the option of combining students that supposed to be in two or more different classes in one single class, thereby making the class over populated at the expense of student's academic achievement and overall educational objectives. Forgetting the fact that crowded classroom conditions not only make it difficult for students to concentrate on their lessons, but in variably limit the amount of time teachers can spend on innovative teaching methods such as cooperative learning and group work or, indeed smaller class size have been found more effective when instructional objectives that involve higher level of cognitive skill including application analysis, and synthesis.

Smaller classes provide for greater contact between students and teachers which appear to be most needed for students with low motivation, those with little knowledge of the subject matter, or those who have difficulty in grasping conceptual resources. Smaller classes are also more effective than large ones in affecting student's attitudes.

Krafter (2004) argued that class size above 40 has negative effects on student's academic achievement in school. Also Fafunwa (2010) opined that there is a big gap in quality resulting from large number of students in crowd classroom, using inadequate and obsolete equipment and with disillusion teachers. Nwagwu (2006) stated that a situation where a teacher teaches more than fifty students in a class as opposed to 35 in primary schools and 40 in secondary schools as provided in the national policy on education (2004) does not give room for effective teaching and learning Research question four showed a significant difference in the performances of students taught Chemistry using instructional resources and those without instructional resources, mean scores 36.6923 and 23.1538 The the average total mean scores of 45.9250 and 31.0740 clearly showed that class size and adequate resources impact positively on students academic achievement in secondary schools. influence of instructional resources in promoting student's academic achievement as well as teaching and learning in educational development is indisputable. The act of teaching is fundamentally concerned with passing ideas, skills and attitude from the teacher to the learner. In Nigeria, for example experience has shown that spoken words alone in the communication of ideas are grossly ineffective and inefficient in producing desired learning outcome.

The findings revealed that all the four hypotheses tested were rejected.

However, based on the findings, the following were obtained:

1. That small class size have positive influence on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State.
2. that class building (not dilapidated) impacted positively on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State.

3. that class with large class size has negative impact on the academic achievement of students in Chemistry in Senior Secondary Schools in Cross River State.
4. that availability/adequate of resources in teaching has impacted positively on the performance of Senior Secondary Schools in Cross River State.

Conclusion

This study has shown a positive and significant relationship between the physical characteristics of the school such as classroom buildings, adequate resources, instructional facilities on students' academic achievement in Senior Secondary Schools in Cross River State. This is an indication that these facilities in secondary schools should be a prime concern of the education stakeholders in the state and the nation in general. However, the extent to which students learning could be enhanced depends on the structure of their classroom, availability of the classrooms, instructional facilities and accessories. It is believed that conducive class size and availability of resources with available school facilities will gear up expected outcomes of education that will facilitate good social, political and economic emancipation, effective teaching and learning process as well as academic achievements of students.

Hence it has been established that facilities are potent to greater academic achievement of students in Chemistry. Therefore, it requires prompt attention on the part of the education stakeholders in Cross River State and the nation in order to improve the poor condition of classsize and availability of resources and academic situation of secondary schools from its present state. Moreover, there are some facilities that can be improvised by the teachers in order to facilitate teaching and learning, hence such facilities should be improvised by the teachers.

Recommendations

Based on the conclusion drawn, the following recommendations were made:

1. Government and other education stakeholders should make concerted efforts to provide adequate classroom building and renovate the existing dilapidated structures in public secondary schools. This would help to reduce the problem of school overcrowding and it would go a long way to create enabling teaching and learning environment.
2. Education stakeholders should endeavor to provide adequate class furniture (chairs and lockers or desk) in public secondary schools and students should be oriented on how to maintain these facilities because most a time's students destroy these facilities by themselves.
3. Small class size should be maintained in public secondary schools and the population of students admitted into public schools should depend on the available space and facilities so that the teacher would be able to manage the class effectively and give individual attention to students where necessary.
4. Adequate instructional resources should be made available in public secondary schools and teachers should be encouraged to be using instructional resources in the course of presenting their lessons and they should be made to update their knowledge and skills in improvisation of instructional resources through seminars, workshops and conferences organized by government and professional bodies.

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