INVESTIGATION INTO THE WAYS OF SUSTAINING STUDENT'S INTEREST IN CHEMISTRY IN SENIOR SECONDARY SCHOOL. A CASE STUDY OF EGOR LOCAL GOVERNMENT AREA OF EDO STATE.

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CERTIFICATION

We, the undersigned, certify that this research project was carried out by IGBINEDON VICTOR CHUKWUDI in the Department of Curriculum and Instructional Technology (CIT) Faculty of Education, University of Benin, Benin City.

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DEDICATION

I dedicate this project work to the ALMIGHTY GOD, who is the reason for my existence and giving me the zeal to complete this project work.

ACKNOWLEDGEMENTS

I wish to make known my sincere thanks to my project supervisor Mrs Aghahowa. I have not seen somebody of such high station in life yet humble, patient with her students and also has the fear of God Almighty in her life, God bless you Ma.

My gratitude and love goes to the following people for their moral, financial and material support which made this project a reality, to my beloved parents Mr and Mrs Igbinedion, my brothers and sisters: victory, ifeanyi, onyeka and uwa for standing by me.

I will always feel eternally indebted to God for his miraculous hands upon me for good which is palpable and tending towards a tangible essence.

Finally, I will also appreciate the sweetest psalmist of all times, David in biblical terms who said “even if all parts of my body were to be tongues, it would not have been enough to praise the Lord for his benevolence”.

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ABSTRACT

This study is to investigate the ways of sustaining student's interest in Chemistry in Senior Secondary Schools SS one (1) in Egor Local Government Area of Edo State. Four research questions were raised in order to carry out this study.

Data were collected through questionnaires that were randomly distributed to five schools in the Local Government Area. The techniques used for analysis were the simple frequency, percentage and mean based on a four point Likert scale. The population of the study was 4639 but the sample was 100 students randomly selected. Five (5) schools were randomly selected from the thirteen (13) Senior Secondary Schools in Egor Local Government Area of Edo State. To ascertain the reliability of the instrument, pilot testing was carried out on twenty (20) SS 1 students from a mixed public senior secondary school.

Based on the research it was discovered that chemistry teachers stimulate their students' interest during teaching, secondly, the interest of students in chemistry can be sustained in them, thirdly, the availability and usability of laboratory facilities can sustains student's interest in chemistry, lastly teachers teaching method can be used to sustain student interest in Chemistry. In overall, student's interest in Chemistry can be sustained by different ways in all public senior secondary schools.

CHAPTER ONE

INTRODUCTION

Background of the study

Science holds a great potential for mankind in terms of providing him with the means of reducing life's burden on earth. Science plays profound roles in the life of individuals and the nation. Broadly, science can be defined as a body of knowledge, which is acquired through observation and systematic experimentation (Ezeudu, 2019). Science is an important enterprise. It is a way of using human intelligence to achieve better understanding of nature and natural phenomena. Science is a systematized co-ordinated knowledge based upon the accurate observation of facts and the relation of these to the general principles of laws. According to Aniodoh (2020), Science enables man as an individual to take rational decision, create a just society and understand the environment. It helps to improve an individual's life expectancy and provides him means of tackling problems of existence such as disease and hunger. The author also emphasized that contributions of science could be seen in the area of our modern health, automation, genetic engineering; gene cloning, agriculture, transportation, building and construction. The positive overall impacts of

science on the life of individuals and national economy explain why most countries including Nigeria are making huge investment in the field of science today.

Science is divided into two main branches viz Biological sciences and physical sciences. The biological sciences deal with living things, while the physical sciences are concerned with properties of non-living matter. Chemistry being a physical science is one of the main branches of pure science. These branches of science are being taught by science educators using scientific processes and educational principles.

Science Education is the study of interrelationship between science as a discipline and application of educational principles to its understanding, teaching and learning (Gbamanja2020). Science education involves the teaching of science concepts, method of teaching and addressing misconceptions held by learners regarding science concepts. Okeke (2017) defined Science Education as an integrated field of study which considers both the subject matter of science discipline such as Biology, Chemistry, Physics, Agriculture etc. as well as the process involved in the learning and teaching of science. In other words, science education implies exposing learners, usually prospective teachers of science, to

scientific attitude as well as equipping them with professional skills of a science teacher. Science Education is very important to the development of any nation. That is why every nation must take it very seriously in all institutions of learning. Science Education comprises three subjects namely: Biology, Chemistry and Physics which are combined with education. Over the years there has been low enrolment of these courses, especially chemistry, in the tertiary institutions which can be attributed to the interest and achievement of students in these subjects in secondary schools (Kola, 2019).

Nigeria, recognizing the need for science education in human and natural development, advocates for citizen's acquisition of scientific and technological education. Science Education has been introduced in Nigerian schools from primary to tertiary level. However, the level of achievement in terms of acquisition of scientific skills is now the problem due to methods of teaching science subjects, especially chemistry.

Chemistry deals with the composition, properties and the uses of matter. It probes into the principles governing the changes that matter undergoes (Osei, 2019). Chemistry forms a major part of the manpower needs of a nation-doctors, engineers, pharmacists agriculturists and science teachers. All at their

secondary school level offered Chemistry. Nigeria today is in need of such manpower in order to gain economic independence, technological know-how and other desirable social amenities and infrastructures. Today, people are aware of the fact that there is a subject known as *Chemistry* and its importance is widely known. Hence, the increasing weight on the need for proper teaching of chemistry in our secondary schools.

In spite of the importance of chemistry and the need to teach the subjects in schools, there are a number of problems confronting the teaching and learning of the subject. Some of the problems include:

i. Shortage of qualified teachers
ii. Inappropriate teaching methods
iii. Inadequate teaching and learning facilities
iv. Lack of favourable attitude of the students to the subject (Obodo2019).

Learning Chemistry involves two important aspects: the theoretical and the practical aspects. The theoretical aspect deals with critical thinking, logical reasoning and ability to transfer knowledge from one concept to another. The practical aspect deals with performing activities, which have indirectly or directly lead to the generation of ideas, concept and principles. Practical

activities involve process of science, which includes the formulation of hypothesis, testing of hypothesis, learning of concepts, exploration, fact finding, and the application of basic skill and knowledge of Chemistry.

The teaching and learning of chemistry is very important to man and for social development. Chemistry is taught in Nigerian secondary schools. The offering of Chemistry in secondary schools starts from senior secondary school one. However, the students are taught Basic science in their junior secondary school classes, part of which includes some aspects of basic chemistry, which are: elements and symbols, compounds, mixtures, atoms and molecules. Though, the teaching of chemistry needs teachers with high morale, motivation and a mastery of knowledge, ability to understand learners difficulties and capacity to facilitate learning, correct use of appropriate teaching methods are critical to the successful teaching and learning of chemistry. Students may learn names and definitions of chemical substances theoretically. But to master chemical reactions, they need to mix the chemicals and observe subsequent reactions. Knowledge of how teaching methods affect students' learning may help teachers to select methods that improve teaching quality, effectiveness, and accountability to learners. It may also help them keep up with information

technology and globalisation (Zadra 2019). The knowledge and application of Chemistry have led to tremendous changes and development in society. The development in chemical industry, the provision of good food and drugs are traceable to the development in Chemistry and other fields of knowledge that have chemistry as their foundation.

Over the years, curriculum planners have been trying to see how achievement of students offering Chemistry as a subject can be affected positively through the teaching of the subject. The chemistry curriculum is aimed at satisfying the Chemistry requirements of the senior secondary school programme in the new National Policy on Education (FRN, 2015).The objectives of the curriculum are to:

I. develop interest in the subject of chemistry;

II. acquire basic theoretical and practical knowledge and skills;

III. develop interest in science, technology and mathematics;

IV. acquire basic STM knowledge and skills;

V. develop reasonable level of competence in ICT applications that will engender entrepreneurial skills;

VI. apply skills to meet societal needs of creating employment and wealth;

In our secondary schools, many students always complain about the teaching of chemistry as a subject. Some see chemistry as being abstract. The academic achievement of students in Chemistry is in a sorry state. WAEC examiners report has shown that in the result of May/June 2017 the Mean score in chemistry was 32 with Standard Deviation 18.39. In the year 2018, the Mean score was 30 and a Standard Deviation of 13.39. This indicates that the achievement of students in 2017 was poorer than that of 2018. So, we often find a situation where by students do not want to offer the subject and those who do, eventually get poor grades. One would say therefore that the teaching of chemistry so far in our secondary schools is causing a "psychological imbalance" on the part of the students since their performance does not qualify them to go for the courses of their choice in higher institutions.

Chemistry is seen as one of the core subjects in the science curriculum of secondary school education and various teaching methods have been put together to ensure effective teaching and achievement on the part of the teachers and students respectively.

In this study, the focus will be on the methods of teaching chemistry in schools. A number of teaching methods can easily be identified (Nworgu, 2019).

These include: lecture method, discussion method, problem- solving method, team teaching method, inquiry method, guided discovery method, demonstration method, project method, field trip method, analogy method, cooperative learning and constructivist-based method.

The teaching of chemistry has been didactic traditional approach (Nworgu, 2019). This is dominated by lecture method where the teacher gives out all the facts he/she wants the students to acquire and master without caring whether or not the students are actively participating in and contributing to the success of the lesson .The discussion method involves intelligent exchange of opinions between a whole class or a small group on a topic or an object. Inquiry method is termed "student centred" and some teachers advocate its use because it involves unstructured exploration by the students through their own process such as observing, measuring, classifying and from this investigation, generalization or conclusion can be made. Since some of these methods have failed to bring about improvement in students' achievement in chemistry (WAEC, 2017), the question now is How do we handle the teaching of chemistry in the present age for effective learning? An attempt to answer this question calls for the need to try other methods of teaching for students' better

interest and achievement in the subject. Most of the convectional or traditional methods such as lecture method, team teaching method, and discussion method encourage rote learning and memorization of concepts without actually exposing students to challenges that will make them to be actively engaged in learning process (Nworgu, 2019). The over reliance on these methods do not really encourage students interest and achievement in Chemistry (Sanni and Ochepa, 2015).

Interest has been defined differently by different authors. Interest is described as the attraction which forces or compels a child to responds to a particular stimulus (Obodo, 2015). This implies that any particular stimulus that is attractive or stimulating will make the learner develop interest in it. That is, in a classroom situation, a student will be attentive during lesson if he/she is very much interested in that particular lesson. Students' interest is closely associated with achievement and one's success in a subject is influenced by his/her interest in it, which might be due to the type of approach used in teaching the subject.

Statement of the Problem

The present state of science student's interest in chemistry education in Nigeria has been very unsatisfactory. The poor academic achievement of the students in Chemistry in Senior Secondary School is a proof of this fact. The overall poor academic performance of secondary school students in Chemistry raises doubt on the efficacy of the teaching methods utilized by the teachers.

Students show lack of interest in Chemistry due to poor approach in the teaching of the subject; this of course results in poor performance in the West Africa Senior Secondary School Certificate Examination. The present methods used in teaching Chemistry e.g. lecture method and poor or inadequate exposures of students to practical activities have failed to arouse and sustain students' interest in the subject. The methods have therefore not helped them improve in their achievement in school and certificate examinations. In view of these, alternative instructional methods (innovative methods) have been proposed to take care of the interest and achievement of students in Chemistry. The problem of this study is to investigation into the ways of sustaining student's interest in chemistry in senior secondary school. a case study of egor local government area of Edo state.

Research Questions

The following research questions were raised and tested.

1. To what extent do chemistry teachers stimulate their students' interest during chemistry teaching?

2. What factors stimulate interest of students in chemistry?

3. To what extent will the availability and utilization of laboratory facilities sustain student's interest in chemistry?

4. Does teachers teaching method usage sustain student interest in Chemistry?

Purpose of the study

The main purpose of this research is to investigate into the ways of sustaining Students' interest in Chemistry in Senior secondary schools factors affecting the use of field trip in teaching and learning of Biology in Egor Local Government Area of Edo State. The overall aim of the study is basically:

i. Find out whether chemistry teachers stimulate their students' interest in chemistry during teaching

ii. Determine if interest in students are sustained in them over time.

III. Find out the extent to which availability and usability of laboratory facilities in sustaining student's interest in learning chemistry

Iv. Ascertain if teacher’s teaching method sustains student’s interest in Chemistry

Significance of the Study

The findings of the research will be of practical significance to the following: students, teachers, curriculum planners, and examination bodies such as WAEC, NECO and JAMB, researchers and educational administrators.

The findings of the study will be of benefit to the students because it will enable them to have full understanding of what they have learnt, improve their skills and interest, hence eliminating rote memorization. This is obvious because of the hands on science activities which involve the active participation of the learner and are capable of arousing the curiosity of the learner as the learner manipulates certain practical skills.

It will be of benefit to the Chemistry teachers because; it will expose teachers to other innovative methods of teaching Chemistry for increased in students’ interest in. The result will also help the teachers to know their own

areas of weakness and strength as well as interest of their students. This can help the teacher to plan their lesson better. It will also help them to know the appropriate teaching methods to adopt at any particular time to meet the learners needs and to know the necessary instructional materials that will enhance their teaching and make it effective.

The finding of the research will also be of immense benefit to the curriculum planners, because it will help the curriculum planners to develop a curriculum that will be relevant to the needs of the students, increase their dexterity and make learning process become interesting to the students.

The findings of the study on sustaining students' interest in learning will help educational administrators to be able to translate what motivate student's learning as teaching methods into action by planning workshops and conferences for the teachers for sustainable educational outcome. This will in turn enable the government to increase teacher's competence and enhance the sustenance of students' positive interest in Chemistry.

Scope and Delimitation of the Study

The scope of the study is on “Investigation into the way of sustaining students” interest in Chemistry in senior secondary schools. (A Case study of Egor Local Government Area of Edo state). The study is delimited to Public Senior Secondary School one (SS 1) in Egor Local Government Area.

CHAPTER TWO

LITERATURE REVIEW

The review of literature for this study has been organized under the following sub-headings:

- Theoretical Framework
- Chemistry in Senior Secondary School
- Interest
- Teaching Methods
- Availability and Utilization of Chemistry Laboratories Facilities for Learning Chemistry
- Empirical Studies
- Summary of Literature Review

THEORETICAL FRAMEWORK

A theory is asset of interrelated construct, definition and propositions that present rational view of phenomenon by explaining or predicting relationship among those elements or variable. Beauchamp in Olaitan(2003) presented a

theory as a set of related statements that are arranged systematically in order to give functional meaning to a set of series of events. A theory is based upon hypothesis and backed by evidence. A theory presents a concept or idea that is testable. The definitions of theory by the aforementioned authors are found to be a useful guide to researchers and lead to application of knowledge to solving real problems clearly. A theory implies considerable evidence in support of a formulated general principle explaining the operation of certain phenomena. The foundation of any researcher is rooted in the theory. This study, the effects of cooperative learning and analogy on students' achievement and interest in chemistry is therefore based on some major educational theories despite their ages, namely: cognitive field theory.

Wolfgang Kohler Cognitive Field Theory

Wolfgang Kohler (1925) was one of the founding members of the cognitive field theorist. This school of thought believes in the organization of knowledge, information processing, thought processes and decision making. According to this theory, learning is not by the association of bits but the formation of new pattern and putting them into meaningful whole. That, for learning to take place there has to be perception of issues for a change in

behaviour and insightful learning. The cognitive field theories deal with how an individual gains an understanding of himself and his environment, how he uses his knowledge, experience and motivational status to act in relation to his environment. The learner's behaviour is directed by his goal as determined by his psychological situation which may include his person, past, present and anticipated experiences. A learner has a built- desire to learn. Thus when faced with a seemingly confused and meaningless situation that is something unfamiliar, a learner is impelled to act in such a way that he/she constructs meaning out of the situation. The goal of learning is the achievement of understanding or self- discovery. Self-discovery is the development of insight. Insight is the experience of doing something and seeing where it fits. The development of insight leads to some degree of order and stability in experience of the learner. The tenets of this theory can be summarized as follows: that, the theory holds the view that learning takes place when perceptions are organized, learning is not easily forgotten, for learning to take place and problem to be solved, the parts of the items to be learnt must not be far apart and when items to be learnt are similar, the learner will not find it difficult to learn. Using what

is familiar to teach what is not familiar for better relation of prior knowledge to present one is what analogy method of teaching is all about.

Through the study of learning theories, the teacher can then assist students not only to remember what has been learnt but also apply these situations to other similar issues and outside the classroom. From the foregoing, it becomes obvious that teachers require thorough understanding of mechanisms involved in learning if they are to acquire a measure of effectiveness in their interaction with children. Markedly different theoretical perspectives (social independence and cognitive development) provide a clear rationale as to why cooperative efforts and building upon prior knowledge (analogy) are essential for maximizing learning and ensuring healthy cognitive and social development as well as many other important instructional outcomes.

Concept of Chemistry

Chemistry is defined by Science-buddies (2017) as the study of matter-what is made of, how it behaves, its properties and how it changes during chemical reactions. Chemistry is the study of the composition, structure, properties and interaction of matter. It is one of the core subjects composition of

science. Chemistry is often called the central science because its interest lies between those of physics and Biology (Merit, 2019). Chemistry is the "scientific study of matter, its properties, and interactions with other matter and with energy (Anne, 2016). An important point to remember is that chemistry is a science, which means its procedures are systematic and reproducible and its hypotheses are tested using the scientific method. Chemists, scientists who study chemistry, examine the properties and composition of matter and the interactions between substances. Chemistry is closely related to physics and to biology. Chemistry and physics both are physical sciences. In fact, some texts define chemistry and physics exactly the same way. As is true for other sciences, mathematics is an essential tool for the study of chemistry (Anne, 2018).

Through Chemistry, many important new substances have been created that have many important applications in our lives. According to Fred (2017), Chemistry is the study of organic and inorganic substances. Organic substances contain hydrogen combined with carbon; inorganic substances are from minerals. It was once believed that organic compounds were exclusively produced by living things, but today chemists can synthesize many organic materials from inorganic ones. Carbon can link with itself and other atoms in

many diverse ways, and its chemistry is far more complex than that of other elements. So while the organic/inorganic distinction is artificial, it's still useful. Chemistry is the study of connections between the everyday world and the molecular world. Chemists use atoms and molecules to explain properties and behaviours of matter. Chemistry is too universal and dynamically-changing a subject to be confined to a fixed definition; it might be better to think of chemistry more as a point of view that places its major focus on the structure and properties of substances, particular kinds of matter and especially on the changes that they undergo.

Chemistry teachers according to Science-buddies (2017) are the people who help students to understand this physical world. They are individuals who are trained in the content and pedagogical areas of Chemistry and vested with the duties of imparting Chemistry knowledge to students. Typically, a bachelor's degree in Chemistry and certification to teach in high school (Senior Secondary School) sometimes referred to as a single-subject certification is necessary for teaching Chemistry. The Chemistry teachers prepare the next generation of scientists and engineers including all healthcare professionals and as well develop scientific literacy through teaching. It is required of Chemistry

teachers to possess enthusiasm, patience, positive attitude, observation skill, a desire to work with young students and outstanding communication skills.

In order to enhance good performance of students in Chemistry, Chemistry teachers must be effective in teaching. According to Woko (2020), the teacher should possess a good balance between mastery of content and the appropriate skill for inculcating the curriculum content and in addition should possess some knowledge of the basic methodological procedures required for sensitizing and arousing the interest of the students. Akano (2017) cited Olaitan as highlighting that the effective teaching and learning entails that the teacher possesses knowledge of the subject matter as well as skill in teaching. Thus, effective teaching connotes a persistent relationship between the knowledge of the subject matter and the teaching (pedagogical) skills possessed by the teacher in enhancing students interest and good performance.

Interest

Hillard (2018) defined interest as persisting tendency to pay attention and enjoy some activities or content. The researcher conceptualized interest as the feeling of one whose attention, concern or curiosity is particularly engaged by

something. Put differently, it is that which concerns, involves, draws and arouses the curiosity of a person. From the definitions, interest in Chemistry refers to individual reaction, feeling and impression about Chemistry and Chemistry related tasks or situation. Interest is described as the attraction which forces or compels a child to respond to a particular stimulus (Obodo, 2016). It implies that any particular stimulus that is attractive or stimulating will make the learner develop interest on it. That is in a classroom situation, a student will be attentive during lesson if he/she is very much interested in that particular lesson. It has been observed generally that both teachers and students will work diligently and most effectively in task in which they are genuinely interested. To create and sustain interest therefore becomes one of the most important tasks of a Chemistry teacher at all levels of education.

It is easier to interest students in their work than it is to keep them interested after the work has gone underway and the novelty has worn off. In this connection, it is worthwhile to observe that students tend to remain interested in those things that they can do successfully and which they understand most completely.

According to Harbor-peters (2018) interest comes as a result of curiosity and eagerness to learn and not by force. The author strongly opined that interest is a state of mental and emotional readiness on the part of an individual to respond to an educational situation in a manner that gives first place to the interest of the society and profession. This implies that interest is that internal state of individual that influences his/her personal actions. While Taylor (2019) opined that interest leads individual to make a variety of choices with respect to the activities in which he/she engages. He/she shows preference to some and aversion to others. These definitions assumed that interest in Chemistry implies the reactions, impression and feelings an individual has about Chemistry and Chemistry related task.

Obodo (2018) pointed out that the type of interest a student brings to the classroom is very important. This means if a student has developed positive interest towards a particular subject he/she not only enjoys studying it but would also derive satisfaction from the knowledge of the subject. The researcher emphasized that interest is one particular class of attitude that is always positive and one associated with object or activities that are need-satisfying and pleasure- giving. Interest is a classified human sentiment which goes along with

value, attitude and other forms of human preference. It is a preferential treatment given to a particular activity. In the word of Chauhan in Obodo (2015) interest means to make a difference. It explains why an organism tends to favour some situation and thus react to them in a very selective manner. In contemporary terms, the study of self interest in the achievement context is focused largely on the tendency of individuals to take personal responsibility for their success and attribute their failure or shortcoming to external cause they do not reflect on their worth as a person.

According to Obodo (2016), interest is the feeling of intent, concern of curiosity about something. It is also regarded as the condition of being anxious to know or learn about something. Interest is a very strong factor in the teaching and learning of Chemistry. The degree and direction of attitude towards Chemistry are largely determined by the kind of interest developed by the students for Chemistry. The author maintained that student with positive attitude studies chemistry because of the fact that he enjoys or likes it. He gets satisfaction from acquiring Chemistry ideas and finds Chemistry activities very rewarding.

Many factors have been found to influence students interest in Chemistry. These factors include the ability of the teacher to allow students responses to drive lessons, shift instructional strategies and alter content (Johnson and Johnson, 2015). They are of the opinion that the students' initial interest or lack of interest in a topic does not determine whether the topic gets taught or does it mean the whole sections of the curriculum are to be jettisoned if students wish to discuss other issues. The writer however maintains that students' knowledge, experiences and interest occasionally do coalesce around an urgent theme. This urgent theme does not address the nation of "teachable moment" throughout the year. According to Johnson and Johnson (2016), there have been moment in the classroom when students enthusiasm, interest, prior knowledge and motivation have intersected in ways that made a particular lesson transcendental and enabled teachers recall the gleam in the students' eyes, their excitement about the task and discussions and their extraordinary ability to attend to the task for long periods of time and with great commitment. If teachers were fortunate, they encountered a hand full of these experiences each year and wondered why they did not occur more frequently.

Sadly enough, Johnson and Johnson (2017) observed that much of what teachers seek to teach the student is of little interest to them at that particular point in their lives. The issue of the imposition of adult expectations on students in a Chemistry class is another worrisome factor which largely influences interest. It is important not to impose adult expectations on a child's thought process but rather to look at the child's behaviour as a manifestation of movement to an ensuing way of reasoning. A child's errors are actually natural steps to understanding. The ability to listen effectively and gather information regarding cognitive and effective functioning and subsequent abilities to adapt teaching methodologies are the heart of what educators can provide for students. There are other factors as found by researchers that sustain students interest in chemistry and these have been attributed to attitude of students in Chemistry (Anene, 2019); peer pressure (Obodo, 2016); attitude of parents/guardians (Obodo, 2015); among others.

Although, a lot of studies have been carried out on the concept of interest and ways of sustaining students' interest in Chemistry yet, students' interest in the subject has continued to dwindle and this affects the level of achievement in Chemistry and science related courses. An issue of urgent attention at this point

is the exploration of appropriate instructional approach for facilitating, developing and sustaining interest in Chemistry as much as science and technological advancement since all are highly dependent on Chemistry as an important tool hence, the need for the study.

Teaching Methods

A method is a means through which a teacher explains a subject matter to a group of learners (Ezeudu, 2018). Nworgu (2019) defined teaching methods as those procedures that help the teacher to accomplish his results. Anene (2017) in book a titled "Fundamentals of teaching practice" stated that teaching methods are pedagogical strategies designed and adopted by the teacher to facilitate teaching on the teacher' part and learning on the learner. According to the author, for effective teaching and learning to take place, the skilful teacher needs to use many different methods and techniques at his/her command. Awoniyi (2017) perceived the prime functions of a teacher as to build up service of intellectual capitals and engage in the systematic assemblage of step to step facts called methods. It is described as well-known procedures with more or less defined steps which tend to promote overall teaching strategies. The main purpose of teaching is the transfer of learning. In this content, Offorma (2018) defined

teaching as a systematic activity deliberately engaged in by somebody to facilitate the learning of the intended worthwhile knowledge, skill and values by another person and getting the necessary feedback. The activities involved in teaching include curriculum planning, instruction, measurement and evaluation. In education, teaching covers all the activities teachers engage in to ensure that the intended learning occurs with the aim of bringing about particular result in the person. It provides the necessary amount and kind of practices so that the changes become part of a person's life.

Sanni and Ochepa (2016) viewed instructional methods as the orderly procedures that guide students to develop skills, knowledge and attitude. They defined teaching techniques as the practices and refinements of presentations, which a teacher employs to make instruction more effective and interesting when using specific methods or teaching materials. When an interesting method is being used in the teaching of chemistry, it will increase the level of interest of students in Chemistry. Interest has been viewed as emotional oriented behavioural trail, which determines a student's vim and vigour in tackling educational programmes or other activities. According to Chukwu (2018), effective learning has to do with feelings and values and therefore influences

our attitudes and personalities. The author suggests that “Teachers and other Chemistry educators believe that children learn more effectively when they are interested in what they learn and that they will achieve better in Chemistry if they like the subject. In other words, interest produces effort, effort increases interest and a combination of the two usually results in success. Dangoli (2017) considered techniques or strategies as integral part of teaching method and that techniques are procedures used to give variety to the teaching process and to stimulate and maintain interest in it. Dangoli defined teaching method as a systematic procedure employed by teachers in their attempt to help learning take place.

Teaching method as an aspect of the teaching strategies is utilized by the teachers to make science lessons interesting and learning successful. There is the need to encourage the students by way of stimulating their interest towards the learning of Chemistry by using good teaching method and instructional materials. Students get attracted to teachers who are knowledgeable in the content they teach and in the manner they teach. Harbor-peters (2018) added that the teacher plays the major role in the teaching and learning process. The

major role in teaching and the various techniques or procedures employed by teachers is to arouse interest and to facilitate learning.

According to Dangoli (2019), there are certain factors that should be considered in selecting appropriate teaching method. These include: the subject matter, nature of the students and their ages, the teacher's competence, economic conditions such as books supply, availability of instructional materials in laboratories, the type of examination the students are being prepared for and the environmental variables. Nworgu (2019) stated that several teaching methods and approaches have been in use for decades. These include the lecture, discussion, laboratory, discovery, demonstration, field trip or excursion, concept mapping, project, games and simulation, experimentation and problem solving constructivist-based cooperative learning and analogy methods. Each method has its marked features and peculiar adaptation to special situations. Hence, whichever teaching method a teacher decides to use depends on the amount of practice the students are exposed to, individual and group participation, motivation, transfer of learning and retention of learned materials. While these features are common in several teaching methods, some of the methods make use of these common features more frequently and effectively

than the others. Hence, teachers can help students develop positive attitude and interest in their lesson and attain the set-learning objectives through effective teaching methods.

The lecture method of teaching is sometimes referred to as the talk and chalk verbal expression or the textbook method. Eya in Ezeudu (2017) defines lecture method as a discourse delivered aloud for instruction or entertainment. It is the oldest, widely practiced and often the least effective method in teaching science subject (Nworgu, 2018). Okeke(2019), describes the lecture method as a process whereby the teacher gives out all the facts gathered from books to the students to acquire and master or memorize without minding the level of active participation and understanding. Okeke observed that many have criticized this method because it is teacher or subject centred since the teacher spends most of his/her time talking and not really teaching the students. It is seen as a learned person disseminating information to a group of people hungry of knowledge. The group is often viewed as passive. The main activity in such a situation involves the teacher telling the students what they needed to know. In lecture method, average teacher does 70% of talking in classrooms; much time is spent in presenting new concepts and information to students using narration

description and explanation. Many educators believe that it is out-dated and not suitable for modern concept of learning in the secondary schools. For effectiveness, the lecture method can be used in conjunction with other methods.

The discussion method involves intelligent exchange of views, ideas and opinions on a topic, which covers a wide range of classroom activities and interactions (Sanni and Ochepa, 2017). The discussion method is based on extensive contribution of ideas and expression by members participating. Under a classroom setting, discussion is an interactive process involving the teacher and the students or among the students themselves. In this case, a problem or topic for the lesson is presented for discussion while the teacher helps to direct the learners' view towards the lesson objectives. Discussion can be used to achieve the following objectives: subject matter, mastery, attitude charge, moral development, problem solving and acquisition of communication. It is rare at the secondary level but occasionally used at the tertiary institutions.

Laboratory method is a practical oriented activity teaching method which involves investigating patterns relationship, concepts and processes (Gbamanja, 2017). The author observed that three procedures are involved in the laboratory method. These are:

1. Scientific method of inquiry, which is the systematic procedures of solving problem.
2. Mental model of solving problems, which involves construction model and using reasoning processes or experiments to test correctness of the model and
3. The experimental design: The process is checked by observation, which requires careful planning.

Harbor-peters, (2018) viewed that laboratory method of teaching proposes that the experimental origin of Chemistry be fully recognized and that the students be led to feel the need of the Chemistry tools through some experiments.

Messials (2017), refers to discovery as process of self–learning where by students generates concepts or principles and ideas with very little intervention from the teacher. The author argued that discovery process is used in the initial perplexing phases of thinking. Harbor- peters (2017) pointed out that discovery has proved to be effective method because it allows learners to actively participate in the learning process. This view is supported by a popular Chinese proverb: What I hear I forget; what I see I remember; what I do I understand.

Ajewole and Owolabi (2019) said that the teacher could employ discovery method by supplying the learners with information upon which the

learners infer through logical thinking. In science teaching, students are guided to discover in what is referred to as guided discovery. This method is aimed at ensuring that learning as an activity takes place while the students' mind is actively engaged through a series of well-structured learning experiences. They viewed discovery as a problem solving method meant for self-development. They presented three types of learning activities which are usually included in the discovery method. These are;

1. The Expository Teaching: This is presenting with a problem and a method of solution.
2. Guided Discovery: The students are given the opportunity to solve a teacher presented problem.
3. Unguided Discovery: This gives an opportunity to the more intellectually oriented students to formulate a problem of their own interest and employ problem solving.

Demonstration method simply entails a display or an exhibition usually carried out by the teacher while the students watch (Nworgu, 2019). It is a procedure where by the teacher allows the students to observe situations as the teacher performs experiment mainly using the demonstration table. It is mostly

used in showing the students correct use of certain science equipment. Demonstration can be carried out by a single teacher alone or by a student or group of students. Demonstration has been described as an audio-visual explanation, emphasizing the important points of a product, a process or an idea. It is basically an activity which combines telling, showing and doing for the benefit of an audience be it a person or group of persons. In teaching, demonstration is generally used as a method but it is also frequently used in relation with other approaches to teaching as a special techniques. The need for this present study is to detect which of the teaching methods will improve the students' interest and achievement in chemistry using cooperative learning and analogy method irrespective of the gender.

Utilization and Availability of Chemistry Laboratories Facilities for Learning Chemistry.

Scanlan (2016) indicates that Laboratory facilities encompasses all the materials and physical means an instructor might use to implement instruction and sustain students' interest of Learning in Learning of chemistry.When item of equipment is maximally used such as equipment is effectively utilized. If the equipment is not maximally used it can be said to be underutilized. When there

is so much pressure on the use of equipment this may result to over utilization which could lead to breakdown of such item of equipment.

Learning chemistry with the aid of learning facilities improves the quality of learning and also makes learning the content meaningful.

According to Azikiwe (2017), Laboratory facilities cover whatever the teacher uses to involve all the five senses of sight, hearing touch, smell and taste while presenting chemistry in the laboratory. Ogunranti, (2015) opines that laboratory facilities in teaching chemistry carriers designed especially to fulfil the objectives of Chemistry educational teaching and presentation of learning and this serve as aids to instruction. However, the need for laboratory facilities in teaching chemistry is seen on the national policy on education (FRN, 2014). This emphasizes the development and promotion of the use of laboratory facilities in teaching chemistry in schools

In a study investigated by Arokoyu and Charles-ogan, (2017) on the basic knowledge, availability and utilization of laboratory kits for practical teaching of Chemistry in science laboratory in Ahoada West local government area of Rivers State. The population of the study was all public senior secondary I (SS1) Chemistry students in Ahoada West education zone of Rivers State. Guided by

Four research questions the result revealed that the availability and utilization of laboratory kits in the sampled senior secondary schools were inadequate. Based on the result, it was recommended that the government at all levels of education should endeavour to make adequate provision of laboratory kits for the practical teaching of mathematics in Chemistry, besides Chemistry teachers, should ensure that students are introduced to the use of the few available apparatuses during practical classes.

Again, Abudu, Banjoko and Gbadamosi., (2015) carried out a study to examine the availability and utilization of laboratory resources and achievement of students in Senior Secondary School Chemistry. Participants were 120 SS III students and five Chemistry teachers in the selected Secondary Schools in Ijebu-Ode Local Government Area of Ogun State. The result obtained revealed that most Secondary Schools do not have adequate resources for Chemistry instruction and the few available resources are not properly utilized for Chemistry instructions in schools. This has a strong influence on their academic achievement in the subject. The researcher therefore concluded that when Chemistry teachers made used of laboratory resources adequately and presenting his teaching in a less abstract manner, the achievement of students in

the subject will improved exponentially and this will increase the number of students that will apply to Science related courses in higher institutions. Thereby leading to the attainment of scientific and technological advancement of the state and the Nation at large. Based on this, it was strongly recommended that Student should be encouraged to fully involve in the practical class activities so that the teaching and learning of Chemistry will real and effective not only for passing an examination but for the acquisition of skills that will be needed in future. Government and other stakeholders in education should also assist in ensuring that adequate facilities for teaching and learning of Chemistry in our Senior Secondary Schools are provided and that Chemistry teachers should always make requisition for the materials needed and ensure proper utilization of the materials for Chemistry teaching.

Talabi (2015) asserts that laboratory facilities in teaching and learning of chemistry are generally designed to provide realistic images and substitute experience to reach practical experiences in knowing chemistry. The facilities are considered the most efficient facilitators in the Learning of chemistry in laboratory practical set up. They are not substitutes for the teacher. Their use however, calls for an imaginative approach by the teacher who needs to

constantly be on the alert for new ideas and techniques to make the lessons presented with different laboratory facilities achieve effective outcomes.

Nkuuhe (2018) holds the view that laboratory facilities are all devices and materials used in the teaching and learning process in practical laboratory According to Adekola (2016), laboratory facilities in teaching of chemistry, are all available human and material resources which appeal to the learner's sense of seeing, hearing, smelling, tasting, touching or feeling and which assist to facilitate teaching and learning of chemistry. Laboratory facilities with its various types affect different senses and act as an integral part of teaching and learning process and thus helping to bring about laboratory practical experiences. A laboratory facilities in teaching and learning of chemistry, refers to models, real objects and other materials in addition to the chalkboard and textbooks that are brought to the teaching and learning process to induce understanding of chemistry in laboratory class.

EMPIRICAL STUDIES

Studies on Achievement and Interest

Obodo (2002) investigated the effect of three teaching models on the achievement, retention and interest of JSS students in some mathematical concepts. The three methods are target task, delay formalization task and expository models. The design was a pre-test post-test experiment. A total of 447 JSS2 students randomly selected from four schools in Enugu Education Zone were used for the study. Mean, standard deviation and MANOVA were the statistical tools employed for data analysis. Result revealed that: (a) on the average the three models (target task, delayed formalization and expository) were equally effective in enhancing achievement and retention. (b) The models were not significant factors in terms of students' interest in the concept, algebra. (c) The urban students however showed more interest than their rural counterparts. The present study is equally experimental and focuses on the effects of teaching strategies on achievement and interest.

Akinsola and Igwe (2002) investigated the relative effects of meta-cognitive strategy of framing on students' achievement in selected difficult Chemistry concepts. The study used a total of 187 students from two co-

educational colleges in Ibadan. The design of the study was quasi experimental pre-test post-test, non-randomized control group. Three hypotheses guided the study. Data collected was analysed using means, standard deviation, t-test comparisons and one- way ANOVA. It was found among other things that students exposed to framing strategy performed significantly better than those exposed to the conventional lecture method. The researcher made use of Meta cognitive strategy of framing to investigate only the achievement of students in difficult chemistry concept In view of this, the present study is considering the effects of two innovative methods (cooperative learning and analogy) on students' interest and achievement in chemistry.

Opara (2005) investigated the effects of self-regulation process on achievement and interest in quantitative chemical analysis. A total of 284 SS2 Chemistry students were randomly selected from 4 secondary schools in Orlu Education Zone of Imo State were involved in the study. The design of the study was quasi –experimental, pre-test, post-test and non-randomized. Six research questions and six null hypotheses guided the study. Mean, Standard Deviation and ANOVA were used for data analysis. Results showed that self-regulation process significantly enhanced students achievement and interest in

quantitative chemical analysis. There exists a relationship between the two studies because they are both cause effect studies using quasi experimental design, mean and ANOVA for data analysis in order to answer research questions and test hypotheses. However there is still a gap to be bridged. Effects of self-regulation process were determined using conventional method while effects of innovative methods (cooperative learning and analogy method) will be studied in this research.

Summary of Literature Review

Literature search showed that chemistry is unavoidably found in many areas of human activities. In learning chemistry concepts, therefore there is the need to develop the students' interest to see chemistry in a situation and to use the knowledge to solve problems that arise from it. However, over the years, students' interest in chemistry has been very poor. This was attributed to the teaching strategies adopted by teachers in presenting the concept. Thus, researchers have continued to search for varieties of teaching strategy that are innovative and could enhance and sustain students' interest in chemistry.

Theoretically, there are benefits in interaction and socialisation among the students and teachers. Learning is being promoted and geared towards a

particular subject can be influenced through interest of the students to learn. The social learning theory emphasises the importance of reinforcement and contingency management in classroom learning. Also the prior knowledge or entry behaviour of the learner is to be examined for relevant cognitive structures that will permit correct interpretation of the present experience.

Empirical studies reviewed showed factors affecting low interest in science (chemistry). It revealed poor attitude of students towards science and methods of teaching.

CHAPTER THREE

RESEARCH METHODOLOGY

In this chapter, the methodology of the study is presented under the following sub-headings:

Design of the Study

Population of the Study

Sample and Sampling Technique

Research Instrument

Validity of the Instrument

Reliability of the Instrument

Method of Data Collection

Method of Data Analysis

Design of the Study

The research design adopted for this study is the survey research design. The character of this study underscores the need for adoption of descriptive survey design. The adoption of this research design allows for the use of questionnaire by the researcher as a data collection instrument and it is cost effective.

The adoption of this design was informed by its efficient way of collecting information about the population of interest, ease of administration of research instrument-questionnaire, which can be tailored to the problem the researcher is studying.

Population of the Study

The population of this study consists of all Chemistry Students from the thirteen (13) public senior secondary schools one (SS 1) in Egor Local Government Area of Edo State. The senior secondary school SS 1 students are made up of 4639.

Sample and Sampling Technique

Five schools were randomly selected from the thirteen (13) public senior secondary schools in Egor Local Government Area of Edo State. Twenty (20) students each were randomly selected from the five (5) sample schools selected for the study. A total of one hundred (100) students were selected for the study.

Research Instrument

The research instrument adopted for this study was the questionnaire constructed by the researcher. The questionnaire is made up of two sections; Section A and B. Section A elicited the necessary demographic data of the

respondents while Section B consists of items on the Investigation into the ways of sustaining students' interest in Chemistry in senior secondary Schools. A case study of public schools in Egor local government area of Edo state. The instrument is scored on a 4-point Likert scale: strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). The points are weighted as 4,3,2 and one respectively.

Validity of the Instrument

To validate the research instrument, the researcher after constructing the questionnaire took it to his supervisor and two other lecturers in his department who scrutinized the instrument and made useful suggestions which were used in the final draft of the questionnaire.

Reliability of the Instrument

To ascertain the reliability of the instrument, pilot testing was carried out on twenty (20) SS 1 students from a mixed public senior secondary school that were not part of the main study. The reliability of the instrument was obtained using Cronbach alpha formula and a reliability coefficient of 0.7 was established.

Method of Data Collection

To collect the data, the researcher visited the schools personally and with the cooperation and help of the school teachers, the questionnaire was administered to the respondents (SS 1 students) to elicit the needed information. The questionnaires were collected immediately after completion.

Method of Data Analysis

Data will be analyzed using descriptive statistics namely frequency distribution and percentages mean value. The result was analyzed and presented in tables to explain the various response to each of the questions. The formula used for the analysis is;

$$\bar{x} = \frac{4+3+2+1}{4} = 2.5$$

The cut-off point is 2.5 (for acceptance is $x \geq 2.5$) will be used to present the data on the basis of conclusions drawn and recommendations made.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter deals with the presentation of results based on the analysis of data collected.

In order to answer the research questions, the mean statistics was used. The researcher used a cut-off mean of 2.5 as the decision value. Therefore, items with a mean value of 2.5 and above were accepted while those below 2.5 were rejected. A summary of the mean statistics is presented in tables.

Presentation of Results

Research Question One: To what extent do chemistry teachers stimulate their students' interest during teaching?

Table 1: Extent to which chemistry teachers stimulate their students' interest during teaching?

S/N	Distribution of items	SA	A	D	SD	N	Mean
1	I am interested in chemistry because my teacher uses an appropriate teaching method	35	40	20	5	**100**	**3.05**
2	I am interested in chemistry because our teacher ensures we pay proper Attention. students' full participation	37	27	22	13	**100**	**2.86**
3	I become more interested in chemistry when the teacher takes us to industrial sites	19	17	36	28	**100**	**2.57**
4	My Chemistry teacher encourages me to ask questions and express my own ideas when learning.	45	21	27	6	**100**	**3.03**
	Grand Total						**2.88**

Table 1 shows the extent to which chemistry teachers stimulate and sustain their students' interest during teaching?

The first item I am interested in chemistry because my teacher uses an appropriate teaching method had a mean of 3.05. The item; I am interested in chemistry because our teacher ensures we pay proper Attention, had a mean of 2.86. The item; I become more interested in chemistry when the teacher takes us to industrial site had a mean of 2.57. The grand mean of the items was 2.88. Since the grand mean of this research question is greater than the cut-off mean 2.5 therefore, this implies that chemistry teachers stimulate and sustain their students' interest during teaching process.

Research Question Two:

To what extent is the interest of students in chemistry sustained in them?

Table 2: Extent to which the interest of students in chemistry sustained in them?

S/N	Distribution of items	SA	A	D	SD	Total	Mean
5	I am interested in chemistry because my parents buy me chemistry textbooks regularly	29	36	13	22	100	2.72
6	Listening to science programs on radio sustains my interest in chemistry	21	24	35	20	100	2.58
7	Participating in science quizzes makes me interested in studying chemistry	11	20	43	26	100	2.16
8	Carrying out chemistry experiments arouses my interest in the subject	24	40	25	11	100	2.77
9	Doing my assignments sustains my interest in chemistry	21	45	21	13	100	2.74
	Grand Total						2.57

Table 2 shows the extent to which the interest of students in chemistry is sustained in them. The item; I am interested in chemistry because my parents buy me chemistry textbooks regularly, had a mean of 2.72. The item; Carrying out chemistry experiments arouses my interest in the subject, had a mean of 2.77. The item; Teaching chemistry with teaching aids excites me, had a mean of 2.74. Since the grand mean of this research question is greater than the cut-

off mean 2.5 therefore, this implies that student's interest in chemistry are been sustained in them?

Research Question 3:

Does the use of Diverse teaching method sustains student's interest in Chemistry?

S/N	ITEMS	SA	A	D	SD	N	MEAN
10	Students enjoy learning Chemistry when Chemistry teachers use different teaching method.	**21**	**41**	**26**	**13**	**100**	**2.74**
11	The use of different teaching method in Learning Chemistry, sustains student's interest to know Chemistry.	**11**	**20**	**43**	**26**	**100**	**2.16**
12	Chemistry teachers encourage students to ask questions and express their own ideas when teaching Chemistry with Different method of teaching.	**21**	**24**	**35**	**20**	**100**	**2.46**
13	Using different teaching method by Chemistry teachers, Motivate student's interest to learn Chemistry	**29**	**36**	**13**	**22**	**100**	**2.72**
14	Chemistry students are always Excited when teachers use different teaching method in teaching of Chemistry.	**32**	**32**	**17**	**56**	**100**	**2.89**
	Grand mean						3.07

Table 3, shows if the use of diverse teaching methods sustains student's interest in Chemistry. The item; using different teaching method by Chemistry teachers, Motivate student's interest to learn Chemistry had a mean of 2.72. The item; Students enjoy learning Chemistry when Chemistry teachers use different teaching method had a mean of 2.74. The item; Chemistry students are always Excited when teachers uses different teaching method in teaching of Chemistry had a mean of 2.89. Since the grand mean of this research question is greater than the cut-off mean 2.5 therefore, this implies that the use of Diverse teaching method of teaching, sustains student's interest in Chemistry?

Research Question Four:

To what extent does the use of Laboratory Facilities by Chemistry students sustains their interest in learning chemistry in Senior Secondary Schools?

Table 4: Extent to which the uses Laboratory Facilities by Chemistry students help in sustain their interest to Learning chemistry in Senior Secondary Schools?

S/N	Distribution of items	SA	A	D	SD	Total	Mean
15	I can skilfully manipulate the facilities available in the Chemistry laboratory	33	45	17	5	100	3.06
16	Regular use of Chemistry laboratory facilities has helped me to be familiar with the structures of some organic compounds in Chemistry	28	25	16	31	100	2.50
17	I am interested in learning chemistry because of the appropriate number and quality of laboratory equipment supplied in my school	16	37	27	20	100	2.50
18	I feel encouraged when my Chemistry teachers makes us understand on how to use the equipment in the laboratory	16	29	30	25	100	2.36
19	I am interested in learning chemistry because we have adequately trained qualified personnel in our school Chemistry laboratory	15	22	37	25	100	2.25
	Grand Total						2.53

Table 4 shows if the use of Laboratory Facilities by Chemistry students sustains their interest in learning chemistry in Senior Secondary Schools. The item; I can skillfully manipulate the facilities available in the Chemistry laboratory, had a mean of 3.06. The item; regular use of Chemistry laboratory facilities has helped me to be familiar with the structures of some organic compounds in Chemistry, had a mean of 2.50. Their grand mean was 2.53. Since the grand mean of this research question is greater than the cut-off mean 2.5 therefore, this implies that the use Laboratory Facilities by Chemistry students help in sustain their interest to learning chemistry in Senior Secondary Schools.

Discussion of Findings

The findings were discussed based on the research questions. During the course of the study, questions were directed on Investigation into the way of sustaining students' interest in Chemistry in senior secondary schools. (A Case study of Egor Local Government Area Of Edo State. The first research question which is: To what extent do chemistry teachers stimulate their students' interest during teaching? It proves that Chemistry teachers stimulate their students' interest during teaching.

The second research question which is; to what extent is the interest of students in chemistry sustained in them? From the finding its shows that the interest of students in chemistry can be sustained in themselves.

The third research question three (3) which is: Does the use of Diverse teaching method sustains student's interest in Chemistry? From the finding it proves that use of Diverse teaching method by teachers sustains student's interest in Chemistry. Finally, from the research question four (4) which is; To what extent does the use of Laboratory Facilities by Chemistry students sustains their interest in Learning chemistry? From the finding it proves that the use of Laboratory Facilities by Chemistry students sustains student's interest in learning chemistry in Senior Secondary Schools.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The study set out to investigate the way of sustaining students' interest in Chemistry in senior secondary schools. (A Case study of Egor Local Government Area of Edo State). From the study we realized that there different ways of sustaining students' interest in Chemistry in senior secondary schools. (A Case study of Egor Local Government Area of Edo State.) The first among them are the involvement of chemistry teachers sustaining their students' interest during teaching by motivating them and other activities, the interest of students in chemistry are being sustained in them, by self-motivation and other factors as well as availability and usability of laboratory facilities sustains student's interest in chemistry. Then finally, the teachers teaching method can also sustain student interest in learning of Chemistry.

Conclusion

Conclusion derived from the findings of the study showed that Chemistry teachers sustains student's interest in chemistry, there is high tendency of

sustained interest among students in chemistry, availability and usability of instructional materials sustains student's interest in chemistry. The findings had some implications for the students, chemistry teachers, educational administrators and researchers. Student's interest in learning can be used in collaboration with Chemistry knowledge to produce high performance in the students. Teacher teaching methods has dominated Nigerian classrooms since they are activity oriented and learners centred which therefore lead to more students' interest to learn and acquire scientific knowledge and skills.

Recommendations

The following recommendations have been proffered based on the findings of this study:

- Based on the findings, it is recommended that science teachers should adopt the right teaching method in science classrooms since it would stimulates students' interest in Chemistry.
- As a result of the indispensable nature of chemistry as one of the tools in scientific and technological advancement, students should be encouraged to take the study of chemistry seriously by exposing them to laboratory facilities such as theoretical practical that will stimulate and sustain their interest.

- Universities and colleges of education should organize workshops on importance of teaching methods and how to effectively implement them when teaching Chemistry.
- There should be effective counselling unit in every school to help students identify and maintain those factors that help in developing interest in their courses as interest relates to achievement in science.
- Government should provide materials like textbooks, well equipped laboratory and scientific equipment for use in learning and teaching.
- Time should be allotted by educational administrators for schools on the use of cooperative learning since it is time consuming so that much will be covered from the curriculum.

Suggestion for Further Study

- This study can be carried out outside Egor Local Government area within the Edo state or outside.
- A study may be carried out to investigate the effects of parental and environmental causes of learning chemistry construct apart from interest.
- A study can also be carried out to replicate this study to cover a wider area.

- Study can be carried out using different teaching methods on the same set of students at different time to investigate the students' interest and achievement in each of the methods.

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APPENDIX I

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY,
UNIVERSITY OF BENIN, BENIN CITY.
QUESTIONNAIRE

Dear Respondent(s),

I am a final year student of the above named institution carrying out a research work on "Investigation into the way of sustaining students' interest in Chemistry in senior secondary schools."
I will be grateful if the questionnaire is responded to as sincerely as possible. You are assured that your views will be treated in confidence.

Thank you immensely for taking time to complete this questionnaire.

Yours faithfully,

……

SECTION A: BIO-DATA

Name of School: ……

Sex: Male ( ) Female ( )

Age: 14-16yrs ( ) 17- 19yrs ( ) 20 yrs and above ( )

Class:_____

Instruction: Read carefully and ticks (√) against any option that you consider to best represent your opinion.

SECTION B: INFORMATION ON SUSTENANCE OF STUDENT'S INTEREST IN CHEMISTRY.

INSTRUCTION: Please kindly respond to the questions as they best appeal to you and tick (√) in the appropriate box provided.

Presentation of Results

Research Question One: To what extent do chemistry teachers stimulate their students' interest during teaching?

Table 1: Extent to which chemistry teachers stimulate their students' interest during teaching?

S/N	Distribution of items	SA	A	D	SD
1	I am interested in chemistry because my teacher uses an appropriate teaching method				
2	I am interested in chemistry because our teacher ensures we pay proper Attention. students' full participation				
3	I become more interested in chemistry when the teacher takes us to industrial sites				
4	My Chemistry teacher encourages me to ask questions and express my own ideas when learning.				

Research Question One: what factors stimulates interest of students in chemistry

S/N	Distribution of items	SA	A	D	SD
5	I am interested in chemistry because my parents buy me chemistry textbooks regularly				
6	Listening to science programs on radio sustains my interest in chemistry				
7	Participating in science quizzes makes me interested in studying chemistry				
8	Carrying out chemistry experiments arouses my interest in the subject				
9	Doing my assignments sustains my interest in chemistry				

Research Question 3:

Does the use of diverse teaching method sustains student's interest in Chemistry?

S/N	ITEMS	SA	A	D	SD
10	Students enjoy learning Chemistry when Chemistry teachers use different teaching method.				
11	The use of different teaching method in Learning Chemistry, sustains student's interest to know Chemistry.				
12	Chemistry teachers encourage students to ask questions and express their own ideas when teaching Chemistry with Different method of teaching.				
13	Using different teaching method by Chemistry teachers, Motivate student's interest to learn Chemistry				
14	Chemistry students are always Excited when teachers use different teaching method in teaching of Chemistry.				

Research Question Four:

To what extent does the use of Laboratory Facilities by Chemistry students sustains their interest in learning chemistry in Senior Secondary Schools?

S/N	Distribution of items	SA	A	D	SD
15	I can skilfully manipulate the facilities available in the Chemistry laboratory				
16	Regular use of Chemistry laboratory facilities has helped me to be familiar with the structures of some organic compounds in Chemistry				
17	I am interested in learning chemistry because of the appropriate number and quality of laboratory equipment supplied in my school				
18	I feel encouraged when my Chemistry teachers makes us understand on how to use the equipment in the laboratory				
19	I am interested in learning chemistry because we have adequately trained qualified personnel in our school Chemistry laboratory				