ENVIRONMENTAL FACTORS INFLUENCING THE TEACHING AND LEARNING OF CHEMISTRY IN SENIOR SECONDARY SCHOOL IN EGOR LOCAL GOVERNMENT AREA.

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A RESEARCH WORK SUBMITTED TO THE DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY. IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE B.Sc. (Ed) DEGREE IN CHEMISTRY EDUCATION

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CERTIFICATION

We, the undersigned, certify that this research work was fully carried out by **Chukwuemeke HAPPY** in the Department of Curriculum and Instructional Technology (CIT), Faculty of Education, University of Benin, Benin City.

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DEDICATION

This research work is dedicated to God all sufficiency, for his everlasting love and mercy.

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ABSTRACT

This research study was designed to investigate the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor local government area. The study was aimed on the influence of environmental factors on the students learning of chemistry in senior secondary schools. Five (5) research questions were raised for the research work. The research work was designed and employed a descriptive survey method, and the research instrument for data collection was a validated questionnaire by experts and supervisor in CIT Department. Twenty (20) questionnaire copies were administered to a set of 20 senior secondary school student of chemistry for reliability. The reliability test was analyzed coefficient of 0.71 was obtained. One hundred (100) copies of the Same questionnaire were administered to the selected Senior Secondary school students, Egor local government area. Ten (10) senior secondary schools (Public and private) were selected for the purpose of this research with ten (10) students from each school, a questionnaire was given each to the students and collected back on the same day. The information gathered from the survey shows the few factors that were identified in this research includes: poor class lightening, over population in class, poor needed facilities, bad road and noisy or dusty neighbourhood. The outcome of the research reveals differences in percentage of how all those factors are common and differ within Egor local government. Though, not all the selected schools experience the same issue at the same level or percentage. The analyzed data from table shows various level in which those factors impact or affect the teaching and learning of chemistry in this local government area. The data also shows that poor lightening in class may affect the eye of the students learning, bad road will definitely result to lateness to school or class. Other effect includes: level of Motivation towards learning, tiredness during learning, poor concentration and low level of understanding are the impact of these factors if not properly managed. The result as well shows that students in conducive learning environment factors learning faster and better compared to their fellow. The study made recommendations as a result of the findings shows that the construction of schools or learning centre site should be carefully selected and survey to avoid unnecessary disturbances. NPE policy on numbers of allowed students per class should be enforced in all schools and ensure it's effective in all schools. All the necessary facilities needed in schools should be made accessible as it facilitates the teaching and learning process. Classroom should be adequately furnished and ventilation should be at maximum to allow students learn at convenience and comfort.

CHAPTER ONE

INTRODUCTION

Background of The Study

Education has made a huge contribution to the development of the world, it's significant to improvement of human lives and society transformation cannot be overlooked. Education is the bedrock of society development, therefore, a society without education is a society without development. The beginning of education can be trace back to the early Men who gained skills and knowledge from their daily lives experiences. They taught their children and younger ones their skills and pass knowledge to them base on their own understanding. The early Men education were basically oral and practical in nature which is learnt by Imitation and observation. Farming, fishing and hunting were mostly the skills male children learned were home management and care for children were female area. Education begins to gain more ground and subsequently developing as the need to train the young ones in the society became necessary and vital. The elderly men in the society would gather the young one and teach them about their traditions and culture, acceptable values and beliefs within their society. Education here in the early Men time was totally informal education (education carried out or operated in a way that is not official in nature). Writing or reading were not yet developed or involved. Education can be defined as the process that involves passing and receiving of knowledge and skills for change in behavior. From the early Men experience and ideas, education gained many ground in Western countries who then introduce it (education) to all part of the world through colonisation. People were taught how yo read and write (formal education). For Education to be well carried out effectively and functions properly, an institution was established to ensure that the aims and objectives of education was achieved. The institution was called "School". School was sadden

with the responsibilities of equipping the citizens with skills and knowledge required for development and change in behavior. Trained and qualified personnel were to carry out the responsibility in schools, they're to develop the learners mentally, physically and psychologically. This will make they (learners) to be fit into the dynamic nature of the world.

Science has made a great impact in the educational system. The development and achievement obtained in diverse ways in the society are mostly work of science, in the field of agriculture, engineering, medicine and technology. The contribution of science to human life cannot be over emphasized. Research and experiment carried out in science has helped to discovered many things about human and the world which they live in. Those research has help to protect against diseases through immunizations and antidote, it has also create jobs for citizens by manufacturing things and improve sectors like agriculture and transportation system. Knowledge from science has help to develop students thinking skills and reasoning ability. It also equips the students with ability to solve problems and issues arising in the society. According to Beauchamp, 2002. Knowledge is categorized into three different areas which are: humanities, social studies and natural science. Science is a body of knowledge gained through practical and careful observations. It's better study with experience and practical as it involves research and experiment to discover something or resolve something, it includes subjects like biology, physics and chemistry. Therefore, experience and practical are inevitable in the study of science, and experience or practical can only be best or effectively carried out in a conducive environment.

Environmental factors play a major roles in the learning of science and education generally. Education can only best obtained when every necessary requirement like conducive environment, facilities and teaching aids plays a very significant role. Nissley (2011) examined what influence

location has on learning. He ascertained that place matters, and his article discussed several aspects of how place affects learning: learning about a place, in a place, from a place, and for a place. Grill (2003) stated that if educators and administrators understood the benefits of certain natural settings, they could and would use them to promote educational programs. Bersch and Lund (2002) found that the environment can act as a catalyst for learning and help create an exciting and productive learning experience. Education studies have shown that time is often a limiting factor for school development (Hargreaves, 2011). Knowing fully well that environmental factors affect the study of science, good environmental conditions should be ensure in order to meet and achieve the planned goals and objectives of science study. Chemistry as a subject in natural science involves the study of chemical substances, the breaking and forming of bonds to give another substances. Studying Chemistry requires a high level of concentration and time. Due to the concentration needed in teaching and learning of chemistry, environmental factors are also considered to facilitate the process.

Statement of The Problem

Due to the importance of education in the society, the need to ensure it is effectively carried out in the classroom or any learning centres should be of great priority to every society. Teaching and learning process requires a well structured and systematic operation to function properly. Therefore, resources and certain conditions must be met for the course to be achieved. Some of those resources include: instructional materials, qualified teachers, laboratory for practical, library, infrastructure and conducive environment. (Hargreaves, 2011). Knowing fully well that environmental factors affect the study of science, good environmental conditions should be ensure in order to meet and achieve the planned goals and objectives of science study. Those resources and conditions determines how fast and well a teacher can pass instruction and how

students learn as well. Environmental factors are to be considered also as it affect the process of teaching and learning. Unfortunately, many schools owners and government ignored those factors. School are being built and operated under low standards coupled with unqualified teachers, poor facilities, large classroom size and poor lightening. Education affects learners mentally, physically and psychologically. This means that the learning environment as well have impact on the students in the place of learning. School location which is been neglected by many schools operators today as they build schools in polluted environments like market area, company or factory, mining site of busy places which is not good enough for the students health and learning. The need to make laws and regulations on how schools should be operated has to be looked into by the government, to ensure the students are learning in environmental that is favorable for them. Nissley (2011) examined what influence location has on learning. He ascertained that place matters, and his article discussed several aspects of how place affects learning: learning about a place, in a place, from a place, and for a place. Many statistics records has been established on various students involved in road accidents, for example, two alkw Ibom state polytechnic students were killed by truck. Source: premium times Nigeria. This is as a result of location of school or poor infrastructure. Dirty environment also disturb the teaching and learning process as some schools cases are today. This study intends to investigate the environmental factors that influence the teaching and learning of chemistry. Environment means the surrounding of dwelling which have influences on man. The influence of environment cannot be escape as its within the dwelling of the people, therefore, it should be controlled in order to get and make best use of it in the teaching and learning of chemistry.

Research Questions

In order to effectively carry out this research study, the following research questions were raised by the researcher to guide the research.

1. What are the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor Local Government area?
2. Are the environmental factors influencing the teaching and learning of chemistry related to school locations in senior secondary school in Egor local government area?
3. Does the environmental factors influencing teaching and learning of chemistry relate to school types in senior secondary schools in Egor local government area?
4. What are the school environmental facility factors that influence the teaching and learning of chemistry in senior secondary schools in Egor Local Government area?
5. What are the impact of those environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor Local Government area?

Purpose of The Study

The aim of this research study is to investigate the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor Local Government area. The study aim to;

1. Investigate the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor.
2. Investigate if the environmental factors that influence the teaching and learning of chemistry is related to school locations in senior secondary schools in Egor.

3. Determine if the environmental factors influencing the teaching and learning of chemistry in Egor senior secondary schools are related to school types in Egor.
4. Ascertain the school environmental facility factors influencing the teaching and learning of chemistry in senior secondary schools in Egor.
5. Determine the impact of those environmental factors influence in teaching and learning of chemistry in senior secondary schools in Egor.

Significance of The Study

This research study would enlighten on the importance of teaching and learning environmental factors in achieving the planned learning objectives of chemistry. The findings of this research study would be useful to the students, teacher, parents and schools owners as it would expand their knowledge on environmental factors that influence the teaching and learning process. Curriculum planner as well would gained from the study so as to ensure the success of teaching and learning is achieved.

The findings would help the Curriculum planners to emphasis on teaching and learning in conducive environment which would help in diverse achievements of the curriculum objectives. For subjects like Chemistry to be well taught as planned in the curriculum, Laboratory facilities is needed for practical purposes and research work. This laboratory must be site and use in well conducive environment, free from noise and disturbance because experiment and practical requires high level of concentration. The principal of the school also would be informed about the impact of conducive environment on teaching and learning Chemistry so as to ensure proper measures are put in place. The principal world also ensure that the educational policy by the ministry is followed on the ratio of students in classroom to teacher so that the students can enjoy

quality education. This research work will be of use to the teachers and students as they would be taught on how to make effectively use of conducive environment for teaching and learning of chemistry. Students would be able to make right choice on deciding the school to attend or area to school.

The results from the research work would be of good use to the government and private schools owners as it would help them to make good choice of location to site a school, the location and environmental atmosphere would be considered in constructing schools and not just in locations close to market or busy and noisy areas. This will also help the parents of students in choosing a school with a better learning environmental factors and conditions for their children enrolment. The students also would gain better understanding on how the environment of a school influence their learning and performance in Chemistry.

Scope And Delimitation of The Study

This study only focused on the Environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor Local Government area. The research study is also delimited to senior secondary schools (SSS2) students in Egor Local Government area.

Definition of Terms

Education: This is the passing and receiving of knowledge or skills from a trained person to an untrained person for change of behavior

Development: This has to do with changes that occurs within a particular period of time in human or things

Chemistry: this is the study of chemical and substance of which deals with the properties and composition of matter.

Teacher: A qualified or professional trainer who have obtained a degree in a particular field and can pass that knowledge to another person.

School: an established institution for the purpose of carrying out educational activities

Environment: This is the surrounding or dwelling place of an organism which has ability of influencing the organism.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This research study review related literature under the following sub-headings;

- Concept of Chemistry
- Why do we learn chemistry
- Overview of Environment for teaching and learning
- Environmental factors influencing the teaching and learning of chemistry
- Impact of Environmental factors influencing the teaching and learning of chemistry
- Ways to manage and ensure the best Environment for teaching and learning of chemistry
- Summary of review of related literature

Concept of Chemistry

According to Beauchamp, 2002. knowledge are categorized into three different groups which include the following; humanities, natural science and social science. The natural science comprises of mathematics, physics, chemistry, Biology and geology. While every other disciplines draw their strengths from those disciplines which made up the natural science.

The area of applied knowledge which is knows as practical work include; architecture, engineering, education and laws, among others are birthed from those basic divisions of knowledge. According to England dictionary chemistry is the branch of natural science that deals with the composition and constitution of substances and the changes that they undergo as a

consequence of reactions in the constitution of their molecules. Chemistry is a science subject that involves in investigation, researching and carrying out of practical works for the purpose of knowing how things work and also engage in manipulation of things to see the results of such manipulation in order to tackle or solve a particular problems in the world. The works of chemistry has really changed the world and brings about development which has made the world a better place of living, and solving of problems coupled with prevention of any occurrence of problems that may put the world in difficult time. Chemistry has gone beyond just developing the world, also have created many jobs opportunities in various are (ie medicine, chemical engineering, Agricultural sector and many other) to the citizens of the society and developed technologies for treatment and production purposes. It has also drawn the interest of knowing more about human by studying the human body since human also is made up of some chemicals compositions.

The word chemistry came from Greek word called Khemeia meaning (cast together) which is the atomic level of matter. And the word Alchemy was the name for chemistry in the old age, a word derived from Arabic word (Kimiya). The art of Khemeia was developed by the Greek over a time of 1000yrs within 700BC - 300 AD. When they had conceded with the philosophical science, and weather as, Thales (640 - 546 BC) speculated, that substance can be form or transform one to another of which has no similarities to the formal substance. This leads more philosophers of this time to conclude that everything in the universe comprises essentially of elements (fire, water, air and earth). Due to the work of ANTONINE L. (1743 - 1794), he was regarded to as the father of chemistry because of his work and contribution to Chemistry development. He was an experimenter and a revolutionized chemistry. He stated the law of conservation of mass, and determined the fact that combustion and respiration are caused by

chemicals reactions with what he referred as "Oxygen" and help systematized chemical nomenclature with many other achievements he had in chemistry.

Chemistry deals with the composition, properties and nature of matter. Matter is anything that has weight and occupied a space, this means that whatever thing that has mass and take up a space is referred to as a matter, either living or non-living things including human. Human is not an exceptional since human has weight and occupied a space, chemists had study matter and classified it into three groups; solid, liquid and gas. Atom is the smallest and indivisible particle which is the building block of a matter and can take part in any chemical reactions.

Why Do We Study Chemistry

Study has to do with the acquisition of knowledge about something worthwhile. That is, to know about something because of its importance. The importance and significance of chemistry to the citizens and societies at large cannot be over emphasized. It has contributed to the development of the world in various ways, improve human life and function of the society and create many jobs opportunities for people. The following are the reasons why we study chemistry.

Career purpose: Due to the fact that chemistry subject has a lot of careers opportunities, the need to study and create jobs for citizens through chemistry became necessary. Jobs opportunities under chemistry includes: engineering, education, petroleum, chemical and steel industries etc. Haven knoe that unemployment has be one of the major contribution of crime and social vice in the society the need to engage in activities to pull out the masses in unemployment has become everyone's concerns. Provision of jobs in chemistry is also necessary as it help to meet the daily need of the people in the case of engineering, a lot needs to be done to satisfy citizens or customers needs.

For development and advancement: The study of chemistry brings about development in May sectors of the economy and causes the society to advance in the areas of operation. For instance in the world today, some countries are far more developed than ithers because of their achievement in study and knowledge in areas like chemistry. In term of production, treatment and chemical manufacturing. Many countries in the Western region and Asian have far left African behind. Knowledge in chemistry brings about development through production and manufacturing of goods and services which brings income, create jobs for citizens and improve the social lives of the people. Those with much knowledge in chemistry are more advanced in their country than those with little or no knowledge in chemistry.

Resolved problems: It is not doubt that the world 8s fill of different problems at different times. Those problems faced by the world are either man-made or natural occurring ones. And those problems militate against the proper functioning of the society. For example, earthquake, disease outbreak, erosion and low growth of food. Though some naturally occurring problems cannot be solved but can be controlled in an extent. Production of chemical fertiliser to improve the growth of food and prevention of food is necessary to ensure good food supply to the people as it is one of the human needs. Problems like clothing and production of medicines to control sickness as well are areas that needs the knowledge of chemistry.

To have knowledge on why something happened: There are things that happens sometimes that can only be explained with the knowledge of chemistry. And the need to why those things happen and the reasons they happened also need to be known. Lightening and thunder, rusting of iron and changing of a substance from one form to another are also questions that can be answered only by knowledge of chemistry.

Overview of Environment For Teaching And Learning

Teaching and learning has become necessary in society today as it's needed for development of the society and citizens fitness in the society. Teaching deals with passing or transferring of knowledge or skills while learning is receiving or acquiring a knowledge or skills. The main purpose or teaching and learning is for change in behavior. Due to development and dynamic nature of the society, the need to equip citizens mentally, physically and psychologically has become inevitable. The process of teaching and learning cannot just be conducted in any place or environment but need a well-structured and planned place to be carried out. Education, which is refers to as the process that involves teaching and learning of skills or knowledge for change in behavior was planned to be carried out by an institution called School. School is an official setting with building, furniture, teachers, students and instruction to be learnt. The process cannot be carried out well, or the purpose cannot be achieved if the environment is not a favourable or conducive one. In other word, for plan of Education (teaching and learning) to be accomplished, the environment must be carefully planned. This is because the environment has a major influence on the teaching and learning process. Nissley (2011) examined what influence location has on learning. He ascertained that place matters, and his article discussed several aspects of how place affects learning: learning about a place, in a place, from a place, and for a place. Grill (2003) stated that if educators and administrators understood the benefits of certain natural settings, they could and would use them to promote educational programs. Bersch and Lund (2002) found that the environment can act as a catalyst for learning and help create an exciting and productive learning experience. Education studies have shown that time is often a limiting factor for school development (Hargreaves, 2011). methods where one set of data is used to further explain another set of data. The closed form survey and Facebook activities

helped to further explain the evaluation and final reports. Environment that must be use for setting up a teaching and learning must have some requirements in which would qualify such environment. For example, polluted environments with dust and noise or bushing areas cannot be allowed or approved for teaching and learning process. This is because it would affect the study psychologically and physical harm also is possible to happen anytime. Environment that supports the students mentally and psychologically are environment that are allowed for education to take place. That is, the knowledge about environment has the be obtained before construction of schools for teaching and learning. Investigation and research on the topography and location is as well advice to be known. A good environmental literacy is higher required in operating school. Environmental literacy, on the other hand, should be defined, as stated by Roth (2017), in terms of observable behaviors. That is, people should be able to demonstrate in some observable form what they have learned--their knowledge of key concepts, skills acquired, disposition toward issues, and the like. Goldman, Yavetz and Peer (2006) worked on the environmental literacy of teacher training in Israel and investigated the relationship between future teachers‟ environmental behaviour and background in three major teacher-training colleges. Their study revealed that those future teachers manifest a low level of environmental literacy which was reflected in their environmental behavior. Hsu and Roth (2014) assessed Taiwanese secondary teachers' environmental literacy and analyzed predictors of teachers' responsible environmental behavior.

Environmental Factors Influencing The Teaching And Learning of Chemistry

Teaching and learning of chemistry has been face by many challenges in the world which are of course different from location or countries. Some of the challenges are environmental factors

influencing the process of teaching and learning chemistry. Some environmental factors influencing the process are:

The use of curriculum materials: curriculum materials are very important in the achievement of teaching and learning process. For any subject to be well taught, it must be in line or align with the recommended textbooks and materials by the curriculum planners. From the curriculum planned to also be effective, it has to be well implemented in the appropriate way. Haven know that knowledge is dynamic in nature, it is necessary to always update and keep new discoveries known. With science curriculum reformation which came into a new era in the 1980s and onwards, initiated by the movement of scientific literacy, large numbers of new curriculum materials have been developed around the world (Power & Anderson, 2002). These curriculum materials are usually thought of as being standards-based, which means that they include inquiry as a part of science content, encourage a constructivist and student-centred approach to learning, and require long-term professional development for sustainable implementation (Power & Anderson, 2002). In comparison with traditional curriculum materials, according to Aikenhead (2006), these new curriculum materials can be seen as having humanistic orientation.Following the global tendency, the latest round of science curriculum reform was initiated ten years ago in China (Wei, 2010). As part of science curriculum reform, the official chemistry curricula were established with the national standards of chemistry curriculum at the stages of junior and senior secondary schools promulgated by the Ministry of Education (MoE) in 2001 and 2003 respectively. Subsequently, new chemistry textbooks, aligned with these curriculum standards, have been published and put into use. Researchers have found that these curriculum standards and chemistry textbooks exhibited new features that were akin to those of the standard-based science curriculum materials (Wei & Thomas, 2006; Gao, 2007; Wei & Chen, in press). The way

curriculum are designed and implemented have a very strong influence on the teaching and learning of chemistry. This is because it can either help the students to learn better or worse.

Infrastructural facilities: a well-planned and structured schools are the one that have everything necessary to carry out learning and teaching process in proper way. Practical aspects of teaching and learning plays a vital role in the process, this, cannot be ignored. Therefore, laboratory and library are very important part of requirements facilities in the school as they facilitate the process of teaching and assisting the students to assimilate better. Chemistry is a science subject that without practical work it cannot be effectively taught as it involves many reactions and activities that needs to be carried out through practical work. Laboratory facilities teachingare appropriately utilized, it brings about more effectiveness in teaching and learning process but this depends on teachers' ability to use such facilities effectively (Ughamadu, 2012). Chemistry practical is carried out after theoretical explanation of the concept or course of study. According to Nwosu (2000) the failure to organize practical work for students by their chemistry teacher can be attributed to unavailability of chemistry laboratory facilities, absence of chemistry teacher, lack of practical skills to put the available chemistry practical laboratory equipment into productive use. Kuth in Etukudo (2014) said that experimentation and laboratory teaching are good pedagogy for discovery learning and mastering of abstract skills as well as building up of low ability learners. The role of laboratories and libraries in schools are too important to be left out.

Teacher's qualification: the qualification of teachers in the school environment should be a matter of concern to the government and schools' owner. A trained teacher knows what to do, how to do it and when to do it. They know how to effectively pass lesson to the students interact

and engage the students also. The level of qualified teacher in schools environment determine the success of teaching and learning of chemistry in the school. Chemistry cannot be taught be untrained person in the field as it has many rules and reactions which can only be carried out be master in the field.

School location: The location or environment of a school must be the one that would encourage students to learn. The location must be good in topography and landscape or slope. This will enable students to walk properly into their various classes without getting too tired or sustaining any injury. The knowledge about the school location and environment is important. Unlike now a days where schools are sited in places close to noisy factory and market which is a great disturbances to students learning. Teachers and school owner must put the knowledge of location into consideration in teaching and learning of chemistry. Nissley (2011) examined what influence location has on learning. He ascertained that place matters, and his article discussed several aspects of how place affects learning: learning about a place, in a place, from a place, and for a place. Grill (2003) stated that if educators and administrators understood the benefits of certain natural settings, they could and would use them to promote educational programs.

Instructional materials: Instructional materials are the resources and tools use in the teaching and learning process to facilitate the process. Some of the resources include: textbooks, models, teachers and libraries. The need of this is for the purpose of facilitating the teaching and learning process. According to Campbell (2004) instructional materials can be defined as any tool or material brought into the classroom by the teacher for the purpose of teaching and learning in order to make the lesson effective and interesting. Asaya (2002) Instructional material are set of tools ranging from the most elementary tools to the most complex machines designed go help the

teacher cope with specific teaching needs and situations. He went furthermore to say that these materials can facilitate the teacher in his or her lesson in the classroom teaching. This will also assist the teacher to focus on the topic without diverting.

Class size: The size of the class is also an environmental factor that influence the teaching and learning process of chemistry. The larger the class the difficulty it becomes to effectively teaching and pass instruction to the students. At times teachers may not be able to control large crowd and the end some students wouldn't gain anything or will be left out. Class size also results to noisy and disturbance when it is too crowded which will make it hard to learn properly.

Impact of Environmental Factors Influencing The Teaching And Learning Of Chemistry

The impact of environmental factors influencing the teaching and learning of chemistry includes;

Poor understanding of the subject or topic: those factors influencing teaching and learning if not good influence, it affects the understanding of the students as they are disturbed in the process.

Lack of motivation: negative influence by the environmental factors becomes a hindrance to learning as the motivation towards learning wouldn't be there again. This can also lead to poor performance.

Poor achievement or performance: the impact of negative influence by the environment on the students is poor academic achievement. This is as a result of lack of understanding of the topic.

Ways To Manage And Ensure Best Environment For Teaching And Learning of Chemistry

The following are ways to ensure best teaching and learning of chemistry

Good use of curriculum materials: curriculum materials are very important in the achievement of teaching and learning process. For any subject to be well taught, it must be in line or align with the recommended textbooks and materials by the curriculum planners. From the curriculum planned to also be effective, it has to be well implemented in the appropriate way. Haven know that knowledge is dynamic in nature, it is necessary to always update and keep new discoveries known. With science curriculum reformation which came into a new era in the 1980s and onwards, initiated by the movement of scientific literacy, large numbers of new curriculum materials have been developed around the world (Power & Anderson, 2002). These curriculum materials are usually thought of as being standards-based, which means that they include inquiry as a part of science content, encourage a constructivist and student-centred approach to learning, and require long-term professional development for sustainable implementation (Power & Anderson, 2002).

Appropriate class size: The size of the class is also an environmental factor that influence the teaching and learning process of chemistry. The larger the class the difficulty it becomes to effectively teaching and pass instruction to the students. At times teachers may not be able to control large crowd and the end some students wouldn't gain anything or will be left out. Class size also results to noisy and disturbance when it is too crowded which will make it hard to learn properly.

Knowledge on school location: The location or environment of a school must be the one that would encourage students to learn. The location must be good in topography and landscape or slope. This will enable students to walk properly into their various classes without getting too tired or sustaining any injury. The knowledge about the school location and environment is

important. Unlike now a days where schools are sited in places close to noisy factory and market which is a great disturbances to students learning. Teachers and school owner must put the knowledge of location into consideration in teaching and learning of chemistry. Nissley (2011) examined what influence location has on learning. He ascertained that place matters, and his article discussed several aspects of how place affects learning: learning about a place, in a place, from a place, and for a place. Grill (2003) stated that if educators and administrators understood the benefits of certain natural settings, they could and would use them to promote educational programs.

Summary of Review of Related Literature

The contribution of chemistry national development cannot be over emphasized, its contribution to the development and creation of jobs opportunities for the citizens of the society is of massive significance to the society. From the research work, many environmental factors were discovered having influence on the teaching and learning of chemistry. Some or the environmental factors are: teacher's qualification, class size, school location, instructional materials and the use of curriculum materials. Those factors have great impact on the teaching and learning of chemistry as it needs to be looked into. The research work also listed some reasons why chemistry are studied in the schools, which include: to have knowledge about some occurances, solve problems and create jobs opportunities. From the study, it was deduced that ways to ensure best teaching and learning of chemistry are: have knowledge about the environment, appropriate class size should be encourage and good use of curriculum materials. And the impact of negative influence by the environmental factors are poor academic achievement, lack of motivation and poor understanding. This process of teaching and learning needs to be properly carried out so that the planned objectives and goals of chemistry can be achieved.

CHAPTER THREE

METHODOLOGY

This chapter presents the methodology of the study under the following sub-headings:

Design of the study

Population of the Study

Sample and sampling Technique

Research Instrument

Validation of the Instrument

Reliability of the Instrument

Method of Data Collection

Method of Data Analysis

Research Design

This study was designed to investigate the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor local government area. A survey method of research was adopted in order to enable the researcher to gather relevant data in order to achieve the purpose of the research study.

Population of the Study

The population of the study comprises of all (1,423) chemistry students from the whole senior secondary schools in Egor Local Government area. The schools comprise of all senior public secondary schools presents in the restricted local Government area.

Sample and Sampling Technique

The sample consists of one hundred (100) chemistry students randomly selected from ten (10) different schools. Both public and private school students were selected, 4 private and 6 public schools were used. The selected students were from SSS2 and SSS3 in the restricted Egor Local government area. A sampling technique (questionnaire) was designed and administered to all the students to fill.

Validation of Instrument

The research instrument was validated by the supervisor and two experts (lecturers) in the field of the study. The experts scrutinised the questionnaire to ensure that the purpose of the research study was obtained using the questionnaire. The corrections and recommendations of the experts were used to make the final copy of the questionnaire for the research study.

Reliability of the Instrument

The determination of the reliability of the instrument was done by printing of the designed questionnaire and administered to twenty (20) chemistry students who were selected from Egor local government schools but different from the selected one hundred (100) students for the research study. The questionnaires were filled by the students and collected back, it was then analyzed and the coefficient of 0.71 was obtained. The value of the coefficient shows that the instrument was reliable and can be used for the research study.

Research Instrument

The research instrument used for collection of data, was a structured questionnaire. The questionnaire consists of two sections (A and B), the section A was designed to collect the demographic data of the students participating in the research. The data collected from the

students are: class and gender of the students while the section B consists of twenty-two (21) items which was designed to attain data on the respondents under investigation. The questionnaire consists of questions which revolves around the chapter one (1) research questions raised by the researcher.

Method of Data Collection

In order to collect the required data from the students, permission was obtained from the various selected schools principals to access the students for the research study. The students were randomly selected from their classes (SSS2 and SSS3) and the questionnaires was given to them (one per student) by the researcher. The students were enlightened on how to fill in their details. The process was carried out in the class with only the selected students for the study and the questionnaire was collected back from the students after completion. This was to ensure elimination of bias and making sure that the questionnaires were completely filled by the selected students.

Method of Data Analysis

The interpretation and presentation of the outcome was expressed in simple percentage and frequency. Tables were used in order to answer the research questions in chapter one. The table shows the respondents view on the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in in Egor Local Government area. The four point Linkert scale of strongly agreed (SA), agreed (A), Disagreed (D) and Strongly Disagreed (SD) were used to obtain the data from the students.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter presents the data collected, analysis, presentation and discussion of findings of the research. The analysis was derived from the questionnaire administered to respondents in Oredo Local Government area.

Presentation of Results

Presentation of respondent's Demographic

Table 1 shows the distribution of class of the respondents.

Gender	Frequency	Percentage	Cumulative percentage
SS2	47	47%	0+47=47
SS3	53	53%	47+53=100
Total	100	100%	

Table 1. Showed the number of class respondents who participated in the research. SS2 respondents is fourth seven (47) with a percentage of 47% and the SS3 is fifty-three (53) with the percentage of 53%.

Table 2. Shows the distribution of school type of respondents

Gender	Frequency	Percentage	Cumulative percentage
Public	40	40%	0+40=40
Privat	60	60%	40+60=100

Total	100	100%	

Table 1. Showed the number of school type of respondents who participated in the research. Private respondents is fourth (40) with a percentage of 40% and the public is Sixty (60) with the percentage of 69%.

RESEARCH QUESTION 1. What are the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor Local Government area?

S/N	ITEMS	Strongly agreed	Agreed	Disagreed	Strongly Disagreed
	What are the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor.				
1	Teaching and learning of chemistry in my school is sometimes affected by noise pollution.	34 34%	22 22%	16 16%	24 24%
2	I often get tired in chemistry class due to heat caused by poor ventilation and faulty fans.	41 41%	29 29%	13 13%	17 17%
3	Poor laboratory facilities contribute to my low performance in chemistry practical work.	18 18%	32 32%	34 34%	16 16%
4	Dust and smoke from neighbouring factories often disturb the teaching and learning of chemistry in my school.	13 13%	19 19%	38 38%	30 30%
5	My poor concentration caused by the large class size has influence my learning of chemistry negatively	27 27%	24 24%	21 21%	28 28%

Research question one shows the various environmental factors that influence the teaching and learning of chemistry in Egor. From the table above, many factors where discovered to have influence the process but at different rate and location. Item 1 show that noise pollution is one of the factor with 34% strongly agreed and 22% agreed. Item 2 shows 41% for poor ventilation and 5 shows 27% strongly agreed and 24% agreed for large classroom size. The following percentage varies with the factors. From the data in the table, it can be concluded that the above factors influence the teaching and learning of chemistry in Egor.

RESEARCH QUESTION TWO: Are the environmental factors influencing the teaching and learning of chemistry related to school locations in senior secondary school in Egor local government area?

6	My school location affects the transportation of instructional materials to my school.	14 14%	23 23%	31 31%	32 32%
7	Availability of chemistry teaching and learning laboratory facilities are often determine by school location.	12 12%	17 17%	35 35%	36 36%
8	Noise and dust disturbance caused by factories in my school is due to my school location.	7 7%	12 12%	39 39%	42 42%
9	My school location doesn't have any influence on my learning of chemistry.	16 16%	13 13%	37 37%	34 34%

Item number 6 reveals the effect of location on transportation of instructional materials. From the table, it shows that 14% strongly agreed that location has effect on transportation of materials while 23% agreed. Item 8 has 7% strongly agreed that noise and dust disturbance is as a result of

school location while the agreed is 12%. Item number 9 also revealed that school location has influence on learning of chemistry with 37% and 34%. It can then be deduced that from the table, the following listed factors are influence by the location of school. This also means that school location has an influence on chemistry learning at various levels.

RESEARCH QUESTION 3. Does the environmental factors influencing teaching and learning of chemistry relate to school types in senior secondary schools in Egor local government area?

	Does the environmental factors influencing teaching and learning of chemistry relate to school types in senior secondary schools in Egor				
10	Noise pollution disturbance from nearby factory and market are not determine by school type.	**9** 9%	11 11%	**32** **32%**	39 39%
11	Well equipped learning chemistry laboratory facilities is sometimes influence by school type	14 14%	**16** **16%**	27 27%	42 42%
12	Over population of class size is often caused by the type of school.	**23** **23%**	21 21%	27 27%	**18** **18%**
13	Poor school facilities in my school is due to my school type.	19 19%	**23** 23%	**29** **29%**	**29** **29%**

Table 3. This shows if the influence of environment on learning of chemistry is dependent on school type. The various influence identified in the table are here check to know if the school type has any link with the factors or not. Item 10 shows that noise pollution from neighbourhood is not determine by the school type with a percentage of 9% with strongly agreed and 11% of agreed while item 11 says availability of facilities for learning chemistry is influenced by school

type. It jas strongly agreed of 14% and 16% agreed. From the above table, it can be deduced that school type has influence of learning of chemistry but at very low rate.

RESEARCH QUESTION 4. What are the school environmental facility factors that influence the teaching and learning of chemistry in senior secondary schools in Egor Local Government area?

	What are the school environmental facility factors that influence the teaching and learning of chemistry in senior secondary schools in Egor.				
14	Poor lightening in my school during teaching and learning of chemistry is one of the factor affecting the process.	17 17%	19 19%	24 24%	40 30%
15	My classroom facilities are not environmental facility that affects my learning of chemistry	36 36%	32 32%	21 21%	11 11%
16	Lack of chemistry library in my school is one of the environmental facility influencing my learning.	31 31%	33 33%	19 19%	19 19%
17	I often perform poorly in my chemistry class due to poor teaching and learning aid in my school.	21 21%	25 25%	19 19%	18 18%

Table 4. Reveals the environmental facility factors that influence the learning of chemistry in Egor. The table shows difference factors with various percentage and frequency. Item 14 shows that poor lightening is one of the facility factors affecting the learning of chemistry with 17% strongly agreed and 19% agreed. Item 15 shows that classroom facilities are not environmental facility affecting learning of chemistry with a percentage of 36% while item 17 shows that poor

performance in school is due to poor teaching and learning aid with 21% strongly agreed and 25% agreed. The table reveals that the factors are facilities influencing learning of chemistry but at different stages.

RESEARCH QUESTION 5. What are the impact of those environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor Local Government area?

	What are the impact of those environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor.				
18	Poor laboratory facilities often affects my chemistry performance negatively	26 26%	24 24%	17 17%	33 33%
19	I sometimes find it difficult to concentrate in chemistry class due to noise from surrounding.	31 31%	28 28%	15 15%	26 26%
20	My hardly understand some chemistry concepts due to noise disturbance during lesson	18 18%	21 21%	23 23%	38 38%
21	I am always motivated to learn chemistry because my school have a conducive chemistry library.	32 32%	37 37%	16 16%	13 13%

Research question 5 reveals the various impacts of these different environmental influence on learning chemistry. The listed impact are at different ranges in the table. Item 18 says that poor laboratory affects chemistry performance and have a strongly agreed of 26% and 24% agreed, item number 19 has 31% of the note that noise pollution is the reason for difficult understanding

of chemistry with 28% agreed. Item 21 says motivate is base 9n conducive environment with 32% of strongly agreed and 47% of agreed. From the table, it can be deduced that the impact are as given percentage in the table and rthat environmental factors influence the impact of learning Chemistry.

Discussion of Findings

The research investigates on the environmental factors influencing the teaching and learning of chemistry in senior secondary school. The result of the investigation carried out are shown in the five tables above with each table answering the questions in chapter one of this study. The analysis of the respondents' data collected shows that the environmental factors influencing the senior secondary school student in learning Chemistry in Egor local government are many. Some of the factors are as follows: poor lightening, learning facilities, class population, road network and noise from neighbourhood, poor classroom ventilation, and bad state of laboratory. From the data analysis, it was discovered that those factors influence the students in various ways like psychological effect from the poor state of the environment, lateness caused by bad road, low motivation towards learning, Distraction caused by over-population which are hardly control by the teacher may result to low understanding. It was also gathered that the learning environment an plays a major role in process of learning which the need to ensure that it is use to facilitate the process teaching and learning for both the teacher and the students is highly of necessity. From the table, the data also shows that the impact of the environmental factors influence on learning of chemistry by senior secondary school students, those factors can either make students learn positively or negative depending on the environment factors influencing the process and how they are been managed. The table shows some of the impact to includes: level of performance,

motivation towards learning, understanding of the lesson and level of comprehension of chemistry concepts.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter reviews the summary, conclusion, and few recommendations in regard to the research findings. It also, made some suggestions for further research. This chapter presents following the sub-headings:

Summary of the study

Conclusion

Recommendation

Suggestions for further study

Summary of The Study

This research was designed to investigate the environmental factors influencing the teaching and learning of chemistry in senior secondary school in Egor local government area. Related literature were reviewed on the topic by the researcher on environmental factors that influence the teaching and learning of chemistry.

The research employed a descriptive survey method for the research. A systematic structured questionnaire was designed to gather the required data from the respondents. The structured questionnaire was designed in a way that all research questions raised in chapter one were attended to. The questionnaire was validated by two lecturers and supervisor in the Department of Curriculum and Instructional Technology, the corrections made by the lecturers were effected as instructed. Twenty (20) copies of the questionnaire were administered to twenty respondents to check for reliability, and the reliability coefficient obtained was 0.71 which means the

instrument were reliable for the research. Ten (10) public and private senoir secondary schools (SSS3 and SSS2) were used in the research within Egor local government area. One hundred (100) copies were then printed and administered to the selected students. From each school, ten (10) students were selected randomly making a total of (100) students altogether. The data obtained from the students were carefully analyzed and used to answer the research questions in chapter one of the research.

Conclusion

The goal of this research work is to investigate the environmental factors influencing the teaching and learning of chemistry in senior secondary school in Egor local government area. The research was carried out using a descriptive survey method and the information gathered were analyzed to ensure that the objectives of this research were achived. The analyzed data from the research survey on the environmental factors influencing teaching and learning of chemistry was discovered that many environmental factors influences the teaching and learning of the students in Egor local government schools. The few factors that were identified in the this research includes: poor class lightening, over population in class, poor needed facilities, bad road and noisy or dusty neighbourhood. The outcome of the research reveals differences in percentage of how all those factors are common and differ within egor local government. Though, not all the selected schools experience the the same issue at the same level or percentage. The analyzed data from table shows various level in which those factors impact or affect the teaching and learning of chemistry in this local government area. The data also shows that poor lightening in class may affect the eye of the students learning, bad road will definitely result to lateness to school or class. Other effect includes: level of Motivation towards learning, tiredness during learning, poor concentration and low level of understanding are the impact of these factors if not properly

managed. The result as well shows that students in conducive learning environment factors learning faster and better compared to their fellow.

Recommendations

The following recommendations were made for effective teaching and learning of chemistry and use of environmental factors and influence in achieving better results.

1. The construction of schools or learning centres site should be carefully selected and survey to avoid unnecessary disturbances.
2. NPE policy on numbers of allowed students per class should be enforced in all schools and ensure it's effective in all schools.
3. All the necessary facilities needed in schools should be made accessible as it facilitate the teaching and learning process.
4. Classroom should be adequately furnished and ventilation should be at maximum to allow students learn at convenience and comfort.

Suggestions For Further Study

This research on environmental factors influencing the teaching and learning of chemistry in senior secondary school in Egor local government area. Due to the dynamic nature of educational system, further study is hereby suggested to area like factors that influence the academic performance of chemistry students. This research topic can as well be carried out in any other subjects area.

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APPENDIX

UNIVERSITY OF BENIN

FACULTY OF EDUCATION

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY

BENIN, EDO STATE

Dear respondent,

This questionnaire is designed for the purpose of data collection, on a research work. Please, kindly fill the questionnaire and tick ( ) where applicable.

Your valid response will be highly appreciated, as the researcher solicits your maximum cooperation. This research work is strictly for academic purpose and your information will treated confidential.

SECTION A : Demographic Data

INSTRUCTIONS: please tick ( ) and fill where is applicable.

Class: SSS2 ( ) SSS3 ( )

School location: Urban ( ) Rural ( )

School type: Public ( ) Private ( )

S/N	ITEMS	Strongly agreed	Agreed	Disagreed	Strongly Disagreed
	What are the environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor.				
1	Teaching and learning of chemistry in my school is sometimes affected by noise pollution.				

2	I often get tired in chemistry class due to heat caused by poor ventilation and faulty fans.				
3	Poor laboratory facilities contribute to my low performance in chemistry practical work.				
4	Dust and smoke from neighbouring factories often disturb the teaching and learning of chemistry in my school.				
5	My poor concentration caused by the large class size has influence my learning of chemistry negatively				
	Are the environmental factors influencing the teaching and learning of chemistry related to school locations in senior secondary school in Egor.				
6	My school location affects the transportation of instructional materials to my school.				
7	Availability of chemistry teaching and learning laboratory facilities are often determine by school location.				
8	Noise and dust disturbance caused by factories in my school is due to my school location.				
9	My school location doesn't have any influence on my learning of chemistry.				
	Does the environmental factors influencing teaching and learning of chemistry relate to school types in senior secondary schools in Egor				

10	Noise pollution disturbance from nearby factory and market are not determine by school type.				
11	Well equipped learning chemistry laboratory facilities is sometimes influence by school type				
12	Over population of class size is often caused by the type of school.				
13	Poor school facilities in my school is due to my school type.				
	What are the school environmental facility factors that influence the teaching and learning of chemistry in senior secondary schools in Egor.				
14	Poor lightening in my school during teaching and learning of chemistry is one of the factor affecting the process.				
15	My classroom facilities are not environmental facility that affects my learning of chemistry				
16	Lack of chemistry library in my school is one of the environmental facility influencing my learning.				
17	I often perform poorly in my chemistry class due to poor teaching and learning aid in my school.				
	What are the impact of those environmental factors influencing the teaching and learning of chemistry in senior secondary schools in Egor.				
18	Poor laboratory facilities often affects my chemistry performance negatively				

19	I sometimes find it difficult to concentrate in chemistry class due to noise from surrounding.				
20	My hardly understand some chemistry concepts due to noise disturbance during lesson				
21	I am always motivated to learn chemistry because my school have a conducive chemistry library.				