

**ASSESSMENT OF SECONDARY SCHOOL STUDENTS ATTITUDE
TOWARDS THE LEARNING OF CHEMISTRY IN EGOR LOCAL
GOVERNMENT AREA**

EDEBHAGBA RACHEAL ENOMONLEN

EDU1803021

**DEPARTMENT OF INSTRUCTIONAL TECHNOLOGY
FACULTY OF EDUCATION
UNIVERSITY OF BENIN
BENIN CITY, NIGERIA.**

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**A RESEARCH WORK SUBMITTED TO THE DEPARTMENT OF
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CERTIFICATION

This is to certify that this research work was carried out by Edebhagba Racheal Enomonlen with matriculation number EDU1803021 in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City.

Dr. I. J. Umoh
(Project Supervisor)

Date

Dr. (Mrs.) A. H. Oyakhirome
(Project Coordinator)

Date

Dr. F.O. Idehen
(Head of Department)

Date

DEDICATION

The steadfast love of the lord never ceases, his mercies never come to an end, they are new every morning, I give thanks to God Almighty who has made my studies at this level possible through the instrumentality of His awesome grace.

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Abstract

The study examined assessment of secondary school students' attitude towards the learning of chemistry in Egor Local Government Area. The study adopted the survey design using questionnaire as instrument of data collection. The study analyse four objectives which include Examine attitude of secondary school students towards the learning of chemistry in Egor Local Government Area; Ascertain whether the attitude of students towards learning of chemistry differs between male and female chemistry students.; Evaluate the attitude of students towards learning of chemistry differ based on school ownership (public and private).; Find whether the attitude of students towards learning of chemistry differ based on parental educational level.

The study adopted percentage to analyse the research questions, the result revealed that The attitude of secondary school students towards the learning of chemistry affects their learning of chemistry in Secondary Schools in Egor Local Government Area. The attitude of students towards learning of chemistry differs between male and female chemistry students in Secondary Schools in Egor Local Government Area. The attitude of students towards learning of chemistry differs based on school ownership (public and private) in Secondary Schools in Egor Local Government Area. The attitude of students towards learning of chemistry differs based on parental educational level in Secondary Schools in Egor Local Government Area.

The study recommended that students should be encouraged towards the study of chemistry in secondary school as to enhance positive attitude towards the learning of chemistry in Egor Local Government Area. The schools should invest in buffers that can promote the interest of both genders as to influence positive attitude towards learning of chemistry in Secondary Schools in Egor Local Government Area. Schools should put enabling environment that can bring about students positive attitude towards learning of chemistry in both public and private Secondary Schools in Egor Local Government Area. Parents should be involved the learning process of children as it can motivate positive attitude towards learning of any subject, including chemistry in Secondary Schools in Egor Local Government Area.

CHAPTER ONE

INTRODUCTION

Background to the Study

Chemistry is the scientific study of how atoms or sub-atomic particles like protons, electrons, and so combine to form chemical substances. Both at the institution and the Senior Secondary School, Chemistry is an essential component of the science curriculum. At this level, which is frequently referred to as "general Chemistry," students are introduced to a wide range of fundamental ideas that allow them to develop tools and skills that will be helpful when they reach more advanced levels, where Chemistry is invariably studied in one of its many sub-disciplines (Musengimana, Kampire & Ntawiha, 2021). Chemistry is central to many science-related courses offered in Nigeria at the Universities and other tertiary institutions of learning. These courses include medicine, engineering, chemistry, biochemistry, optometry, etc.

Students' attitudes toward chemistry are one of the factors that have been reported. Therefore, educators ought to attempt to implement teaching strategies that inspire learners, creating a fun and stimulating learning environment. Teachers' instructional methods were reported to affect students' attitudes towards

the subject (Musengimana et al., 2021). Low achieving students argued that traditional instructional methods that involve reading and listening, among others, cause a decline in their attitudes towards chemistry. They suggested that even if such methods are used, teachers could adapt and develop them according to students' needs. Student-centered methods like the use of computers and videos, making inquiries, and field trips, when designed properly, lead to long-term positive attitudes towards chemistry which creates positive students' performance.

This can be positive or negative depending on their perception of problem-solving in chemistry. Yunus and Ali (2012) and Najdi(2013) showed that there is a significant difference between the attitude of boy and girls in chemistry students in terms of negative attitude towards chemistry hence low attitude towards problems-solving in chemistry. In addition, investigation of the effect of gender on attitude towards chemistry has shown that male students have always been attested to show more positive attitude towards chemistry and chose chemistry-related career paths more often than the female (Sofiani, Maulida, Fadhillah & Sihite, 2017).

Meanwhile, conversely, the study by Miller, Slawinski and Schwartz (2006) reported that female students were more interested in science (chemistry) than males and more often planned a chemistry-related field as their future career.

Evidence has shown that, children achieve more in academic work and express positive attitudes when parents get involved in their learning particularly at home level. Parental involvement seems to be the most important influences on students' attitudes towards and they appear to be the most significant adults in students' performance in science such as chemistry. The implication of these is that parental influence has a significant influence on students' attitude towards Chemistry.

Therefore, parents' contribution is highly needed when it comes to attitude of students in chemistry as it plays an important role in influencing student attitudes towards chemistry. For example, some parents/guardians are aware of the importance of advocating for the choice of chemistry as a subject, thereby promoting the value of chemistry-related professions. Similarly, parents/guardians should be educated on the need to drop religious and cultural beliefs that do not favour girls' in chemistry education so as to promote positive attitudes towards chemistry in female students as well as boys/male students.

Some literature has shown that there is a significant difference in the interest of female students of different age groups toward the learning of chemistry. Conversely, many female students have a poor attitude to chemistry learning because they have poor study habits and skills which are required for understanding

and retrieving information; particular they are the link between comprehension and memorization. While, other literature agrees with the argument that boys showed higher learning interests in sustainability issues and scientific topics than girls. However, girls recalled more life experiences about science (chemistry) than boys. It was also showed that there was high correlation between learning interests and life experiences related to chemistry, and in the perspective on attitudes towards chemistry.

Statement of the Problem

The student's performance in Chemistry in both internal and external examinations has been persistently poor, which is highly disappointing given the relative significance of the subject. Chemistry educators have made honorable and sincere attempts to pinpoint the main issues relating to chemistry education in the country's schools. Despite all of these admirable efforts, the issue of low performance in Chemistry has lingered in the country's public examinations, and Chemistry is one of the subjects affected. Despite the praise given to chemistry, it is clear that students still have a bad attitude toward the subject, which could affect their performance. Students' attitude towards Chemistry could be as a result of

teachers' method of Chemistry teaching and personality greatly accounted for the students' positive attitude towards Chemistry.

According to Kanni (2020), student performance in the subject is still uninspiring, indicating that the level of performance is still insufficient, despite the importance of chemistry, its educational value that is relevant to each learner's needs, a nation's economic and technological advancement, and researchers' efforts to improve teaching and learning. As an individual's attitude is a very powerful sensation that increases the likelihood that they will regularly react favorably or unfavorably to specific items or circumstances, this may not be unrelated to how they feel about the subject. The emotional concepts and expressions of interest, value, self-worth, and preference are linked to attitude. Furthermore, it is evident that interest is focused on a certain action, whereas attitude is directed at an object.

In secondary schools in Nigeria, students' decisions to study chemistry are mostly influenced by their intelligence, attitude, personalities, and type of school (Francis, Baba & Enock, 2023; Otor, 2011). Jegede and Okebukola (2012) asserted that socio-cultural variables can also contribute to the attitude gap between boys and girls. To ensure that students grasp complex chemical concepts

and participate in interactive thought, a range of teaching techniques must be used (Raymond, 2015). The inclusion of these concepts encourages students to learn. When using idea mapping, students have the opportunity to work in groups, fostering collaborative learning and fostering a positive attitude toward chemistry.

It is against this backdrop, that this study is motivated to do an assessment on secondary school students' attitude towards the learning of chemistry in Egor Local Government Area.

Research Questions

Based on the above purpose of the study the following research questions will guide the course of the study.

1. What is the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area?
2. Does the attitude of students towards learning of chemistry differs between male and female chemistry students?
3. Does the attitude of students towards learning of chemistry differ based on school ownership (public and private)?
4. Does the attitude of students towards learning of chemistry differ based on parental educational level?

Purpose of the Study

The main purpose of this study is to assess the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area. The specific purpose of the study is to:

1. Examine the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area.
2. Ascertain whether the attitude of students towards learning of chemistry differs between male and female chemistry students.
3. Evaluate the attitude of students towards learning of chemistry based on school ownership (public and private)
4. Find whether the attitude of students towards learning of chemistry differs based on parental educational level.

Significance of the Study

This study is expected to be beneficial to students, teachers, parents, schools, and future researchers. The study also aims to help students develop a positive attitude towards chemistry. It also helps teachers develop teaching strategies that enhance students' attitude towards chemistry. It enlightens parents to encourage and influence students' attitude towards learning of chemistry.

The finding of this study essentially provide information to government and ministry of education on the measure to be taken in curbing poor attitude of study towards learning of chemistry senior secondary schools in Egor, Local Government Area (LGA), Edo State.

Practically, the findings of this study is of importance to the school boards, proprietors, administrators, parents, general public, and students on the import of motivating students towards learning of chemistry in senior secondary schools in Egor, Edo State.

The result of this study will seem to provide the ministry of education suggestion that include ways of students' attitude towards learning of chemistry in our secondary schools. The suggestion of this study will be a guide to selecting from the pool of teachers and location for secondary school students offering chemistry.

The findings of this study can be used by government, especially the Ministry of Education, in formulating, developing, sustaining and evaluating policies and programmes that will positively impact on teaching and learning of chemistry.

Scope and Delimitation of the Study

This study focuses on the assessment of secondary school students' attitude towards the learning of chemistry in Egor Local Government Area, Edo State.

Definition of Terms

The following terms were operationally defined:

Students: A young individual usually male and female who are dually registered as learners in a school to take learning process in an educational institution is called a student.

Attitude: A person's attitude, which is a psychological construct, can be described as a mental and emotional entity that characterizes or inheres in them, as well as their approach to something or their viewpoint on it. Their thoughts, outlook, and feelings are all a part of attitude.

Learning: The process of transforming knowledge, attitude and status for the benefit of individuals and the society. .

Male: A boy child that grows up to become a productive man, they are considered to be sexually recognized as male students in this study.

Female: A girl child that grows up to become a productive woman, they are sexually recognized as female students in this study.

School Ownership (public and private): States own or support a large number of schools. Independent of the government, private schools operate.(Better source is required) Private schools typically derive their money from the families whose children attend them through tuition fees; although, on occasion, these institutions also get assistance from the government (for instance, in the form of school vouchers). Parochial schools are private institutions that frequently have a religious affiliation.

Parental Educational Level: Parental educational level is the parent's highest level of education. It might cover anything from high school to the workplace. The educational attainment of parents has been linked to children's academic performance.

Egor LGA: The headquarters of the Egor local government area are located in the town of Uselu in the Nigerian state of Edo, which is in the South-South geopolitical zone. The Okhoro, Use, Uwelu, Iguikpe, Ugbighoko, Iguediaye, Evbougide, and Oghedaivbiobaa towns and villages are among those that make up the Egor local government area.

CHAPTER TWO

LITERATURE REVIEW

This chapter contains the literature review, which is divided into the following subheadings:

- Theoretical framework
- Concept of Chemistry
- Students' Attitudes in Chemistry
- Male and Female Attitude of Students towards Chemistry
- School Ownership and Attitude of Students towards Chemistry
- Parental Educational Level and Students attitude towards Chemistry learning
- Related Empirical Literature
- Summary of Reviewed Literature

Two theories have been selected as guide on students' attitude towards the learning of chemistry. These theories are:

Cognitivism Theory by Robinson (1975)

Cognitivism theory was developed by Robinson (1975). He stipulated that ``the memory is an active organized cognitive processor of information and that prior knowledge plays an important role in learning''. According to him, cognitive

view looks beyond behaviour to explain brain-based learning. He considers how human memory works to promote learning. This shows that, the physiological processes of sorting and encoding information and events into short memory and long term memory are important to educators working under the cognitive theory. The major issue associated with the study is the locus of control over the learning activity of the learner in context.

The major asserts some facts which explained the factors that associated with study behaviours and their respective performance as an end-result in the school or educational building pyramid. The implication of the theory is that, cognitive reasoning helps the learner to arranged learning in order of importance through the physiological process of sorting and encoding information and events into short term memory activity. This medium serves as a stimulus of reinforcement for the sound academic performance of the students in the school.

Constructivism theory by Mills and Watson (1972)

The constructivism theory was propounded by Mills and Watson (1972) , They stipulated that constructivism views learning as a process in which the learner activity construct or builds new ideas or concept based upon current or past knowledge or experience. In other words, ``learning involves constructing ones

knowledge from one own experience’’. Constructive learning therefore is a very personal endeavor whereby internalized concepts, rules and general principles may consequently be applied in a practical real world context. This is also known as social constructivism which posits that knowledge is constructed when individuals engage socially in talk and activity about shared problems or tasks. According to them, learning is seen as the process by which individuals are introduced to a culture by more skilled members.

Constructivism itself has many variations, such as active learning, discovery learning and knowledge building. Regardless of the variety, constructivism promotes a student free exploration within a given framework or structure during learning. They concluded that the teacher acts as a facilitator who encourages students to discover principle for themselves and construct knowledge by working to solving realistic problems. Hence, aspects of constructivism can be found in self-directed learning, transformational learning, experimental learning, situated cognition and reflective practice and religious practice.

The implementation of this theory is that constructive learning theory exposes the learners to quality learning habits or attitude where teachers are introduced to a culture by more skills learning activities. The underlying

assumptions show that constructivism theory promotes students free exploration within a given framework of learning activities. Furthermore, the analysis shows that the constructive learning process indicate learning attitude of student which makes them to be self-directive transformational learning habit and effective practice by making it necessary to improve intelligence, as a progressive phenomenon in view academic performance syntax approach.

Conceptual Chemistry

Chemistry is central to every facet of life. It is the study of properties and composition of matter; its chemical reactions, structure and associated changes. It is primarily concerned with atoms and their interactions with other atoms, and particularly with the properties of chemical bonds. Chemistry is a science springing from the principles of physics with its applications in other sciences such as life-sciences, engineering, technology, earth sciences and medicine (Abanikannda, 2016). Chemistry graduates are engaged across the globe in rewarding careers in pharmaceutical, metallurgical firms, commercial laboratories, scientific research institutes, forensic scientists in the criminal justice system, universities, health services, food processing, petroleum and petro-chemical industry, biotechnology, toxicology, hazardous waste management, manufacturing

industry, mining and extractive industry, medical technology, agriculture and forestry (Ababio, 2013).

The interdisciplinary nature of chemistry also lends its graduates to collaborating with engineers, physicists and biologists in proffering solutions to a wide spectrum of societal problems. Chemistry is globally adjudged a prerequisite subject for the study of engineering, medicine, other basic and applied science courses in any tertiary institution. Oloruntegbe and Oduntuyi (2008) averred that a student who is deficient in chemistry, and has good grades in other science subjects will hardly be able to offer any course in the faculties of science, medicine and engineering in the universities.

What is Attitude?

How Oskamps and Schultz (2005) defined attitude as a predisposition to respond in a favourable or unfavourable manner with respect to a given attitude object. Attitude can also be seen as a learned tendency or readiness to evaluate things or react to some ideas, persons or situations in certain ways, either consciously or unconsciously. A sociological definition of attitude looks on at verbal expression as an intention to act Common to sociological definitions is the view that an attitude is a mental position with regards to a fact or state or a feeling

or emotion toward a fact or state. In sociology, attitude refers to a person's predisposition to act in a certain way based on their opinions, beliefs, and values shaped by the culture and social norms of a particular group.

Psychologists defines attitude as a learned tendency to evaluate things in a certain way. This can include evaluation of people, issues, object or events. According to Olufemi (2012), an attitude refers to beliefs, feeling and reactions of an individual about phenomenon, persons, objects and events, Attitudes are not inherited but they can be learned and modified, in marketing, attitude refers to a consumer's overall emotional and cognitive evaluation of a product that influences their purchasing decision.

In organizatronal behavior, attitude is seen as relatively stable opinions and beliefs of employees about their work and working conditions and how these opinions shape employee behaviour, motivation, and job satisfaction. Yara (2009) definition of attitude in chemistry however, focuses on scientific approach assumed by an individual for solving problems, assessing ideas and making only decision. He added, it is student's belief and attitude that have the potential to either facilitate or inhibit learning. With all these definitions, one can say that

Attitude is a special psychological character associated with an individual. Student's attitude is their tendency to respond in a certain way towards something.

There are several positive attitudes that students can have towards learning chemistry, such as:

1. Curiosity: Chemistry can be a fascinating subject for students who are curious about how the world works on a molecular level. They may have a natural desire to learn more about chemical reactions, molecules, and chemical properties,

2. Perseverance: Chemistry can be a challenging subject, so students who are willing to work hard and persist through difficult concepts are more likely to have a positive attitude towards the subject.

3. Creativity: Learning chemistry can also require some creative thinking, such as with problem-solving and designing experiments, so students who enjoy this type of thinking may have a positive attitude.

4, Real-world relevance: Chemistry concepts can have real-world applications » that can be interesting and motivating to students. For example, learning about how chemicals interact in the natural environment can be inspiring to students who care about environmental sustainability. Secondary school students may have a variety of negative attitudes towards learning of chemistry, these includes;

1. Lack of interest: Chemistry may not be an appealing subject to some students, leading to disinterest and lack of motivation to learn.

2. Difficulty: Chemistry can be a challenging subject for students who have trouble understanding abstract concepts or may struggle with the mathematical aspects of the subject.

3. Perception of chemistry: Students might see chemistry as a boring or irrelevant subject that doesn't have any real-life applications, which can lead to negative attitudes towards the subject.

4. Negative past experiences: Prior negative experiences with chemistry such as low grades or negative feedback can also contribute to a negative attitude towards the subject.

5. Lack of confidence: Some students may lack the confidence to learn chemistry, which can hinder their learning process and lead to negative attitudes towards the subject.

Students' Attitudes in Chemistry

Learning results can be impacted by student attitudes (Kurniawan, Perdana, & Kurniasari, 2018). Positive attitudes among students help them learn more effectively. The way in which students view the subject influences their interest in

it and their likelihood of studying it in the future. Academic success is greatly influenced by chemistry-related attitudes. Positive students perform better than those with bad attitudes.

According to Kurniawan et al. (2018), attitudes are feelings of liking or disliking a particular issue. Some academics have framed the significance of attitude in terms of social psychology and educational sciences. Results of the Lu et al. (2016) study demonstrate some associations and potential relationships between the motivational and emotional components evaluated and students' attitudes and intentions toward pursuing science, as well as results of correlation and structural equation modeling, which would raise their chances of pursuing a scientific career in the future. Additionally, favorable attitude modifications for perceived self-efficacy and appreciation of science and scientific lessons were attained on the affinity dimension (Arajo, Morais, & Paiva, 2021).

There is a strong correlation between students' interest, attitudes, and the subject's relevance. Attitudes toward chemistry are a collection of beliefs that students form regarding chemistry or chemistry courses. Students have a good attitude toward the subject and are interested in learning it if they believe it to be relevant to them in the society in which they live. Students that have a bad attitude

are not engaged in learning the material and do not focus on the subject's content for longer periods of time. According to Xu, Villafane and Lewis (2013), attitudes can be divided into three categories: affective, behavioral, and cognitive. The emotive dimension is concerned with an emotional reaction that conveys how much pupils appreciate chemistry lectures. The behavioral components speak to pupils' propensity to act behaviorally based on chemistry. According to Francis, Baba, and Enock (2023), the cognitive dimensions describe the evaluation that is made up of personal beliefs and chemistry knowledge.

Innovative teaching methods will improve students' understanding of difficult ideas. These methods engage pupils, arouse their interest in the subject matter, and elevate their attitudes. The way that students reacted to a new teaching method after learning it may be used to determine how they feel about it, whether it increases their academic achievement, and how they feel about it. To this end, research has shown that active learning methods can help students better understand the science topics they are being taught and change their attitudes toward science when combined with other teaching strategies like cooperative learning, project-based learning, the five elements of inquiry learning, and

computer-assisted materials (Demirel, 2016; Mboniryivuze et al., 2021; Rabgay, 2018).

Studies that looked at how gender affected secondary school students' attitudes toward chemistry produced conflicting findings (Kubiatko, Balatova, Fancovicova & Prokop, 2017). For instance, according to some studies (Bajaj & Devi, 2021) girls are more likely than boys to acquire positive attitudes toward learning chemistry, while other studies (Anwer, Iqbal & Harrison, 2012; Kousa, Kavonius & Aksela, 2018) found that boys are more likely to do so. However, additional research revealed that both boys and girls had similar attitudes regarding chemistry. Students in urban schools outperformed those in rural schools when PhET simulations were utilized, according to extensive research on the association between school location (urban versus rural locations) and academic achievement in science (Ndiokubwayo et al., 2020). In a research to look at students' attitudes toward science, Anwer et al. (2012) discovered that rural students did better than urban students. It is necessary to conduct a study to ascertain the impact of TBL gender and school location variables in light of these contradicting data.

Students' Learning

Studies suggest that there is a relationship between attitude and methods of instruction and between attitude and achievement. Therefore, it is possible to predict the level of achievement from attitude scores. Although many researchers argue that teaching methods have a great impact on students' attitude to learn a subject, the relationship between students' attitudes towards chemistry and motivation to learn chemistry has not yet been examined. In this study, the relationship between attitudes towards chemistry and motivation to learn chemistry were investigated. The relationship between gender and motivation to learn chemistry as well as gender and attitude towards chemistry were also explored.

It was observed that the students who have negative attitude towards chemistry have lack of motivation for class engagement while students who have positive attitudes towards Chemistry have motivation for class engagement (Xu, Southam & Lewis, 2012). Detailed examinations of students' attitudes towards science demonstrated that attitudes of students towards science changes with exposure to science, but the direction of change may be related to the quality of

that exposure, the learning environment, and teaching method (Mattern & Schau, 2002).

A positive attitude can influence expected achievement and is heavily influenced by attitudes towards science. Students who have a positive attitude towards and beliefs about chemistry will succeed at a higher level. Student attitudes towards Chemistry also play a powerful role in how they think about using problem solving method in their chemistry or any science class (Woldeamanuel & Selassie, 2019).

Male and Female Attitude of Students towards Chemistry

Some studies found that there is no significant difference in performance between male and female attitude and performance in chemistry (Ajayi, 2016; Ajayi & Ogbeba, 2017). The fact that men and women are exposed to distinct chemistry learning regimens is typically blamed for the conflicting results that studies of gender disparities in chemistry performance continue to produce. Parental level of education influence students' academic performance in chemistry, parent also mount tremendous pressure on students to earn good grades because academic achievement which is assumed to possess predictive value and used to

bar or open the gate between the university and successful careers in life (Rahaman, 2010).

Academic success is likely to be influenced by student attitudes, which seems to be one of the key objectives of secondary scientific education. One of the main duties of every scientific teacher is to foster in the students a good attitude toward science as a subject. Unfortunately, research has shown that a large portion of what is covered in science classes is not all that interesting to students. An inclination to respond favorably or unfavorably to a specific attitude object can be described as an attitude (Olawale, 2016). Evidence has shown that secondary school student' perceptions of chemistry instruction, including both theoretical and laboratory courses. Interests or feelings regarding studying chemistry or science are indicated by attitudes toward those subjects. It is a student's predisposition to "like" or "dislike" science, whereas attitudes in science refer to the scientific method adopted by an individual for problem-solving, idea evaluation, and decision-making. Student beliefs and attitudes may either support or obstruct learning (Obaje & Eje, 2021).

Due to the lack of student motivation, unfavorable attitudes, low enrollment, limited laboratory equipment, and lack of pedagogical competency, chemistry has

been difficult in the Nigerian environment. Perhaps the subject has a reputation for being difficult for students to study (Salame, Casino & Hodges, 2020), and it has been associated with subpar performance, particularly at the secondary level. Perhaps there is a wealth of literature that describes the determinants of students' success in chemistry (Lacambra-Malana, 2020; Omoniyi & Ese, 2018). But an important psychological concept that has garnered a lot of academic attention in relation to students' performance is attitudes. A person's attitudes reveal whether they agree or disagree with any part of their social environment. It represents a person's cognitive, emotional, and behavioral assessments, in other words. It has been demonstrated that a student's attitude toward a subject influences how well they succeed in that subject. A positive attitude motivates students to work harder, whereas a bad attitude makes learning challenging. Student attitudes toward chemistry may include their general opinion of it, their enthusiasm for it, and their propensity to engage in chemistry-related activities. Success in chemistry is greatly influenced by attitudes.

Oladejo, Nwaboku, Okebukola and Ademola (2021) investigated gender difference in students' performance in chemistry can computer simulation bridge the gap, the study found that found no statistically significant difference between

the performance of the male and female students. Their findings also revealed that there was a statistically significant main effect of treatment on the students' performance, the inter action effect of gender and treatment did not attain statistical significance.

The differences in the Educational attainment of boys and girls are broadly attributed to biological cause and/or to culture and stereotypes in the words of Kleen (2011), differences in academic achievement of boys and girls are as a result of culture, biological functions and stereotype, studies carried out by (Okebukota, 2010) revealed dwindling performance of women in Education which could be attributed to gender inequality in Education.

The widening gap in gender difference can be viewed to have taken its root from home and the perception and expectation of the society about gender (Nzewi, 2020). For example, in many homes in Nigeria, certain technical activities and duties like washing cars, cutting grasses, fixing bulbs are reserved for male children, while other chores that require no technical skills such as washing dishes, cooking, cleaning and so on, are reserved for their female counterparts (Tambaya, Sabitu & Matazu 2016).

The effects of this stereotype mindset play a major role in both the participation and performance of females in science. For most adolescents, cultural and societal expectations alongside career prospects and opportunities within the socio-cultural milieu are factors that play a major role in their individual choice of career and vocations (Eugene & Ezech, 2016). Efforts to increase female participation in STEM courses and professions have proven to have a slow uptake as compared to female participation in other fields of study in Nigeria (Onyekwelu, 2019). In Nigeria, females studying chemistry account for only about 13%, for those studying medicine, they took only about 10% and account for less than 6% of those studying agriculture (Ayodotun, 2015). This is not surprising and has not significantly improved even after five years (Nzewi, 2020). As can be observed in our environment, males have higher participation in STEM professions like medicine, engineering, Agriculture and others.

Ownership of School and Attitude of Students towards Chemistry

The ownership of school and its effective management can determine to a large extent the level of students achievement, Orji (2013) opened that school ownership implies ownership in urban-rural setting can influence students' attitude to learning chemistry. Some ownership schools are those schools in municipalities

or schools found within the town and rural schools are those located in the village or semi urban areas. Hence, the location of a school can determine the academic achievement of students in chemistry. Fredrick (2011) view school ownership as one of a majors factors that influence students' academic achievement in Chemistry or other subject. He opened that parent look at such factors as the ownership of schools (urban or rural) and the distance to school before enrolling there wards or children. Distance of school from home, noisy environment and other variables are capable of hampering effective teaching and learning of chemistry and it can lead to low achievement.

The school is a social and learning agent that provides the environment upon which a child may be formally educated in order to attain educational goals. Human beings, have unlimited capacity to learning, but may however be limited by the behavioral patterns and facilities that the immediate environment offers. According to Umoh (2006) nature only provides the raw materials in form of potentials, but it is the environment that determines the extent of development. Furthermore, in the assessment of effect of traveling distance among students in community secondary schools in relation to the quality by Galabawa and

Lwaitama (2008) revealed that most of the students arrived at school late, tired and lost interest in learning and hence poor academic performance.

Odeleye Oyelami and Odeleye, (2012) Claimed that the history of private ownership in educational administration was introduced to the country in 19th century. Between 1859 and now, statistic is not able to review the number of privately owned secondary school in Nigeria. And if at all the list is released one can be sure that many of them will be omitted. Private participation in education could be substantial as a result of breakdown of the public school ownership structure and void in the educational sector due to falling level of infrastructure academic achievement those government secondary schools.

There are many be on exception to this, especially in the eastern state of the country where the catholic mission still play a dominant role in the establishment and control of secondary schools, there are some private schools that employ and maintain poorly paid staff who therefore feel distrusted. This must have adverse effects on over all achievement of the schools.

Parental Educational Level and Learning of Chemistry

Oloruntegbe (2012) investigated parental influence as a factor in helping students establish a match between science concepts learnt in schools and the

activities they carry out daily at home and hence promotion of positive attitudes towards science. The study investigated the relationship between parental influence and students attitudes towards chemistry. The findings indicated that there was a statistically significant influence between parental influence and the students' attitude towards Chemistry.

Mokoro, Wambiya and Aloka (2014) examined parental influence on secondary school students' attitudes towards chemistry. The results revealed positive correlation between parental influence and students' attitudes towards chemistry, that is, as positive parental influence increase, the students' positive attitudes towards chemistry also increase. Students' attitude towards chemistry was influenced by the extent of parental involvement / parental influence. The level of education of parents, availability of reading materials at home, and parental support in education, can cause variation in students' attitudes and academic achievement in chemistry.

Related Empirical Literature

Obaje and Eje (2021) examined the effect of teacher's likability on student's attitude towards chemistry. Chemistry is among the essential science subjects taught at the secondary school level in Nigeria's education landscape. There has

been a persistent concern about the poor performance in chemistry in Nigeria. The present study investigated teachers' likability as a scarcely explored variable that could explain the variation in students' attitudes towards chemistry. A cross-sectional survey was employed for the analysis, and the population of the study comprised senior secondary school students in the Kogi State of Nigeria. Participants included males and females senior secondary school students enrolled in the science classes. One hundred and fifty-three students participated in the study. The respondents completed a self-report measure of the Teacher's Likability Scale and the Attitude toward Chemistry Lessons Scale (ATCLS). The finding showed that most of the participants indicated a negative attitude toward the subject ($M = 2.89$, $SD = 3.32$), compared to others ($M = 1.18$, $SD = 3.39$) that exhibited an unfavorable attitude towards the chemistry. A linear regression analysis was conducted to test the study hypothesis, and the result showed that teacher's likability statistically significantly predicted attitude towards chemistry $F(1,151), 124.716, P < .05$. Therefore, the study concluded that a teacher's likability is an essential determinant of student's attitudes towards chemistry. Thus, it is recommended that teachers should improve in their personal and professional attributes.

The study by Francis, Baba, and Enock (2023) examined students' attitudes toward chemistry and their responses to a concept mapping instructional approach. The mean attitude ratings of male and female students who were taught the periodic table concept in Chemistry were compared using idea mapping. Following the intervention, the study compared the mean attitude evaluations of students who were taught the idea using concept mapping versus those who were taught the same concept using the lecture approach. 11,094 Senior Secondary School II (SSII) Chemistry students from the eleven public senior secondary schools in Katsina made up the population. The study sample consisted of 128 SS2 Chemistry students from 2 schools. To direct the investigation, two research questions and related hypotheses were posed and produced, respectively. To serve as the experimental and control groups in the study, two classes were randomly selected. The controls for the initial and final tests were not equal. The Concept Mapping Attitude Scale towards Chemistry (CMASTC) was the tool used by the researcher to collect data. Average and variance were used to respond to the questions, and t-test statistics were used to evaluate the assumptions. The study's findings included, among other things, the fact that there was no statistically significant difference between the mean attitude scores of boys and girls who

learned about the periodic table through idea mapping and those who learned it through lectures.

Nja, Cornelius-Ukpepi, Edoho and Neji (2013), investigate how students' performance in Chemistry can be enhanced by using kitchen resources in Calabar. The kitchen resources used included a piece of white paper, a swab, lemon juice and candle. These were used to show that paper cellulose was oxidized by flame due to the catalysis of lemon juice acid. Other materials used were empty bottles of water, a balloon, a teaspoon, a glass, vinegar and sodium bicarbonate to inflate balloons without blowing. Volcano being made with a large glass, water, liquid dye, oil, effervescent tablet and a lantern was to demonstrate immiscibility, and carbon dioxide was formed because of effervescent tablet dissolution. The sample comprised 50 students drawn from two secondary schools in Ikom Education Zone of Cross River State. Two instruments were used to collect data: Chemistry Interest Questionnaire (CIQ) and Chemistry Achievement Test (Cat). Cronbach was used to establish reliability for CIQ and was found to be 0.78. Richardson formula 21 was used to establish reliability for Cat, 0.83. The research used a mixed design (quasi experimental and survey design). Data obtained were analyzed using independent t-test and Pearson product moment correlation

coefficient. The results gave a significant t test of 4.96 and positive $r = 0.90$ at 0.05 alpha level. The null hypothesis was not accepted which stated that there is no significant relationship between students' interest when taught with and without kitchen resources. The second null hypothesis with regard to Chemistry interest and academic achievement was also not accepted. Teachers are encouraged to use kitchen resources in the teaching of Chemistry to foster interest which will lead to high academic performance.

Arniezca and Ikhsan (2020) examined students' attitudes towards chemistry: On the gender and grades perspective. This descriptive research with a quantitative approach aims to describe the differences in students' attitudes toward chemistry based on gender and grade level. The participants were 186 senior high school students in Kalimantan Barat, Indonesia, selected by convenience sampling technique. The data collection tool used was the Likert-scale Attitudes toward Chemistry Questionnaire by Salta that has been validated and proven reliable using Pearson Correlation and Cronbach Alpha. The questionnaire consisted of 23 items, including aspects of the importance of chemistry, difficulty of chemistry, the interest of chemistry, and usefulness of chemistry in the future career. Mann Whitney analysis was used to describe the effect of gender and grades on attitudes

toward chemistry. The result showed that students had a neutral attitude toward chemistry. There are significant differences in attitudes towards chemistry between male and female students in all aspects. The differences in students' attitudes towards chemistry based on grades only exist in the aspect of the importance of chemistry. The teacher should motivate and enhance chemistry learning to increase students' positive attitudes toward chemistry. Further research is required to ensure the cause of the difference between male and female students' attitudes.

Summary of Reviewed Literature

The association between student attitudes about learning chemistry is a key focus of this study. It is possible to draw the conclusion from the literature review that attitude toward scientific fields and learning motivation are strongly correlated. According to the study's findings, the majority of students report that success in chemistry makes them feel happy. In other words, individuals enjoy themselves when their efforts to excel in chemistry are successful. Nearly all of the students who responded indicated that they enjoyed learning chemistry when they found it useful for resolving issues in their daily lives. This further demonstrates that there are no appreciable differences between the attitudes of students studying chemistry,

their motivation for both samples, and their attitude and motivation for the chemistry subject. Additionally, there is a chance component to the association between attitude learning of chemistry. An effort was made in this study to examine various variables relating to attitudes about learning chemistry. The results showed that regardless of the student's gender, he or she has a negative attitude toward learning chemistry. The causes could primarily be attributed to the material's difficulty, the student's lack of awareness of the subject's significance in daily life, a lack of exposure and field trips, unattractive and inadequately equipped laboratories, as well as the teacher's lack of motivation.

CHAPTER THREE

METHODOLOGY

This chapter discusses the method and procedure used in carrying out the study under the following subheadings

Design of the Study,

Population of the Study,

Sample and Sampling Procedures,

Research Instrument,

Validity and Reliability of the Instrument,

Method of Data Collection and

Method of Data Analysis.

Design of the Study

The descriptive survey research design was used for this study. This method was employed because the study was concerned with the explanation of an existing phenomenon-factor responsible for the low enrolment of students in history.

Population of Study

The population from which the sample of the study was drawn are the chemistry students of public and private schools, using the random sampling procedures to select the Ten Secondary Schools from Egor Local Government Area of Edo State. This gives approximately 4, 000 chemistry students.

Sample Size and Sampling Technique

In this study, ten (10) secondary schools (comprising of five (5) public and private schools) were randomly selected for effective analysis. The schools are, the five schools chosen are mixed schools; the respondents consisted of 100 students' selected using simple random sampling technique from targeted Secondary schools. To each respondent a questionnaire was administered as a test instrument. All the students responded to the questionnaire not on duress from the researcher.

Research Instrument

The research instrument adopted for this study was the questionnaire titled "Secondary School Students' Attitude towards the Learning of Chemistry questionnaire. The instrument was subdivided into two sections (section A and B). Section A contained demographic information of the respondents, while sections

B contained questions drawn to cover the research questions raised to guide the study and it were Strongly Agreed = SA; Agreed = A; Disagreed = D; Strongly disagree = SD questions.

Validity of the Instrument

The instrument was validated by the researcher's supervisor and two (02) experts in measurement and evaluation for scrutiny and suggestions. This was done to ensure the face and content validity of the instrument. Their corrections, opinions, suggestions and recommendations were used to produce the final draft of the instrument.

Reliability of the Instrument

The internal consistency of the instrument was established with the use of test-retest reliability test. This was done by administering the questionnaire to 30 students from Egor Secondary School, Egor were selected for reliability test. The reliability coefficient of the instrument was determined using test-retest method which yields 0.77 implying that the instrument is trustworthy and reliable.

Methods of Data Collection

The instrument was administered to the respondents through personal contact by the researcher. A total of 100 copies of the questionnaire were distributed to all

sampled secondary schools in Egor Local Government Area. The administered questionnaire was collected immediately to avoid omission.

Method of Data Analysis

Data that was obtained for the study was analysed using mean and standard deviation to answer the research questions.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

In any empirical research work the presentation and analysis of data is fundamental. This study is aimed at examining ‘assessment of secondary school students’ attitude towards the learning of chemistry in Egor Local Government Area’. This chapter is concerned with the presentation and analysis of data gathered through the use of questionnaire distributed to the respondents. During the survey, one hundred questionnaires was administered and Ninety was return completed

The results of the analysis are tabulated below.

Presentation of Results

Research Question1: What is the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area?

Table 4: Present Mean and Standard Deviation on attitude of secondary school students towards the learning of chemistry in Egor Local Government Area (N = 90).

N/S	ITEMS	Responses				No.	MEAN	STD	Decision
		SA	A	D	SD	N	X	Standard Deviation	Remark
1	Learning chemistry requires extra skills apart from being intelligent	28 112	47 141	11 22	4 8	90 283	3.14	0.886	High
2	Secondary school chemistry syllabus is too wide and the subject is difficult to learn than other science subjects	52 208	26 78	2 4	10 10	90 300	3.33	0.912	High
3	There is a revision after each topics and tests are given by the teacher periodically	36 144	23 69	23 46	8 8	90 265	2.94	0.857	High
4	Students run away from chemistry in S.S.C.E	18 72	43 129	23 46	6 6	90 253	2.81	0.838	High
5	Does the attitude of students affect the teaching of chemistry	39 156	30 90	18 36	3 3	90 255	2.83	0.841	High
5	Mean						3.01	0.8668	High

N= 90 Criterion mean = 2.50 aggregate mean = 3.01 (Accept)

Table 4.5 provided responses to assess the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area, shows a calculated mean value of 3.01 with a test value of 2.50. From this analysis, the mean value is higher than the test value. Therefore we do not accept the negative statement on which states the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area. Therefore, it can be concluded that the

attitude of secondary school students towards the learning of chemistry in Egor Local Government Area based on the value of the standard deviation.

There was a strong agreement as revealed by items 1,2,3,4 and 5 that indicating that the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area. Other items in the table agreed otherwise, which may be due to students' personal effort in the subject of chemistry. This implies that attitude of students could be strong factor influencing learning of chemistry in Egor Secondary Schools. This was confirmed by the mean value of 3.01 which is greater than 2.500 critical value at 0.05 level with standard deviation of 0.8668 respectively.

Research Questions 2: Does the attitude of students towards learning of chemistry differ between male and female chemistry students.

Table 5: Present Mean and Standard Deviation on the Attitude of Students towards Learning of Chemistry Differs between Male and Female Chemistry Students

N/ S	ITEMS	Responses				No.	MEAN	STD	Decision
		SA 4	A 3	D 2	SD 1				
6	Does boys have positive attitude to chemistry than their girls in Secondary Schools	28 112	49 147	13 26	0 0	90 285	3.16	0.889	High
7	Does girls have positive attitude to chemistry than boys in Secondary Schools	10 40	42 126	21 42	17 17	90 225	2.50	0.791	Below
8	Does boys performance better than girls in chemistry in Secondary Schools in Egor	27 108	21 63	24 48	18 18	90 237	2.63	0.811	High
9	Does girls performance excellently in chemistry than boys in Secondary Schools in Egor	26 104	30 90	20 40	14 14	90 248	2.75	0.829	High
10	Is there significant difference in the attitude of female and male students in chemistry	26 104	45 135	17 34	2 2	90 275	3.06	0.875	High
	Mean						2.82	0.839	High

N= 90 Criterion mean = 2.50 aggregate mean = 2.82 (Accept)

Table 4.6 provided responses to assess the attitude of students towards learning of chemistry differs between male and female chemistry students, which showed that the calculated mean value of 2.82 with a test value of 2.50 with standard deviation of 0.839 respectively. From this analysis, the mean value is higher than the test value. Therefore we do not accept the negative statement with respect to objective two which states that the attitude of students towards learning of chemistry does not differs between male and female chemistry students, but the alternative which states

state that the attitude of students towards learning of chemistry differs between male and female chemistry students.

There was a strong agreement as revealed by items 6,7,8, 9 and 10 that affirming that the attitude of students towards learning of chemistry differs between male and female chemistry students in Egor Local Government Area. The result implicates that the attitude of boys and girls differs both and their concentration performance and overall outcome. Hence, the attitude of students towards learning of chemistry differs between male and female chemistry students in Egor Secondary Schools. This findings was strengthened by the mean value of 2.82 which is greater that the critical value of 2,500 with standard deviation of 0.839 respectively.

Research Questions 3: Does the attitude of students towards learning of chemistry differ based on school ownership (public and private)?

Table 6: Present Mean and Standard Deviation on the attitude of students towards learning of chemistry differs based on school ownership (public and private).

N/ S	ITEMS	Responses				No · N	MEAN X	STD Standard Deviation	Decision
		SA 4	A 3	D 2	SD 1				
11	Has chemistry education improved due to school ownership	36 144	29 87	16 32	9 9	90 27 2	3.02	0.869	High
12	Has school ownership helped to develop scientific attitude including curiosity	29 116	24 72	15 30	22 22	90 24 0	2.67	0.817	High
13	Has it developed the ability to observe and explain the chemical environment	16 64	28 84	30 60	16 16	90 22 4	2.48	0.787	Below
14	Has it helped the ability to apply the skill and knowledge gained through the study of chemistry to solve day-to-day problems	13 52	42 12 6	24 48	11 11	90 23 7	2.63	0.811	High
15	Has it helped your ability to manipulate apparatus for demonstration and use	30 120	23 69	23 46	14 14	90 24 9	2.77	0.832	High
	Mean						2.70	0.822	High

N= 90 Criterion mean = 2.50 aggregate mean = 2.70 (Accept)

Table 4.5 presented responses on the attitude of students towards learning of chemistry differ based on school ownership (public and private), which showed the calculated mean value of 2.70 with a test value of 2.50. From this analysis, the mean value is higher than the test value. Therefore we do not accept negative objective statement three which states the attitude of students towards learning of chemistry

does not differ based on school ownership (public and private) and accept the alternative which states that the attitude of students towards learning of chemistry differ based on school ownership (public and private).

The result as shown in items 11, 12, 14 and 15 demonstrated that the attitude of students towards learning of chemistry differ based on school ownership (public and private). This could also result in students' choice of particular schools due its quality of teacher, materials and enhancing environment. This implies that the attitude of students towards learning of chemistry differs based on school ownership (public and private). The result was complimented by the mean value of 2.70 which is greater than the critical value which indicate that attitude of students towards learning of chemistry differs based on school ownership (public and private) as shows in the value of standard deviation 0.822 respectively.

Research Questions 4: Does the Attitude of Students Towards Learning of Chemistry Differ Based on Parental Educational Level?

Table 7: Responses on the Attitude of Students towards Learning of Chemistry Differ Based on Parental Educational Level.

N/S	ITEMS	Responses				No.	MEAN	STD	Decisi on
		SA 4	A 3	D 2	SD 1	N	X	Standard Deviatio n	High
16	Do parents influence the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area	37 148	28 84	15 30	8 8	90 270	3.00	0.849	High
17	Does parental advice influence students' attitude to chemistry in secondary school chemistry	23 92	30 90	17 34	20 20	90 236	2.62	0.809	High
18	Some educated parents encourages' their children with positive attitude towards chemistry	16 64	28 84	30 60	16 16	90 224	2.48	0.787	Below
19	Educated parents aid their children in learning chemistry because they have experience in sciences	25 100	30 90	23 46	12 12	90 248	2.76	0.831	High
20	Does parents promotes positive attitude of students towards teaching and learning of chemistry	33 132	26 78	16 32	15 15	90 257	2.86	0.846	High
	Mean						2.74	0.825	High

N= 90 Criterion mean = 2.50 aggregate mean = 2.70 (Accept)

Table 4.5 presented responses on the Attitude of Students towards Learning of Chemistry Differ Based on Parental Educational Level, which showed the calculated mean value of 2.74 with a test value of 2.50. From this analysis, the mean

value is higher than the test value. Therefore we do not accept negative objective statement four which states the attitude of students towards learning of chemistry does not differ based on parental educational level and accept the alternative which states that the Attitude of Students Towards Learning of Chemistry Differ Based on Parental Educational Level.

The results above designated that the attitude of students towards learning of chemistry differ based on parental educational level in Egor Local Government Area, however it seems that many parents with enlighten in the field of chemistry could enhance the positive attitude of their children towards learning and performance in chemistry as reflected in items 16-20. The responses revealed that the attitude of students towards learning of chemistry differ based on parental educational level in Egor Local Government Area. The mean value of 1.74 which is greater than the critical value of 2.500 having a standard deviation of 0.825 respectively.

Discussion of Findings

The first question analysis presents the attitudes of junior high school students towards learning chemistry in the Egor local government area. There is a high consensus, as shown in points 1, 2, 3, 4 and 5, indicating the attitudes of

middle school students towards studying chemistry in the local government area of 'Egor'. Other elements of the table are subject to other agreement, possibly due to the individual efforts of the students in learning chemistry. This implies that students' attitudes can be an important factor influencing chemistry learning in Egor high schools. This finding supports the study by Kousa, Kavonius and Aksela (2018) found attitude to be a strong influencing factor in teaching and learning in secondary schools.

The analysis of the second research question shows that the students' attitudes toward learning chemistry are different between male and female chemistry students. There is strong agreement, as revealed in research questionnaires 6, 7, 8, 9 and 10, that students' attitudes towards learning chemistry are different between male and female chemistry students in the local government in Egor Local Government Area. The results imply that both male and female attitudes, as well as their ability to focus and overall results, differ. Therefore, the students' attitudes towards learning chemistry between male and female chemistry students at Egor Secondary School are different. This finding corroborates with the study by Ajayi and Ogbaba (2017) the attitude of students to chemistry differs

with gender in senior secondary based on the individual performance at different examination.

The results show that the answers to the third research question show that students' attitudes towards learning chemistry are different depending on school ownership (public and private). The results presented at points 11, 12, 14 and 15 shows that students' attitudes towards learning chemistry are different depending on the form of school ownership (public and private). It can also lead students to choose a particular school because of the quality of teachers, facilities, and nurturing environment. This implies that students' attitudes towards learning chemistry are different depending on school ownership (public and private). This finding also corroborates with the study by Omwirhiren and Anderson (2016) found that school ownership and class size can influence students' attitude on academic performance in chemistry.

The results of the fourth research question give the results on the response of students' attitudes towards learning chemistry which varies depending on the educational level of the parents in the Egor local government area. The above results show that the students' attitudes towards learning chemistry are different according to the educational level of their parents in the Egor local government

area. However, it seems that many parents with knowledge of the field of chemistry can improve their children's positive attitudes towards learning and achievement in chemistry, as described in sections 16 through 20. The responses show that students' attitudes toward learning chemistry varied depending on the parent's education level in the local government area in 'Egor Local Government Area. This finding is in line with the study by Sibomana et al, (2021) found that parental factors can affect secondary school students' academic achievements in chemistry.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter deals with the summary, conclusions as well as recommendations made in light of this research.

Summary of Findings

The summary on research questions one which state that; what is the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area?

The results of the findings from the analysis of research question one revealed that learning chemistry requires extra skills apart from being intelligent and that secondary school chemistry syllabus is too wide and the subject is difficult to learn than other science subjects. The result shows that there is a revision after each topics and tests are given by the teacher periodically and that the students run away from chemistry in S.S.C.E certificate examination. The result also shows that the attitude of students affect the teaching of chemistry.

The summary on research questions two which state that; does the attitude of students towards learning of chemistry differ between male and female chemistry students?

The result of research question two demonstrated that have positive attitude to chemistry than their girls in Secondary Schools while some opined that girls have positive attitude to chemistry than boys in Secondary Schools. The result indicated that boys performance better than girls in chemistry, while many agreed that girls performance excellently in chemistry than boys in Secondary Schools in Egor. The result showed that there significant difference in the attitude of female and male students in chemistry.

The summary on research questions three which state that; does the attitude of students towards learning of chemistry differ based on school ownership (public and private)?

The analysis of research question three designated that students attitude to chemistry education improved due to school ownership and that school ownership can help students to to develop positive attitude towards chemistry. The shows that school ownership can develop students' ability to observe and explain the chemical environment and it help students' ability to apply the skill and knowledge gained through the study of chemistry to solve day-to-day problems. The result further shows that it school ownership can help the ability to manipulate apparatus for demonstration and use.

The summary on research questions four which state that; does the attitude of students towards learning of chemistry differ based on parental educational level?

The test of research question four revealed that parents can influence the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area and that parental advice can influence students' attitude to chemistry in secondary school chemistry. The result showed that some educated parents can encourage their children with positive attitude towards learning of chemistry and that educated parents can aid their children in learning chemistry because they have experience in sciences. The result indicated that parents promote positive attitude of students towards teaching and learning of chemistry.

Conclusion

Based on the findings from the analysis of the various questions raised in this study, the following conclusions were made.

- The attitude of secondary school students towards the learning of chemistry affects their learning of chemistry in Secondary Schools in Egor Local Government Area.

- The attitude of students towards learning of chemistry differs between male and female chemistry students in Secondary Schools in Egor Local Government Area.
- The attitude of students towards learning of chemistry differs based on school ownership (public and private) in Secondary Schools in Egor Local Government Area.
- The attitude of students towards learning of chemistry differs based on parental educational level in Secondary Schools in Egor Local Government Area

Recommendations

Based on the above conclusions, the following recommendations were made.

- Students should be encouraged towards the study of chemistry in secondary school as to enhance positive attitude towards the learning of chemistry in Egor Local Government Area.
- The schools should invest in buffers that can promote the interest of both genders as to influence positive attitude towards learning of chemistry in Secondary Schools in Egor Local Government Area.

- Schools should put enabling environment that can bring about students positive attitude towards learning of chemistry in both public and private Secondary Schools in Egor Local Government Area.
- Parents should be involved the learning process of children as it can motivate positive attitude towards learning of any subject, including chemistry in Secondary Schools in Egor Local Government Area.

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APPENDIX
DEPARTMENT OF CURRICULUM AND
INSTRUCTIONAL TECHNOLOGY
(CHEMISTRY EDUCATION)
FACULTY OF EDUCATION,
UNIVERSITY OF BENIN
BENIN CITY

**QUESTIONNAIRE ON: “Assessment of Secondary School Students Attitude
Towards the Learning of Chemistry in Egor Local Government Area”.**

(To be Completed by Students)

SECTION: A

Sex: Male [], Female [].

School Ownership: Public [], Private [].

Parental Educational Level: SSCE/GC [], TCII [], OND/NCE [], Degree &
Above [], None [].

Age: 9 - 12 [], 13 - 25 [], 16 – 18 [], 19 and above [].

SECTION: B**SECTION I**

Items	What is the attitude of secondary school students towards the learning of chemistry in Egor Local Government Area?	Responses			
		SA	A	D	SD
S/N	Questions				
1.	Learning chemistry requires extra skills apart from being intelligent				
2.	Secondary school chemistry syllabus is too wide				
3.	The subject is difficult to learn than other science subjects				
4.	There is a revision after each topics				
5.	Tests are given by the teacher periodically				
6.	Students love chemistry because of laboratory practice				
7.	Students do not like chemistry because of laboratory practice				
8.	Students have pleasant attitude for chemistry when the teacher is friendly				
9.	Chemistry is attractive to boys than girls				
10.	Chemistry is attractive to girls than boys				
11.	Parents encouragement enhance students positive attitude towards chemistry				
12.	Parental job is a key to students' involvement in chemistry				
13.	Parental support can aid students understanding				
14.	Parental support can help promote students enrolment in chemistry				
15.	Parents organizes extra lesson for chemistry enhance their attitude towards chemistry				

Appendix

Test Retest using product – moment correlation coefficient for reliability

	Test Scores	Retest			
Subject	X	Y	X ²	Y ²	Xy
1	1	2	1	4	2
2	0	3	0	9	0
3	2	2	4	4	4
4	4	5	16	25	20
5	3	5	9	25	15
6	2	3	4	9	6
7	1	2	1	4	2
8	5	6	25	36	30
9	1	4	1	16	4
10	1	4	1	16	4
Total	20	36	62	148	87

The product – moment correlation coefficient is calculated as:

$$R = \frac{n\sum xy - \sum x \sum y}{\sqrt{(n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

$$R = \frac{(10)87 - 20(36)}{\sqrt{10(62) - (20)^2} \sqrt{10(148) - (36)^2}} = 0.767$$