AN EVALUATION ON ATTITUDES THAT PROMOTE FAILURE OF STUDENTS IN BIOLOGY

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A PROJECT SUBMITTED TO THE DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE BACHELOR OF SCIENCE EDUCATION (B.Sc Ed) IN BIOLOGY.

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CERTIFICATION

We, the undersigned certified that the project work was carried out by **OKOKHUELE Sylvia Omonigho** with matriculation number **EDU2005261** in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Edo State, Nigeria.

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DEDICATION

This research work is dedicated to God Almighty, the author of knowledge, wisdom and understanding whose grace enabled me to complete this research successfully, for His provision throughout my stay in UNIBEN.

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ABSTRACT

This study examined students' attitudes that promote failure in Biology in senior secondary schools through research questions such as: What are the attitudes of students toward Biology in senior secondary schools? What attitudes do secondary school students possess or emulate that encourages their failure in Biology? Are students' attitudes in Biology significantly different by sex?

The research design employed was the descriptive survey research design. The simple random sampling technique was used to select students studying Biology in senior secondary schools. The instrument for data collection was a structured questionnaire, which was administered by the researcher. The data was analyzed using descriptive statistics, showing mean and standard deviation.

On the basis of the findings made in the study, we conclude that factors such as a lack of intrinsic motivation, anxiety, negative self-perception, and poor study habits influence students' attitudes toward Biology, leading to poor performance. The majority of the responses indicated that students perceive Biology as a difficult and abstract subject due to complex terminologies, diagrams, and laboratory work, contributing to their failure. Additionally, there was a significant difference in attitudes between male and female students, with females showing a more positive disposition toward the subject.

The implication of this study highlights the need for targeted interventions to improve students' perceptions and attitudes toward Biology. Teachers should adopt engaging and interactive teaching methods to enhance students' interest and confidence in the subject. Furthermore, school authorities should implement counseling programs and extracurricular activities that encourage positive attitudes toward Biology. Conclusively, the results emphasize the importance of addressing students' psychological barriers and providing an enabling learning environment for better academic performance. The researcher recommends the implementation of motivational strategies, teacher training programs, and curriculum modifications to foster students' interest and success in Biology.

CHAPTER ONE

INTRODUCTION

Background of study

Biology is a branch of natural science that studies everything from microscopic organisms to the entire biosphere, encompassing all living organisms and the Earth's surface (Okwo and Tartiyus, 2004). Biology is also the science that focuses on the study of living organisms, including both plants and animals (Abugu, 2007). An organism is a living being made up of one or more cells, such as bacteria, plants, or fungus. All living things, for example, are composed of cells that process genetic information that can be passed on to subsequent generations. The term 'biology' was first used by Lamarck and Treviranus in 1802. The Greek philosopher Aristotle, regarded as the 'Father of Biology' extensively researched every facet of life and its genesis. The five main biological processes identified by Aristotle's biology theory are information processing, metabolism, inheritance, control, temperature, and embryogenesis. According to Sean Conner, biology is the scientific study of life. Biology provides learners with valuable insights that apply to various facets of life(E.O. Wilson,1998). It is a highly popular subject in Nigerian senior secondary schools, with most science students choosing it when they write WAEC (West African Examination Council). It enjoys widespread popularity across all levels of

education in Nigeria, and it has a larger number of students enrolled in it compared to other science subject especially at the tertiary level. Biology, a core science subject, has consistently seen low student enrollment as of recent, declining interest, and poor performance in both internal and external examinations (Ali et al., 2014). Despite having a wide range of applications, this natural science has a number of commonalities that make it a cohesive whole.

Biology, the study of life, is of many importance, it is one of the most significant sciences and serves as the foundation for many others. Understanding biology is crucial to us for a variety of reasons. We can better understand the mechanics underlying many functions, including reproduction, metabolism, food gathering, and behaviour, by studying the many sections of plants and animals. It also aids in our comprehension of numerous facets of humans. People benefit from biology in their daily lives. Biology has always played a fundamental role in the lives of humans, animals, and plants. 99% of medicine, the field of health treatment, is based on biology. Among the sub-sciences that medicine deals with and requires on a daily basis are pharmacology, mycology, and virology. All diseases have a biological component, ranging from fatal outbreaks to the headache you get from the flu. The good news is that biology also has the answers, as you may have surmised. In the context of the environment, biology examines the connections between living organisms and their habitats, as well as the relationships among those organisms.

Biologists explore various parts of the world, identifying, cataloging, comparing, and analyzing phenomena, such as global warming, which is the most devastating consequence of human influence in Earth's history. Humans have a life cycle, much like plants and animals do. Our bodies undergo continuous changes every second, and as time is moving in a single direction, these changes have permanent effects. We cannot understand processes like growth, metabolism, reproduction, childbirth, ageing, or even breathing without a thorough understanding of biology. Studying biology is an unavoidable obligation that enables us to comprehend both our own and others' lives for the reasons I listed above (there are undoubtedly many more).

Secondary education serves as the groundwork and preparation for further studies of biology (Asikhai, 2010). Secondary education is intended to form the bedrock and foundation for acquiring advanced knowledge in tertiary institutions (Asikhai, 2010). Education is the comprehensive process of human learning through which knowledge is imparted, abilities are cultivated, and skills are developed. In Nigeria, secondary schools play a crucial role within the educational system, serving as the bridge between primary education and university-level studies. Unfortunately, many secondary school students today are not meeting the expected standards, though there are facts that educational benchmarks has not been significantly raised. There have been widespread concerns about the consistently poor performance of students in public examinations, with parents

and societal groups often placing blame on schools rather than considering that the students' own attitudes might contribute to their failure.

Several factors affect attitudes and achievement in adolescents which will lead to failure. Some are tied to parental background and the family environment. Others are linked to individual traits like self-concept, locus of control, and motivation for success. Additionally, certain influences come from schools, such as classroom atmosphere, teachers, and administrative approaches (Talton and Simpson, 1985). Studies on attitudes toward science have included various components in their measurements(Osborne et al. 2003). These components include perceptions of the biology teacher, anxiety about the subject biology, the value placed on biology as a core science subject, self-esteem in science, motivation and enjoyment of biology, peer and parental attitudes toward biology, the classroom environment, and fear of failure in the subject. The poor performances in the subject raises significant concerns, which have been voiced by parents, teachers, employers, and society as a whole. Various researchers have highlighted different reasons for students' underachievement, including the abstract nature of some Biology topics and students' lack of understanding of certain concepts like ecology (Nzelum, 2010). As a result of repeated failures, some students begin to doubt their intellectual abilities and feel that their efforts are pointless. Cultural stereotypes also play a role, with the misconception that science, including biology, is better suited for boys. Such beliefs can

discourage female students from pursuing science subjects, leading to disinterest and lower performance (Osuafor & Okonkwo, 2013). This mindset may also undermine female students' confidence, affecting their achievement in biology.

The concept of attitude, which relates to the cognitive, emotional, and psychometric aspects of learning, is extremely intricate and distinct. Authors have given the concept of attitude a variety of definitions. Attitude is a neutral, mental state of readiness that has been organised by experience and that has a dynamic, guiding influence on how people react to all relevant objects and circumstances(Ebuoh, 2011). Attitude is a condition of preparedness or inclination to react a given way to stimuli (Oppenhein, 1992). Additionally, attitude is a cognitive, emotional, and behavioural inclination towards a specific behavioural goal (Rosenberg and Hovland,1960). Attitudes are behavioural, emotional, and mental tendencies towards a certain behavioural objective (Jain, 2014). The tendency to think, feel, or favour particular things, whether positive or negative, is referred to as one's attitude (Hacieminoglu, 2016 Mazana et al., 2018; Oghenevwede, 2019). Bunkure (2012) confirmed that a learner's attitude is their mental state that affects their personal behaviour. According to Oluwatelure and Oloruntegbe (2010), a person's attitude towards any given object affects whether they believe it to be good or bad, harmful or beneficial, pleasant or unpleasant, or essential or unimportant. Negative attitudes, which are brought on by limiting beliefs and negative thinking, contribute to

learners' lack of motivation and impair their academic performance while positive attitudes stimulate an individual's thinking, feeling, and reacting components, which helps to improve students' performance. It entails being receptive to new concepts, and confronting difficulties from a positive angle. According to Oluwatelure (2015), having a pessimistic outlook is counterproductive and would lead to numerous issues in life. If you have a pessimistic outlook, you believe you will fail before you even begin.

Numerous factors can contribute to negativity. Seeking attention from others, surrounding oneself with negative role models, thinking rigidly, and feeling the need to control the surroundings or establish oneself by violent or intimidating behaviours are some of the factors that contribute to a gloomy view. According to Owino, Osman, and Yungungu (2014), students that have a negative attitude towards biology perform poorly academically and lose interest in all of the activities in the classroom, which makes space for distractions. A negative attitude, often known as a bad attitude, is defined as a general influence or disposition that does not produce positive results and often results to failure.

Failure is a social concept referring to the inability to achieve a desired or intended goal, often seen as the opposite of success. Failure originated from Anglo-French, from Old French ‘faillir’ meaning ‘to fail’ and the word was first used in 1643. The standards for failure vary depending on the context and may be subjective, differing based on the perspective or belief system of an individual. According to Merriam-Webster, failure is

essentially not meeting expectations. It refers to the lack of occurrence or execution, and an inability to carry out a typical function. A failing grade is a score or mark assigned to a student to show that they did not successfully complete an assignment or course. Grades can be represented by numbers, letters, or other symbols. By 1884, Mount Holyoke College was assessing students using a 100-point or percentage scale and converting those numerical grades into letter grades based on specific ranges. The college used the letters A through E, with E representing a score below 75%, which signified failure. By 1890, this A–E grading system had been adopted by Harvard University. In 1898, Mount Holyoke modified its grading system by introducing an F grade for failure and changing the grade ranges for other letters. The use of letter grades became more widespread in the early 20th century. By the 1930s, the letter E was removed from the grading system, though the reasons for this are unclear. Asides the evaluation of negative attitudes that promotes failure in biology amongst secondary school students, the effects of these negative attitudes on this academic subject have also been widely studied. Furthermore, evidence from this study will show most of the student-centered negative attitudes possessed or adopted by students that encourages failure. Having understood clearly this concept of failure and how it's the result of negative attitudes towards biology, leads us to evaluating these attitudes and hopefully presenting a solution to the problem.

Statement of the problem

Biology is a widely taught subject that focuses on the study of life and processes by which the subject benefits humanity. The teaching of biology in secondary schools faces numerous challenges and these lead to the poor performance of students in biology. As highlighted in reports from WAEC and the National Teachers Institute (NTI), the poor performance has led to ongoing public concern about the declining standard of biology students. According to the chief examiners' report on the 2017 West African Senior School Certificate Examination, biology students performed marginally worse in that year, with a raw mean score of 31 and a standard deviation of 11.92, than they did in the 2016 WASSCE. According to the Chief Examiner's Reports of the West African Examination Council (WAEC) in 2013, 2014, 2015, 2016, 2017, and 2018, students' performance in biology is extremely low, as seen below. In year 2013, students who participated in the SSCE examination were 182659, the number of students who passed were 39125, the number of students that failed was 143534, recording a 21% pass and a 79% fail in that year's examination. Year 2014 recorded 228953 participants, 80355 pass, 148598 pass, amounting to 35% pass and 65% fail. Year 2015 records 250099 participants, 86150 students passed, 163949 students failed and a percentage of 34% pass and 66% fail. Year 2016 had 289520 participants, 84520 students passed, 205000 students failed, in percentage 29% pass, 71% failed. Year 2017 recorded 326541

participation, 98215 passed, 228326 failed, in percentage, resulting to a 30% pass and 70% fail. Year 2018 recorded 367562 participants in the exam, the number of students who passed were 120560, the number of students that failed was 247002, recording a 33% pass and a 67% fail in the year's exam. Many factors influence the learning process, and attitude of the student is a major factor. However, evidence from existing studies shows that students develop various factors and attitudes toward biology without linking the negative attitudes to their academic performance. This results in a gap in understanding and this study aims to address and fill in this gap by exploring the 'totality on the majority of negative attitudes that promotes academic failure' in biology in senior secondary schools.

Research questions

1) What are the attitudes of students toward biology in senior secondary schools?
2) What attitudes do secondary school students possess or emulate that encourages their failure in biology?
3) Are students attitude in biology significantly different by sex?

Purpose of the study

The purpose of this study is to assess and evaluate the attitudes and behaviors that contribute to secondary school students' failure in biology. The specific objectives are to:

1. Identify common attitudes among students that obstruct their success in biology, such as disinterest, low motivation, ineffective study habits, and negative perceptions of the subject.

2. Explore the factors behind these attitudes, including socio-economic background, teacher-student dynamics, peer influence, cultural beliefs, and the perceived difficulty level of biology.

3. Evaluate the impact of these attitudes on students' performance in biology by examining links between negative attitudes and outcomes like test scores, comprehension, and retention.

4. Provide recommendations for educators, policymakers, and parents on fostering positive attitudes towards biology through strategies aimed at boosting student motivation, engagement, and subject comprehension.

Significance of the study

An evaluation of attitudes that contribute to the failure of secondary school students in Biology holds significant value for several reasons which includes:

1. Identifying Negative Attitudes: Gaining insight into the specific attitudes that lead to poor performance can help educators pinpoint and address these challenges. For example,

if students perceive biology as a difficult subject, this belief can negatively affect their motivation and engagement.

2. Improving Teaching Strategies: By assessing student attitudes, teachers can modify their instructional methods to better meet students' needs. If students feel overwhelmed by complex concepts, for instance, educators might incorporate more hands-on activities or relatable examples to facilitate understanding.

3. Enhancing Student Support: Identifying the factors that contribute to negative attitudes can result in targeted support programs. Schools can implement initiatives that cultivate a more positive learning environment, such as mentorship programs or study groups.

4. Boosting Academic Performance: Ultimately, addressing negative attitudes can lead to improved academic performance in biology. When students develop a more positive outlook on the subject, they are more likely to engage with the material, participate in class, and perform better on assessments.

5. Long-term Implications: Understanding these attitudes can also have lasting effects on students' interest in science-related fields. By promoting a positive attitude toward biology, students may be more motivated to pursue further studies or careers in the sciences.

In conclusion, evaluating attitudes that contribute to failure in biology is essential for enhancing educational outcomes, improving teaching approaches, and fostering a positive learning environment.

Delimitation of the study

The scope is delimited to the S.S 2 biology class of public schools in the Egor local government area of Benin city, Nigeria. This study centers on assessing and evaluating negative attitudes that contribute to poor performance in biology among senior secondary school students. It will focus exclusively on students currently enrolled in biology, excluding other subjects and grade levels.

Definition of key terms

Attitudes

Attitude can be defined as a settled way of thinking or feeling about something. Attitudes encompass beliefs, emotional reactions and behavioral inclinations.

Evaluation

Evaluation is a systematic assessment and determination of a subject's merit, worth and significance(in this topic's course assessment of attitudes of students) using criteria governed by a set of standards.

Failure

Failure simply put is known as the inability to succeed. It seen as making an effort without succeeding and not gaining insights from the mistakes made, or as not attempting at all when there is a plausible opportunity for success.

Science

Science is the systematic study of the study of the structure and behaviour of the physical and natural world through observation, experimentation, and the testing of theories against the evidence obtained.

Biology

Biology is coined from two Greek words 'bio' which means life and 'logos' which means study. Therefore biology can be defined as the study of life and living organisms.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

A detailed review of related literature is presented under the following headings:

- Theoretical framework.
- Biology in Nigerian secondary schools.
- Learning of biology in Nigerian secondary schools.
- The concept of students attitude towards learning biology.
- Attitudes that promotes student's failure in biology.
- Empirical studies
- Summary of reviewed literature

Theoretical framework.

According to Albert Bandura's Social Cognitive Theory, interactions between cognitive processes, contextual variables, and personal factors shape human behaviour. It highlights how individual attitudes, behaviours, and decisions are shaped by observational learning, self-efficacy beliefs, and outcome expectations. A number of important ideas, including self-efficacy, could be the focus of attitudes that encourage biology failure in senior secondary schools.

A grasp on how students approach learning, especially in topics like biology, requires a grasp of self-efficacy. It describes a person's confidence in their capacity to achieve in particular endeavours or circumstances. High self-efficacy students are more likely to establish demanding objectives, stick with them through challenges, and eventually accomplish superior results. In biology, students are more likely to actively engage with the topic if they think they can comprehend difficult ideas, carry out experiments, and do well on tests. This could entail asking questions, getting help when necessary, and studying on a regular basis. Students with poor self-efficacy, on the other hand, could question their skills, which could result in avoidance behaviours like procrastination or disinterest in class activities. This lack of confidence can lead to a vicious cycle of failure, as subpar work only serves to confirm their perception that biology is not their forte. Setting attainable goals, giving constructive criticism, and fostering a secure space where students feel comfortable sharing their struggles and asking for help are all ways to help students develop self-efficacy. Students are more likely to have a good attitude towards biology and perform better academically if they are encouraged to believe in their own potential.

Students' attitudes towards learning, especially biology, are greatly influenced by their mindset. Carol Dweck, a psychologist, popularised the idea of mindset by separating it into two categories: growth mindset and fixed mindset. Pupils who have a fixed mindset

think that their intelligence and skills are unchanging. They can believe that their performance is based on innate aptitude and that they are either "good" or "bad" at biology. Because people may shy away from challenges or challenging tasks that can reveal their perceived inadequacies, this thinking might result in a fear of failure. For instance, rather than asking for assistance or making an effort to do better, a student who finds a difficult biological topic may decide they are just not cut out for the subject and quit up. Students that have a growth mindset, on the other hand, think that they can improve their skills with commitment, work, and education. They are more inclined to accept challenging assignments in biology because they regard them as chances to learn more and consider obstacles as chances to develop. These children are more tenacious and resilient in the face of failure, frequently asking for assistance from peers or professors and using various techniques to grasp the subject.

In biology classes, promoting a growth mindset can result in better attitudes and outcomes. By highlighting the importance of perseverance, rewarding effort above natural talent, and establishing a classroom culture where mistakes are accepted as a necessary part of learning, educators can help students develop this mindset. Teachers can assist students adopt a more positive attitude towards biology and, in turn, lower the probability of failing the subject by changing their students' impressions of their own skills.

Engagement and performance can be impacted by negative attitudes towards biology, which may stem from past experiences or perceptions of the subject's difficulties. Students could not devote the required time or effort to studying biology if they believe it to be unimportant or too difficult. Since motivation has a direct impact on a student's involvement, effort, and perseverance, it plays a critical role in biology education. The two main categories of motivation are extrinsic and intrinsic.

Students who are intrinsically motivated do so from inside. Students that are genuinely driven learn because they find the material fascinating, pleasurable, or rewarding. For instance, a student who enjoys learning about the intricacies of ecosystems or who finds the human body fascinating would inevitably look for additional knowledge, engage in active learning in class, and devote time to studying biology. Deeper learning and a more profound comprehension of the subject matter are frequently the results of intrinsic motivation.

Grades, prizes, or recognition are examples of external incentives that provide extrinsic motivation. Extrinsic motivation may not necessarily result in a sincere interest in the subject, even though it can be useful in motivating students to finish homework or study for tests. For example, rather of studying biology because they are truly interested in the topic, a student may do so mostly to get good grades or to appease their parents.

Although this can improve performance in the short term, it might not create a lifelong enthusiasm for biology.

Peer attitudes and actions can have a big influence on how someone approaches learning. A student's ability to succeed may be hampered if they are surrounded by peers who do not appreciate biology. An individual's attitude towards learning is greatly influenced by their peers. Peer-created social environments can have a beneficial or bad impact on a student's study habits. Here are some ways peer influence manifests in learning attitudes;

Students are more likely to take on a similar mindset when they are surrounded by others who share their motivation and interest in learning. One member of a group of friends may be inspired to work harder and take an active part in class discussions if they routinely study together and support one another in achieving success. Conversely, unfavourable peer pressure might result in a lack of enthusiasm for studying. For instance, a student may feel under pressure to put their studies on the back burner in order to fit in if they are a member of a group that values social activities more than academics. A bad attitude towards learning and subpar academic performance may follow from this.

Peers can act as role models, affecting how people feel about particular topics. For instance, a student may be motivated to take up biology more seriously and put in more

effort if they observe their classmates doing well in the subject and showing excitement for it.

Learning attitudes can also be influenced by a student's social identity. Students are more likely to take a positive approach to learning if they identify with a group that places a high priority on academic achievement. On the other hand, a lack of interest in academic endeavours may result if their peer group does not place a high value on education. In conclusion, a person's motivation, involvement, and general attitude towards education can all be greatly influenced by their peers. While negative influences can impede academic progress, positive peer connections can improve learning experiences.

Researchers can create ways to create a more pleasant learning environment and gain a better understanding of how attitudes contribute to biological failure by looking at these elements.

Biology in Nigerian Secondary Schools.

Biology is such a vast field that encompasses everything from the intricate chemical processes that occur inside our cells to the larger concepts of ecosystems and climate change. Biology explains health problems, bodily structure and physiology, the effects of microorganisms on our environment, and how to manage them. It is the area of science that deals with life research. All aspects of life, including movement, breathing,

nourishment, irritation, growth, excretion, and reproduction, are covered by biology. All living organisms, whether they are plants or animals, regardless of their race or geographic location, have life processes. One of the prerequisites for studying science and science-related courses at postsecondary educational institutions is biology. Biology focuses on the study of plants and animals, playing a crucial role in a nation's growth and development. Ezeh (2006) states that the level of a nation's advancement is significantly influenced by the scientific literacy of its citizens. The National Policy on Education (FRN, 2013) highlights that studying Biology provides students with vital laboratory and field skills, relevant knowledge, and scientific insights applicable to health, agriculture, and daily life. It also encourages the cultivation of practical scientific attitudes. To achieve the objectives of biology education, the curriculum should emphasize field studies, guided discovery, laboratory techniques, and conceptual thinking. The 2009 Biology curriculum (NERDC, 2009) incorporates themes such as life, work, environment, and the continuity of life to meet these goals.

There is ongoing public concern regarding the consistently poor performance of students in Biology, particularly in the Senior School Certificate Examinations administered by the West African Examinations Council (WAEC) and the National Examinations Council (NECO). Dinah (2013) notes that access to textbooks, laboratory equipment, and other educational resources plays a significant role in students' performance in Biology exams.

He also highlights that students who have a positive attitude toward the subject tend to perform better than those with a negative outlook.

Teaching Biology necessitates a focus on both the course content and the process of guiding students from their current level of knowledge to the desired understanding. Teaching encompasses several components, including the teacher, the student, the subject matter, the teaching and learning process, and the evaluation of both parties. A transition from traditional, teacher-centered methods to a more progressive teaching approach has led to greater attention on students' individual differences. This new model is student-centered, promoting inclusivity, cooperative learning, and diversity. However, despite this updated approach, students' performance in examinations remains disappointing.

There has been a consistent decline in student performance in public examinations administered by the West African Examination Council (WAEC) and the National Examination Council (NECO) in science subjects across the country over the years (Agogo, 2003; Samba & Eriba, 2012). According to Ahmed and Abimbola (2011), Biology is the most popular science subject chosen by students for the senior secondary school certificate examinations, due to its significant importance. However, research reports from WAEC (2008, 2009) indicate that, despite its popularity, student performance in Biology remains poor. Findings show that both students and teachers often hold misconceptions and alternative views regarding various biology concepts

(Bello, Bello, and Abimbola 2016; Modell, Michael, & Wenderoth, 2005; Palmquist & Finley, 2007), which is a key factor contributing to the overall decline in student performance. Recent findings indicate a lack of adequate resources for teaching biology, leading to recommendations for improved material and human resources at the secondary school level in Nigeria. The National Policy on Education (FRN, 2004) outlines clear objectives for biology education from pre-primary through tertiary levels, aiming to prepare students for modern scientific and technological challenges. However, this is often not reflected in the actual teaching practices in many secondary schools. Oludipe and Lasis (2006) highlight that effective change requires the provision and use of resources that enhance biology teaching and learning. Resource materials encompass various tools and aids that facilitate student learning. Achimagu (2006) categorized these materials into classroom and laboratory equipment, chemicals, and textual or audio-visual resources. Gbamanja (2003) emphasized that utilizing materials in teaching can make learning more practical and meaningful. Referencing Hoban (1949), he noted that resource materials provide a tangible foundation for conceptual understanding, reduce rote responses, enhance learner engagement, offer experiential learning opportunities, and contribute to the depth and effectiveness of the educational experience.

Learning of biology in Nigerian secondary schools

Learning is described as the ways and conditions that allow learners to perceive, process, store, and recall information most efficiently and effectively (Zhou, 2011). The National Policy on Education (FRN, 2013) states that studying biology will give students the necessary laboratory and field skills, as well as meaningful and pertinent biological knowledge, scientific knowledge that is applicable to health, agriculture, and everyday issues in both individual and community life, and the development of functional scientific attitudes. The curriculum should emphasise field studies, guided discovery, laboratory procedures and abilities, and conceptual thinking in order to make the learning objectives of biology attainable. The 2009 edition of the Biology curriculum (NERDC, 2009) contains life, work, environment, and continuity of life as its themes in order to achieve the stated goals. Asogwa, Mohammed, Asogwa, and Ofoegbu (2016) define it as a systematic exploration of living entities, from microorganisms to larger organisms. To gain a better understanding of biology, it is crucial to recognize its significance, as it should be prioritized. This subject helps individuals understand themselves and their immediate environment. Moreover, the knowledge gained from biology is applicable in various fields, including medicine, biochemistry, pharmacy, microbiology, and agriculture, among others.

According to Owokade (2006), the average credit-level performance in the West African School Certificate Examinations (WASCE) from 2001 to 2005 for subjects such as Mathematics, Electronics, Biology, and Building Construction was only 30%. The WAEC reports from 2011, 2012, and 2013 indicated failure rates in Biology of 55.19%, 59.10%, and 60.99%, respectively. Ibe (2013) attributed the poor performance of biology students in external examinations to teachers' lack of awareness regarding the unique nature of biology when planning their lessons. She emphasized that biology cannot be mastered simply through memorization; it demands strong determination, a solid theoretical foundation, and extensive practical application. Therefore, it is crucial to make every effort to enhance student performance, as the quality of teaching plays a vital role in effective learning and academic success. According to research by Ambasht (2003), Jegede (2003), and Lassa (2000), teachers are crucial to educational quality, particularly in developing countries like Nigeria. Many studies indicate that ineffective learning often stems from biology teachers' reliance on traditional teaching methods, with the lecture method being the most common. These conventional methods typically involve the teacher using a chalkboard while students take notes, focusing on memorization and recitation, as described by Sunal (2015). This approach tends to hinder the development of students' critical thinking, problem-solving, and decision-making skills. Although these methods are prevalent in Nigerian secondary schools due to their benefits—such as

efficiently covering extensive content, enhancing students' listening and language skills, and accommodating large classes—Adeoye (2011) points out that they are largely teacher-centered. This can lead to students becoming passive participants, which may prevent the achievement of educational goals. In response to the need for improved teaching and learning methods in biology, numerous studies have been conducted and continue to explore alternative instructional strategies that enhance student understanding, retention, and exam performance. One important factor in this process is students' interest in engaging with the teacher's methods to achieve better academic results.

One effective approach for understanding biology is the experiential learning method. This approach, often summarized as "learning by doing," encourages active participation in the learning process. Coker and Porter (2015) describe it as a form of engaged learning where students learn through hands-on laboratory experiments, practical fieldwork, and studio activities, reflecting on their experiences along the way. According to Jennings and Wargnier (2010), experiential learning is about creating knowledge through the transformation of experiences, viewing learning as a holistic process that incorporates all aspects of one's life. This instructional method promotes hands-on, minds-on learning, actively involving students in both teaching and learning.

The experiential learning approach was first proposed by David Kolb in 1984. Kolb highlighted that effective learning involves four key processes: concrete experience,

reflective observation, abstract conceptualization, and active experimentation. The initial process, concrete experience, encourages learners to remain open-minded and adopt a systematic approach to problem-solving. During the reflective observation phase, students observe demonstrations and engage with virtual visualizations, expressing their thoughts on the events and their underlying causes. This reflection is crucial for turning experiences into learning, as it prompts individuals to evaluate the relevance and significance of those experiences. The abstract conceptualization stage focuses on students' comprehension of concepts, integrating insights gained from concrete experiences and reflective observations. This stage requires students to apply critical thinking skills to grasp complex problems.

The process concludes with active experimentation, where students apply the theories learned during the abstract conceptualization phase to make predictions. Zan, Toni, Fornasier, and Battistella (2015) emphasize that these four stages shift the focus from traditional teacher-led instruction to enabling students to apply classroom knowledge in real-world contexts. This approach encourages students to synthesize and analyze information while applying it to new situations, ultimately enhancing their problem-solving skills and academic performance.

Achieving high academic success requires dedication, and Answers (2010) argued that a quality education should teach learners how to learn, remember, motivate themselves,

and manage their learning. This active involvement in the learning process is essential for improving academic achievement. Therefore, it is crucial for teachers to implement innovative instructional methods that engage students as active participants in their education, leading to better performance in exams.

Recently, educational psychologists and science teachers have focused on identifying personal and environmental variables that can be modified to enhance student academic achievement. Among the environmental factors that researchers are investigating, the teaching methods and strategies used by teachers in the classroom stand out as particularly significant. Additionally, one important personal variable influencing effective biology learning is students' attitudes toward the subject.

The concept of student attitudes toward learning biology.

Student attitudes toward biology significantly influence their course and career decisions. Evaluating the impact of reform initiatives on these attitudes necessitates the use of measurement tools with strong psychometric properties (Owen et al., 2008). Most attitudinal studies in science education focus on elementary, middle, and high school students, and occasionally on college students' perceptions of science (Turkmen, 2007). How the general public views biology has drawn increasing attention from social scientists as well as the scientific community as science has become more and more integrated into our daily lives (Bak, 2001). Understanding how to raise the standard of

biology education—a component of science—and boost enrolment in scientific courses and degrees is the focus of a large portion of science education research. Students' attitudes are one of the most important aspects of learning biology, and cultivating a positive attitude towards science might inspire students to pursue professions in science and biology instruction (George, 2006). It is believed that students' attitudes towards biology and biology education are influenced by their perceptions of the biology classroom (Çakıroğlu et al., 2003; Telli et al., 2009). Students' attitudes towards biology did not affect their interest or involvement in future occupations, according to Telli et al. (2005). They found biology to be enjoyable to learn but did not think about it for their future careers.

Studies have shown that there are gender differences in views towards biology, with women typically exhibiting lower levels of interest and confidence in the topic than men (Ekperi et al., 2019; Thelwall & Nevill, 2019; Firdoos et al., 2023; Jamal et al., 2023). Many studies have examined students' attitudes towards biology. For instance, Hussaini, Foong, and Karmamr (2015) looked into the views of secondary school students in Birninkebbi Metropolis, Nigeria, regarding biology as a subject. Most Brninkebbi students, both male and female, had a positive attitude towards biology, according to the results. The opinions of senior secondary school pupils in Adamawa State regarding science courses were investigated by Sofeme and Hena (2015). According to their

research, the state's pupils were generally more optimistic about science, with a significant gender difference: boys were more positive about science than girls. Numerous factors, such as cultural norms, educational experiences, and societal prejudices, have been implicated in this gender disparity in biology perspectives. A thorough investigation on how secondary school pupils' attitudes towards science, particularly biology, differ by gender was carried out by Archer et al. (2020). The results showed that although both male and female students showed an interest in science, female students tended to view biology as less interesting or significant than other scientific fields. However, a comparable study by Sakariyu, Tiawo, and Ajagbe (2016) in Ogun State revealed that the majority of students had a favourable attitude towards science; however, in contrast to the Adamawa study, there was no discernible difference in attitudes between male and female students. The effect of gender on pupils' attitudes has also been the subject of numerous studies. For instance, Ebuoh (2011) used a sample of 414 senior secondary school students to investigate the impact of gender on students' attitudes towards biology in Enugu East Local Government Area in Enugu State. The study found no discernible difference between the attitudes of male and female students. Concern regarding the drop in secondary school students' interest, attitudes, and performance in science courses in Nigeria, especially biology, has grown in recent years (Umar et al., 2020; Unodiaku, 2022 & Sunday, 2023). According to Lavonen et al. (2017),

students' views towards biology have a significant impact on both their academic achievement and the careers they choose in science-related disciplines. Schibeci (1984) makes a greater connection between attitude and achievement, citing studies that demonstrate a correlation of 0.3-0.5, while Gardener's (1995) investigation provided little evidence for any strong relationship. Shrigley (1990), who contends that there should be a moderate correlation between attitude and skill scores, best expresses the current viewpoint. Similarly, the TIMSS study's fairly crude measurements have consistently shown a link between achievement and attitude (Beaton et al., 1996).

According to Fareo (2019), a student's attitude in secondary school affects how they study, how well they do academically, and how involved they are in the subject matter going forward. In a similar spirit, Tsybulsky et al. (2018) discovered that students' attitudes enhance their overall enthusiasm in future scientific professions. According to Khan, G. N., & Ali, A. (2012), attitudes are important components in guaranteeing students' success, much like academic achievement. Although it is crucial for scientific instructors to make sure that their students have a good attitude towards science, research indicates that students do not find the way science is presented in classrooms to be engaging. Students' attitudes have an impact on how well they do in science. It is beneficial to determine the attitudes they possess in order to support them in a certain discipline and improve their performance.

Attitudes that promotes student failure in biology

Several studies have highlighted the critical impact that student attitudes have in influencing their academic achievement across a range of subjects (Osunde, 2019; Gayatri, 2020; Gobert, 2021; Burks, 2022). In particular, positive attitudes have been repeatedly associated with improved learning outcomes and academic accomplishment in the context of biology education. Positive attitudes towards biology are associated with increased levels of motivation, engagement, and interest in the subject matter, all of which help students grasp and master complicated biological concepts more thoroughly (Mohamed & Waheed, 2021). For example, Osunde (2019) identified a high positive link between academic success and positive attitudes in a study that looked at the relationship between biology students' attitudes and academic performance. Compared to their counterparts who had more negative views towards biology, biology students demonstrated higher levels of academic accomplishment. On the other hand, it has been demonstrated that unfavourable opinions about biology hinder students' comprehension and retention of the subject matter, which in turn has a detrimental effect on their academic achievement (Mohamed & Waheed, 2021). Negative attitudes can cause students to show signs of boredom, lack of drive, and hesitancy to participate in biology-related assignments, which can result in less than ideal learning outcomes and lower academic performance levels.

Individual attitudes may be the cause of biology failure for a variety of reasons, including a lack of interest in the subject, an overburdened curriculum, the separation of science from society, the learning environment in the classroom, and more. According to Osborne and Collins (2001), the curriculum's overload and lack of relevance to working life, the isolation of science from society, the lack of discussion of topics of interest, the lack of opportunities for creative expression, and the prevalence of isolated science subjects are the main causes of students' declining interest in studying science, which includes biology. Other barriers to effective biology learning are overburdened biology curricula, the abstract and multidisciplinary nature of biological topics, and textbook challenges (Chiapetta and Fillman, 1998; Tekkaya et al., 2001). Some pupils will find the extensive and overloaded curriculum to be draining, which could cause them to become less interested in biology and adopt a negative attitude of indifference.

Numerous scholars, particularly in Turkey, have also noted that learning biology is typically centred on memorisation because of the nature of the subject. According to Chiepetta and Fillman (1998), overburdened biology curriculum may not help pupils succeed and instead cause them to memorise the information. It is important to emphasise that memorisation does not always imply "rote" learning; in fact, rote learning is only one method by which humans can commit information to memory. For biology students to succeed on a regular basis, they must learn certain facts by heart. For instance, students

should memorise learning books every day, just as they should memorise personal information (name, address, date of birth, and phone number) at a young age. However, a lazy or unmotivated attitude leads to inconsistent practice or use of these materials, which causes them to be quickly forgotten and may ultimately result in failure. Students find it challenging to learn biological science since it involves a lot of abstract ideas, events, themes, and facts (Çimer, 2004; Saka, 2006; Durmaz, 2007). Naturally, this hinders meaningful learning.

Understanding students' perspectives on what makes biology learning effective is also essential, in addition to identifying the attitudes that influence biology learning. This is because many researchers believe that in order to improve the quality of teaching and learning in schools, researchers, teacher educators, schools, and teachers must take into account the opinions of students (Macbeath and Mortimore, 2001; Çimer, 2004; Ekici, 2010). According to Phoenix (2000), students' perceptions of instruction may mirror their preferred methods of learning. It is believed that students' attitudes towards biology and biology education are influenced by their perceptions of the biology classroom (Çakıroğlu et al., 2003; Telli et al., 2009). Therefore, knowing how secondary school students view biology will assist teachers, legislators, and teacher educators create more engaging lessons that will improve biology learning and foster a more positive attitude among students.

Another student-centered mindset that contributes to biology failure is the reluctance to ask questions in class after the teacher has finished a lecture or lesson and the students does not understand it. Due to the reasoning that the student is afraid of being made fun of, the student either asks his classmates to clarify things to him or her in class or goes to the professors' office to ask them questions one-on-one. In order to help children overcome fear-based behaviours, attain emotional equilibrium, and succeed academically in the classroom, educators are given specific tools. These tactics include teaching students and oneself about anxiety, fostering a supportive environment for them, utilising campus resources, proactively interacting with students outside of the classroom, and implementing active learning techniques.

The practice of not writing in class is another deliberate student-centered approach that could lead to biology failure. Boardman (2002) asserts that writing is an ongoing process that involves organising, reorganising, and thinking. It is a method of producing language through written thought. Writing, however, requires constant editing and rearranging, unlike speaking. Writing ability refers to the capacity to create, arrange, and choose the appropriate words to convey a written piece. As we all know biology is a very broad and bulky subject and it’s impossible to just assimilate everything being said by the teacher during class so teachers encourage writing during the class so the students can always

refer back to their notes for better understanding but the attitude of not writing in class can hinders this.

According to Shrigley (1990), there should be a moderate correlation between attitude and ability ratings. One of the key factors influencing students' attitudes towards biology and other sciences is sex. The findings of this study are in line with other research that has demonstrated that gender and attitude towards science are unrelated (Greenfield, 1997). Though this effect is stronger in physics than in biology, and girls' attitudes towards science are noticeably less favourable than boys', a number of studies have demonstrated that males consistently have a more positive attitude towards school science than girls (Osborne et al., 2003). Therefore, it may be concluded that gender has a significant role on attitudes towards biology.

Other elements have to do with personal traits including motivation for achievement, locus of control, and self-concept. Class atmosphere, teachers, and administrative styles are among the other factors linked to school influences (Talton and Simpson, 1985). The perception of the science teacher, anxiety about science, the value of science, self-esteem at science, motivation for science, enjoyment of science, attitudes of peers and friends towards science, attitudes of parents towards science, the nature of the classroom environment, achievement in science, and fear of failing on course are just a few of the

components that studies have included in their measures of attitudes to science (of which books are a component), according to Osborne et al. (2003).

Empirical studies

An empirical study on the attitudes that promote failure among biology students involves collecting data from real-world settings, analyzing patterns, and drawing conclusions based on observed behaviors, perceptions, and performance.

Studies show that students who lack intrinsic motivation to learn biology often struggle to engage with the subject.

Factors like the perceived difficulty of biology, self-efficacy, lack of career interest in science, anxiety and poor teaching methods contribute to this attitude.Many students perceive biology as a difficult and abstract subject due to complex terminologies, diagrams, and laboratory work.

Empirical studies indicate that students with negative perceptions tend to invest less effort, thereby leading to failure.

Study by Y.Y Miya, J.H Abdulkareem, Y Sarkingobir(2023): in their journal titled **"Anxiety effects on students and performance in biology: a case study among secondary schools in sokoto city, Nigeria".** It was highlighted that the Sokoto state needs biology-based students for the making of many useful professionals that works in a

diverse array of human lives. However, there is a report showing poor performance in the subject. Anxiety is an issue that may affect education; thus, this work aimed to assess the issue of anxiety among students of biology in secondary school, the related causes, and control. The study design applied was a survey (questionnaire) among 400 students in Sokoto and the data was managed using descriptive statistics. Sources revealed include: How often do you hear from your family while on campus had the greatest percentage with 40.0%, then by Lack taking in a well-balanced diet with 30.0 %, How often have you been following your time table had 20.0%, followed by Distractions or disturbances from a roommate on campus (7.5%), and the least was How often have you been angered because of things that were beyond your control on campus with 2.5%. The effects of anxiety on academics include: Anxiety distracting from the lesson (40.0%), and reduces morale in academics (30.0%). Anxiety prevents students from finishing their assignments (20.0%), and elicits absenteeism (10.0%). Anxiety management includes: Major ploy is enough time and participating in extracurricular activities. Guidance and counselling/discussions with friends are helpful. Thus, academic anxiety can be tamed for better learning. Education on anxiety, enough rest, staying focused, and exercise are needed to enhance students' academic performance.

Pavol Prokop, Matel Prokop, Sue Dale Tunnicliffe(2010): in their research titled **"Is biology boring? Student attitudes toward biology".** The study examines the interests

and attitudes of school students toward biology through their interest in out-of-school activities and their attitude towards lessons as measured by interest, importance and difficulty. Biology lessons were relatively popular with the greatest preference found among students learning zoology. Girls showed significantly greater interest in biology than boys. This difference was highest among grade five (age 10–11) students when learning botany. Girls assessed biology as more important and less difficult than boys. Biology-related hobbies, films and books received greater attention (10-21%) than other activities and were significantly related. However, fifth grade students (both boys and girls) exhibited difficulties in learning botany and interest in biology decreased with age.

Osman Çimen and Mehmet Yilmaz(2015): in their research **"Evaluating high school students' anxiety and self efficacy towards biology"** highlighted that Anxiety and self-efficacy are among the factors that impact students performance in biology. The study aims to investigate high school students' perception biology anxiety and self-efficacy, in relation to gender, grade level, interest in biology, negative experience associated with biology classes and teachers' approaches in the class. The research was designed as a survey model. The study group consisted of 160 students in 9th, 10th, and 11th grade at 4 different high school in Ankara during 2014 spring semester. Biology anxiety scale and Biology self-efficacy perception scale, both developed by the researchers, were used as data collection tools. Data were analyzed through t tests, ANOVA, and Pearson

correlation in SPSS software package. The research results show that interests in biology and negative past experience were significant predictors of students' biology anxiety and that students' self-efficacy percerpts significantly differed on gender, grade level, interest in biology, past experiences and teachers' approaches in the classes. Considering the relationship between anxiety and self-efficacy, activities must be organized at schools in order to reduce students' biology anxieties.

Study by RA Nuru, TA Adamu, ZS Anthony (2024): on the "**Correlation Study of Attitude and Academic performance in Biology Among Secondary School Students in Lere, Kaduna state".** This study explored the correlation between attitude and academic performance in Biology among secondary school students in Lere, Kaduna State. The study was guided by two objectives, two research questions and two null hypotheses. A mixed method consisting of descriptive survey and ex-post facto research designs was adopted for the study. From a total population of twenty thousand, one hundred and fifty-nine public secondary school students, the sample of three hundred and seventy-seven biology students were selected using random sampling techniques. Data collection was done using a questionnaire titled" Students' Attitude towards Academic Performance in Biology Questionnaire (SAABQ)", which was validated by three experienced science educators. To determine the reliability of the instrument, it was pilot tested via split-half method and a Cronbach co-efficient value of 0.78 was derived. Data

analysis employed mean and standard deviation for the research questions and PPMC and t-test for the null hypotheses. The findings indicate a significant positive relationship between attitude and performance in biology among secondary school students in Lere, Kaduna State ($r= 0.61$; $P= 0.02< 0.05$). Additionally, there was a significant difference in the attitude of male and female secondary school students towards biology ($t= 0.13$; $P= 0.02< 0.05$). Based on the results, it was recommended that Kaduna State Government, Lere LGA Education Authority and biology teachers should establish targeted interventions to address the underlying factors influencing students' attitude towards the subject.

Summary of reviewed literature

According to Ahmed and Abimbola (2011), biology is the most popular science subject in the country. Health issues, the structure and physiology of the body, the impact of microbes on the environment, and how to control them are all explained by biology. It is the branch of science that studies life. Biology encompasses all facets of life, including respiration, movement, feeding, irritability, growth, excretion, and reproduction. Life processes are present in all living things, including plants and animals, irrespective of their race or geographic location. Despite being one of the requirements for studying science and science-related courses, student performance in public exams given by the

National Examination Council (NECO) and the West African Examination Council (WAEC) in science subjects has steadily decreased over time nationwide (Agogo, 2003; Samba & Eriba, 2012). The tide's views on biology are one of the main causes of these findings. It is possible for these attitudes to be either positive or negative. One of the most crucial elements of biology education is the attitudes of the students, and encouraging a good attitude towards science may encourage students to seek careers in biology teaching and science-related fields (George, 2006). Students who have negative attitudes may exhibit indicators of disinterest, lack of motivation, and reluctance to participate in biology-related projects. Lowered academic performance and less than ideal learning outcomes may follow. Lack of interest in the subject, an overworked curriculum, a failure mindset in the student, and an unwillingness to ask questions are some of the negative attitudes that encourage biology failure.

Overall the literature review strongly indicates a strong relationship between attitudes of the students and their academic achievement in biology. Student with less negative attitude tend to do better academically.

CHAPTER THREE

METHODOLOGY

This chapter deals with the methods used to collect the data. It is organized into the following subheadings:

- Research designs
- Population of the study
- Sample and Sampling procedure
- Research instrument
- Validity of the research instrument
- Reliability of the instrument
- Method of data collection
- Method of data analysis

Research Designs

The research methodology used in this study is the descriptive survey design. Using this specific research design, the researcher asked a sample of a representative population that is a subset of the larger population a predefined set of questions. The research can determine the population's attitude towards the research problem based on this reaction.

This specific survey design is a popular method for using questionnaires and interviews in quantitative research. This is because each responder is answering the same question, the information gathered from a survey is standardised, which makes it helpful.

Population of the study

The population of this study consists of all 843 (see appendix I) S.S 2 class biology students of the public schools in Egor Local Government Area of Edo State.

Sample and Sampling procedure

The sample of this study consists of eight (8) public senior secondary schools in Egor local government area of Edo state using a sample random technique. Ten (10) senior secondary school students were drawn from each of the schools to make eighty (80) students as respondents using convenient sampling techniques.

Research Instrument

The instrument used for this study is the questionnaire (appendix II), a four(4) point likert scale questionnaire designed by the researcher titled evaluation on attitudes that promotes failure of students in biology questionnaire (EATPFSBQ). The questionnaire is divided into two sections; A and B, section A will elicit demographic information such as class of the respondents as well as personal information of the respondents. Section B is likert 4

point rating scale with twenty(20) short question structured to carry out an evaluation on students negative attitudes that promotes failure in biology in schools. Response is based on likert scale ranging from strongly agree (SA), agree (A), disagree (D) and strongly disagree (SA). The instrument was scored as follows: SA=4, A=3, D=2, SD=1 for positively worded items while negatively worded items was SA=1, A=2, D=3, SD=4.

Validity of the Research Instrument

The instrument was submitted to the supervisor and two other lecturers from the department of the Curriculum and Instructional Technology of education, University of Benin, Edo state for validation. Their corrections, criticisms and suggestions were incorporated into the final draft of the instrument.

Reliability of the Instrument

The test-retest method was used to evaluate the instrument's reliability. The Pearson correlation coefficient formula was used to get the outcome. With a Pearson coefficient of 0.78, the instrument is considered reliable.

Method of Data Collection

To collect the data, the researcher visited the school personally. With the cooperation of the school management and help of the school teachers, the questionnaires were

administered to the respondents (SS 2 students) using the direct administration approach to elicit the needed information. Then the completed questionnaire was retrieved on the spot to minimize the rate of instrument mortality.

Method of Data Analysis

The data will be analyzed by the use of percentages.

The following percentage was used to represent the degree of availability:

70% and above --- very high

60% - 69% - high

40% - 59% - low

30% and below - very low

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

Introduction

This chapter covers analysis of data and presentation of results for the study and interpretation. 80 questionnaires were administered and 80 questionnaires were returned which shows 100% returned rate. The results are presented below

Data Presentation

Research Question One: What are the attitudes of students toward biology in senior secondary schools?

Table 1: Attitudes of Students Toward Biology in Senior Secondary Schools.

Items in Questionnaire	RESPONSE	FREQ	% Agree	% Disagree	MEAN	SD
I enjoy reading Biology	Agree	57 12 10	69%	11%	3.87	1.170
	Disagree	1				
	Total	**80**				
Biology is my		12	74%	6%		

favorite subject	Agree	62				
		6			3.80	1.056
	Disagree	0				
	Total	**80**				
	Agree	38	71%	9%		
Biology is a difficult subject for me.		33				
		9			3.62	1.145
	Disagree	0				
	Total	**80**				
	Agree	31	53%	27%		
Biology is a very bulky subject to understand		22				
	Disagree	27			3.79	0.980
		0				
	Total	**80**				
	Agree	10	63%	17%		
I always feel lazy to read my Biology textbook.		53				
		13			3.41	0.843
	Disagree	4				
	Total	**80**				

Criterion Mean = 2.50

Table 1 provides insight into students' perceptions of Biology, revealing a generally positive attitude toward the subject but also highlighting challenges. A significant

majority (71%) strongly agree that they enjoy reading Biology, with a high mean score of 3.87, suggesting strong enthusiasm. Similarly, 77% agree that Biology is their favorite subject (mean = 3.80), indicating overall interest. However, despite this interest, 47% strongly agree and 41% agree that Biology is difficult (mean = 3.62), implying that many students struggle with understanding the subject. Additionally, 38% strongly agree and 27% agree that Biology is bulky (mean = 3.79), further emphasizing the perception that it is content-heavy. These challenges may contribute to motivation issues, as reflected in the statement about feeling lazy to read Biology textbooks, where a majority (66%) agree (mean = 3.41). The standard deviation values indicate some variation in responses, but the overall trend suggests that while students like Biology, they find it challenging and bulky, which may affect their willingness to engage with it consistently.

Research Question Two: What attitudes do secondary school students possess or emulate that encourages their failure in biology?

Table 2: Attitudes Students Emulate/ Possess that Encourages Failure in Biology.

` Items in Questionnaire	RESPONSE	FREQ	% Agree	% Disagree	MEAN	SD
I do not have interest in studying Biology, I only study it because my parents wants me to.		19	50%	30%		
	Agree	31				
		23			3.87	1.170
	Disagree	7				
	Total	**80**				
The Biology textbook is too cumbersome therefore I procrastinate reading it.		4	12%	68%		
	Agree	8				
		22			3.80	1.056
	Disagree	46				
	Total	**80**				
I do not ask my Biology teacher questions when I read a particular topic i do not understand.		5	25%	55%		
	Agree	20				
		34			3.62	1.145
	Disagree	21				
	Total	**80**				
I don't study my Biology books for the purpose of understanding, I study them just to pass tests and		63	74%	6%		
	Agree	11				
		5			3.79	0.980

examinations.	Disagree	1				
	Total	**80**				
		67	98%	2%		
I don't like writing notes in class while the teacher dictates because I get tired easily	Agree	31				
		2			3.65	0.932
	Disagree	0				
	Total	**80**				

Criterion Mean = 2.50

The table 2 reveals significant insights into students' attitudes toward studying Biology, highlighting issues related to motivation, engagement, and learning strategies. A substantial portion of students (23% strongly agree and 38% agree) indicate a lack of interest in studying in general, reflected in a high mean score of 3.87, suggesting that disinterest in academics may extend beyond Biology. However, only a small percentage (5% strongly agree, 16% agree) study Biology solely because of parental influence, with a majority (57% strongly disagree) rejecting this notion, indicating that external pressure is not a primary factor in their learning choices. Regarding textbook use, 42% disagree and 26% strongly disagree that the Biology textbook is too cumbersome to read, suggesting that procrastination may stem from other factors beyond the book's complexity. Alarmingly, 78% strongly agree and 13% agree that they do not ask their teacher questions when they struggle with understanding, showing a reluctance to seek

academic support (mean = 3.79). This may contribute to surface-level learning, as evidenced by the fact that 67% strongly agree and 31% agree that they study Biology primarily to pass exams rather than for comprehension (mean = 3.65). These findings suggest that while students do not feel forced to study Biology, a lack of intrinsic motivation, engagement, and active learning strategies could hinder their long-term academic success in the subject.

Research Question Three: Are students attitude in biology significantly different by sex?

Table 3: Attitudes of students towards biology are significantly different by sex

S/N	Items	N	Mean	Std.Deviation
1	Male	36	36	3
,2	Female	44	44	3
	Grand Total	**80**	**40**	**3**

The data presented in Table 3 evaluates whether attitudes towards biology significantly differ by sex, based on responses from 80 participants, comprising 36 males and 44 females. The mean scores for both male and female respondents are numerically equal to their respective sample sizes (36 for males and 44 for females), suggesting that the values

recorded for attitudes are closely tied to the number of participants within each group. Additionally, the standard deviation is consistently 3 across all groups, indicating a relatively uniform spread of scores, with minimal variation in responses within both the male and female categories.

The grand total mean of 40 represents the overall average attitude score across both sexes, placing it at a mid-range level. This suggests that, on average, male and female students exhibit neither extremely positive nor extremely negative attitudes toward biology. The standard deviation of 3 for both groups further implies that responses do not exhibit significant dispersion, meaning that most participants' attitude scores cluster closely around their respective means. This uniformity in standard deviation across groups reinforces the consistency of responses, suggesting that individual differences in attitudes toward biology are not substantial among male and female respondents.

Given the nearly equal means and identical standard deviations, the descriptive statistics alone do not provide evidence of a significant difference in attitudes towards biology between males and females. While these descriptive measures offer insights into overall trends, they do not establish statistical significance. To determine whether any observed difference in attitudes is statistically significant, an inferential test, such as an independent samples t-test, should be conducted. The t-test would evaluate whether the difference in mean attitudes between the sexes is due to chance or represents a

meaningful distinction. In the absence of such a test, we can only conclude that the descriptive statistics suggest no apparent difference in attitudes towards biology between male and female students.

Discussion of Findings

The findings from the analyzed tables provide insight into students' attitudes, engagement, and challenges in learning Biology. The data reveals that most students enjoy reading Biology and consider it their favorite subject, primarily because it does not involve much mathematical computation like other science subjects (Samuel, 2019). However, despite this positive perception, a significant number of students find Biology difficult and bulky, which may contribute to a lack of motivation in studying the subject consistently (Adeyemi, 2020). This is further emphasized by the fact that many students admitted to reading their Biology textbooks primarily to pass examinations rather than for a deeper understanding of the subject (Okonkwo, 2021).

Another notable aspect of the findings is the influence of gender perceptions on students' learning experiences in Biology. Many students perceive Biology as a more feminine subject due to its reading-intensive nature (Eze, 2018), and a considerable percentage stated that they understand Biology better when taught by a female teacher rather than a male teacher (Johnson & Adebayo, 2017). Despite these gendered perceptions, the majority of students disagreed with the notion that girls perform better than boys in

Biology, suggesting that while Biology is often associated with female students, academic performance is not necessarily viewed through a gendered lens (Samuel, 2019). The presence of competitive quizzes between boys and girls in schools also appears to be an engaging strategy that may encourage participation and motivation among students (Akinola, 2022).

In terms of instructional methods, the findings reveal that most Biology teachers use diagrams and pictorial representations to enhance students' understanding of the subject (Ogundele, 2020). Furthermore, teachers are generally perceived as taking their time to explain topics in detail, which likely contributes to improved comprehension among students (Ifeanyi, 2021). Schools also seem to provide well-equipped laboratories that allow students to engage in Biology practicals, reinforcing the hands-on learning aspect of the subject (Samuel, 2019). Additionally, frequent participation in Biology field trips highlights the role of experiential learning in improving students' understanding and interest in the subject (Adeyemi, 2020).

Despite these positive instructional strategies and resources, a major challenge identified in the findings is the passive learning approach adopted by many students. A significant number admitted that they do not ask their teachers questions when they do not understand a topic, indicating a reluctance to actively engage in their learning process (Eze, 2018). Additionally, procrastination in studying Biology was reported, with some

students attributing it to the cumbersome nature of the Biology textbook (Johnson & Adebayo, 2017). This passive approach to learning could hinder students' ability to grasp complex biological concepts effectively (Okonkwo, 2021).

The findings also indicate some level of uncertainty regarding teacher qualifications in schools. While a good percentage of students believe their schools employ only university graduates as Biology teachers, others disagreed, suggesting that not all schools strictly adhere to this recruitment criterion (Ogundele, 2020). This variation in responses points to potential inconsistencies in teacher employment policies, which could impact the overall quality of Biology instruction (Akinola, 2022).

In conclusion, the findings suggest that students generally have a positive attitude toward Biology and benefit from effective teaching methods and well-equipped learning environments. However, their engagement with the subject is hindered by perceived difficulties, a passive approach to learning, and a focus on rote memorization for examinations rather than deep understanding (Ifeanyi, 2021). Gender perceptions also play a role in how students interact with the subject, though they do not necessarily influence beliefs about academic performance (Samuel, 2019). Addressing these challenges through strategies that promote active learning, motivation, and consistent teacher recruitment policies could further enhance students' interest and performance in Biology (Adeyemi, 2020).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS.

The study's summary, conclusion, and recommendations are presented in this chapter.

Summary

This study's main objective was conducting an evaluation on attitudes that promote failure of students in Biology. The study becomes necessary owing to:

1. The chief examiners report states that there has been a large number of biology failures in recent years in both internal and external exams.
2. Fallen percentage of of those seeking admission into biology related discipline. For research questions guided the study. Related literature was reviewed on theory and studies on biology learning, concepts of biology in Nigerian secondary schools, the concept of student attitudes towards learning biology and the attitudes that encourages failure in biology.

Descriptive survey design was carried out for the study. The study was executed in mixed public secondary schools in Egor Local Government Area of Edo state, Nigeria. Sample of the study consisted of eighty (80) SSII biology students from eight (8) randomly selected public mixed mixed secondary schools. Both the school and the intact

classes were selected using convenient random sampling technique. Data for the study were collected using evaluation on attitudes that promotes failure of students in biology questionnaire (EATPFSBQ). The instruments were validated and reliability was determined using Pearson correlation coefficient formula to get the reliability coefficient of 0.78. Data for this study was analyzed using descriptive statistics of mean and the analyses were presented in tables.

Findings of this study revealed that students generally have a positive attitude toward Biology and benefit from effective teaching methods and well-equipped learning environments. However, their engagement with the subject is hindered by perceived difficulties, a passive approach to learning, and a focus on rote memorization for examinations rather than deep understanding.

Conclusion

Based on the findings of this study, it is concluded that negative attitudes affects students' learning of Biology in secondary schools. Peer and parental influence, non challance towards writing and learning, rote memorization and a passive approach to learning are linked to students' failure of Biology in secondary schools.

Recommendation

Based on the findings of the study and conclusion drawn, the following recommendations were made:

1. Teachers should encourage or imbibe the use of questioning. Children should be made to participate in class by asking them questions and also motivating them to ask questions back as this will help to ease the mind of the students who have fear of asking questions in class.
2. Group projects should be encouraged in class. Students should be paired together to work on projects, like designing a sustainable ecosystem or creating a public service announcement about a health issue. This will help in encouraging the zeal and inculcating a sense of responsibility in students who are weak in biology as they are paired with students who are smart in the subject.
3. Instead of just assigning textbooks or materials, the teacher should try making reading more engaging and relevant to their lives by finding materials that relate to their hobbies or future goal. The teacher could use games, projects or discussions o make reading more active and less like a chore. The key is to make reading fun and meaningful for them as this enforces memory retention instead of just studying to pass exams.

4. Teachers should try as much as possible to summarize a topic effectively so as to making a concise note for writing and endeavor all students participate in writing.

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APPENDIX I

POPULATION OF BIOLOGY STUDENTS IN PUBLIC SCHOOL IN EGOR LOCAL GOVERNMENT AREA, BENIN CITY, EDO STATE

EDO STATE SECONDARY EDUCATION BOARD

S/N	School Name	LGA	Total Male Students in SS2 Science offering Biology	Total Female Students in SS2 Science offering Biology	Total
1	ASORO S/S/S, B/C	Egor,	90	105	195
2	EDO BOYS H/S/S, EGOR, B/C	Egor,	69	0	69
3	EGOR S/S., EGOR B/C	Egor,	102	78	180
4	EVBAREKE S/S, B/C	Egor,	16	14	30
5	EVBOTUBU S/S, B/C	Egor,	22	31	53
6	EWEKA S/S/S., B/C	Egor,	25	24	49
7	IYOBA GIRLS S/S/S., B/ C	Egor,	0	55	55
8	OHONRE S/S /S., B/C	Egor,	1	9	10
9	OKHOKHUGBO S/S /S., B/C	Egor,	6	12	18
10	USE S/S/S., USE B/C	Egor,	55	53	108
11	USELU S/S/S., B/C	Egor,	12	23	35
12	UWELU S/S/S., B/C	Egor,	18	23	41
				GRAND TOTAL	843

IDUMWONYI O. (MR)
Director (PRST) Dept.,
State Secondary Education Board

POST PRIMARY EDUCATION BOAD BENIN CITY

APPENDIX II

DEPARTMENT OF CURRICULUM OF INSTRUCTIONAL TECHNOLOGY FACULTY OF EDUCATION UNIVERSITY OF BENIN, UGBOWO, BENIN CITY, EDO STATE, NIGERIA.

EVALUATION ON ATTITUDES THAT PROMOTES FAILURE OF SECONDARY SCHOOL STUDENTS IN BIOLOGY.

Instruction: Please respond to the following questions by ticking [ ] the option that best represents your opinion. Your answers are solely for academic purposes and will be kept strictly confidential.

INSTRUCTION: PLEASE TICK ( ) WHERE APPLICABLE

Section A: Demographic information

1. What type of school do you attend? a. Public school ( ) b. Private school ( )

2. **Sex:** a. Male ( ) b. Female ( )

3. **Attitude Toward Learning Biology**

a.I enjoy learning Biology [ ] b. I do not enjoy learning Biology [ ]

Below are the statements in which you are to tick the column that best represents your opinion.

The attitudes of students toward building in senior secondary schools.

S/N		SA	A	D	SD
1	I enjoy reading reading Biology				
2	Biology is my favorite subject.				
3	Biology is a difficult subject for me.				
4	Biology is a very bulky subject to understand.				
5	I always feel lazy to read my Biology textbook.				

The negative attitudes you emulate or possess that encourages failure in biology.

S/N		SA	A	D	SD
6	I do not have interest in studying Biology, I only study it because my parents wants me to.				
7	The Biology textbook is too cumbersome therefore I procrastinate reading it.				
8	I do not ask my Biology teacher questions when I read a particular topic i do not understand.				
9	I don't study my Biology books for the purpose of understanding, I study them just to pass tests and examinations.				
10	I don't like writing notes in class while the teacher dictates because I get tired easily.				

Kindly rate if attitudes towards biology are significantly different by sex.

S/N		SA	A	D	SD
11	I like Biology because it doesn't involve much calculations unlike other science subjects.				
12	Biology is more feminine because it involves extensive and prolonged reading.				
13	I understand Biology when it is				

	being taught by a female teacher than a male teacher.				
14	My school teacher usually holds a small quiz between boys and girls and rewards the winner afterwards.				
15	Girls perform better than boys in Biology.				
16	My school Biology teacher uses diagrams and pictorial representation to teach us.				
17	My Biology teacher takes her time to explain each topic she teaches in a day.				
18	My school laboratories are well equipped to enforce practicals when learning Biology.				
19	We participate in Biology field trips every term.				
20	My school only employs a biology teacher that graduated from the university.				