AVAILABILITY AND USE OF INSTRUCTIONAL MATERIALS FOR TEACHING BIOLOGY IN SECONDARY SCHOOL IN EGOR LOCAL GOVERNMENT AREA OF EDO STATE.

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UNIVERSITY OF BENIN

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A PROJECT REPORT SUMMITED TO THE DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY, UNIVERSITY OF BENIN IN PARTIAL FULFILMENT OF THE REQUIREMENT OF THE AWARD OF BACHELOR OF SCIENCE EDUCATION (B.Sc.ED) IN BIOLOGY

APRIL, 2025

CERTIFICATION

We, the undersigned, Certify that this research project was carried out by **Oyarekhua Princess Sophia** in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Nigeria.

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DEDICATION

This work is dedicated to God Almighty, for making this project a success and to her late mom Mrs Patience Oghenekome Oyarekhua for inspiring her to complete her education.

ACKNOWLEDGEMENT

The researcher would like to express her sincere gratitude to the following individuals who have contributed to the success of this project: The researcher also appreciate her supervisor Dr E.P. Ikuereye for his invaluable guidance, support, and expertise throughout this project. Uniben for providing her with the necessary resources and facilities to complete this project.

The researcher also appreciate her brother Eugene for his unwavering encouragement and financial support during this challenging journey. The researcher would like to express her heartfelt gratitude to her late mother, Mrs Patience Oghenekome Oyarekhua whose selfless love, encouragement, and support have been a constant source of inspiration throughout her academic journey, Her presence will always be remembered and cherished. Thank you all once again for your support and guidance.

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ABSTRACT

This Study evaluated the availability and use of instructional material for teaching biology in secondary school in Egor Local Government Area of Edo State, three (2) research questions served as it's guidelines, and it used a descriptive survey study design. It sought to find out What is the availability of instructional materials for teaching Biology in secondary schools? To what extent do Biology teachers in secondary schools use instructional materials in their teaching practices? What are the factors that influence the use of instructional materials by Biology teachers in secondary schools?

The study employed the descriptive survey random design of Biology students in University of Benin, Edo State and a total of (100) respondents which were collected from Biology students of Egor Local Government Area of Edo. The researcher developed a questionnaire. There are fifteen (15) questions on the Questionnaire. To analyze the data collected, descriptive statistics such as simple percentage and frequency were used.

The study findings indicated that while instructional materials are available in many schools in Egor Local Government Area, the degree to which they are used effectively depends on several factors, including teacher training, motivation, and resource availability. The study suggests that in order to improve the use of instructional materials in teaching Biology, it is essential to address issues related to funding, teacher preparedness, and time management. Schools should be provided with the necessary resources, and teachers should be supported through professional development programs to enhance their ability to integrate instructional materials into their teaching practices, it is suggested that the government should make an effort to hire qualified teachers who can effectively teach students with the use of Instructional materials. The government and private Schools owners should provide adequate instructional materials in schools.

CHAPTER ONE

INTRODUCTION

Background to the Study

Biology is the scientific examination of life, unified by various themes that create a comprehensive field. For instance, all living organisms consist of cells that encode genetic information, which can be inherited Hillis, David, Heller et al, (2020). Biology holds immense importance for humanity; it elucidates bodily functions, propelling advancements in medicine and healthcare, and informs us about environmental dynamics and human impacts on ecosystems. Additionally, Biology is vital in fields such as agriculture, genetics, and species conservation, enhancing human life quality and supporting planetary sustainability. It is foundational for numerous fields like Medicine, Research Science, Biochemistry, Environmental Science, Pharmacy, Biotechnology, and Forensics Henry, (2015). The availability and use of instructional materials are critical factors that influence the effectiveness of teaching and learning Biology.

Instructional materials consist of a variety of materials and tools utilized to facilitate instruction and training, based on the goals of education. These materials effectively communicate information and enhance the teaching and learning processes. Their significance in improving the teaching and learning of Biology is crucial, as they positively influence students' understanding. The absence of instructional materials such

as charts, maps, and graphs impedes the expected outcomes of biology education Amichebe, (2017). Many researchers have noted the challenges posed by insufficient instructional resources in Biology classrooms, contributing to poor academic performance among students. Instructional materials, also known as teaching aids, serve to achieve educational objectives and foster problem-solving skills. For instance, students' negative attitudes toward Biology often stem from inadequate teaching quality, exacerbated by a lack of qualified instructors Henry, (2015). The role of educational resources in enhancing students' academic success in Biology is undeniably significant, as Biology education is vital for Nigeria's educational and economic advancement. Given that biology is a core subject in Senior Secondary Schools, effective teaching relies on suitable instructional materials. Engaging multiple senses during learning is essential, as instructional materials provide necessary sensory experiences for meaningful and lasting behavioral changes Ibe, (2013).

The use of instructional materials is crucial for raising educational standards, enabling Biology students to achieve better academic results. However, teachers often underestimate the value of these resources, and many remain inaccessible. Predominantly, educators rely on verbal instruction to convey knowledge. The researcher emphasizes the need to shift teachers' negative perceptions of Biology instruction by incorporating educational resources to make learning more dynamic and effective Keldage, (2017). The study highlights the importance of strategically selecting and utilizing instructional

materials for biology education, as how they are employed directly affects educational outcomes. Factors such as learner characteristics, educational objectives, and instructional constraints must be considered when using educational resources. Thorough research should precede the use of any resource, ensuring that the environment is conducive and that it captures students' attention and curiosity while clearly explaining its relevance. This resource can be integrated at any stage of the lesson Tella, (2017). Evidence supports the effectiveness of appropriate instructional materials in Biology education, underscoring the need for more qualified and experienced Biology teachers to deliver quality education to future generations.

The purpose of this study is to identify suitable instructional materials that can help students easily understand the subject matter. The study posits that increased use of instructional materials in secondary schools will enhance students' academic performance in Biology. The incorporation of such educational resources is essential for teaching all subject areas in the school curriculum. According to Richard (2015), students are likely to retain newly acquired knowledge more effectively when instructional materials are utilized. Emmanuel (2018) notes that thoughtfully and creatively employing visual aids in the classroom can reduce apathy, enhance textbook effectiveness, and spark students' interest. Thoughtfully chosen instructional materials can enhance student comprehension of lessons by making them visually engaging, thus motivating students to learn. Historically, Biology instructional aids included maps and charts; however,

advancements in technology have expanded these to include digital components such as film slides, iPads, laptops, projectors, televisions, and internet systems. Consequently, it is essential to explore the impact of instructional materials on Biology education in Senior Secondary Schools within Egor Local Government Area of Edo State.

Statement of the Problem

The state of our educational system is alarming. One problem that teachers and students in our educational system encounter is the lack of proper teaching and learning instructional materials. When employed appropriately, instructional materials are brought into play to improve academic attainment along the way. However, it has come to light that teachers require a centralized source of knowledge regarding the creation and application of instructional materials. This will assist in lowering the majority of the issues in the teaching and learning process. Issues that prevent instructional materials from being used effectively in classrooms include a shortage of trained educational technologists and an inadequate electrical supply for some visual aids. To achieve a breakthrough in educational attainment, curriculum planners should, however, place a strong emphasis on the utilization of instructional materials by teachers. The question that most educationists and researchers wonder about is whether or not using instructional aids in a lesson can produce desired effects regardless of the teacher's degree of training and experience. Nigeria must advance and raise its scientific standards, hence it is

necessary to research the variables on availability and use of instructional material for teaching Biology in secondary school.

Research Questions

To guide this study, the following research questions have been formulated:

1. What is the availability of instructional materials for teaching Biology in secondary schools?

2. To what extent do Biology teachers in secondary schools use instructional materials in their teaching practices?

3. What are the factors that influence the use of instructional materials by Biology teachers in secondary schools?

Purpose of the Study

The objective of this study is to assess the availability and use of instructional materials on students' academic performance in Biology within Senior Secondary Schools. Specifically,

1. To find out the availability of instructional materials for teaching Biology in secondary schools.

2. To find out what extent do Biology teachers in secondary schools use instructional materials in their teaching practices.

3. To evaluate factors that influence the use of instructional materials by Biology teachers in secondary schools.

Significance of the Study

The researcher anticipates that after this study is finished, the results will be helpful to teachers, students, the government, and the general public in a variety of ways. First, the findings of this study will help secondary school teachers implement the regular use of instructional resources in the classroom to engage students and improve their knowledge.

The government will be able to produce more instructional materials for all schools, increasing productivity in education, since the use of instructional materials in formal or informal teaching has been proven over years to have positive effects, such that it improves effective understanding in the learners.

Furthermore, it is seen and thought that the use of instructional Materials will be quite beneficial in fostering mental imagery in students who struggle with learning. Materials that reinforce learning in tangible terms are necessary for a healthy discussion and comprehension of abstract concepts and themes.

The findings of this study will also be a point of reference and inquiry for the general public and students who wish to learn more or conduct related research in this field. The results of this study also bear significant implications for Nigeria's ministry of education across all governmental levels. This is due to the fact that it will tell the government about the lack of instructional materials for the purpose of teaching and learning of Biology.

Scope/Delimitation of the Study

This study aims to investigate the Availability and use of instructional material for teaching biology in secondary school, focusing on Biology students in both private and public institutions within Egor Local Government overnment Area of Edo State.

Definition of Terms

Instructional Materials: Often referred to as educational materials or instructional aids, these are tools teachers use in the classroom to clarify lessons and supplement knowledge transfer.

Audio-Aids: Educational resources that are limited to auditory inputs, such as tape recorders and radios.

Visual Aids: Educational resources (e.g., films and charts) meant for visual engagement.

Audio-Visual Tools: Communication tools that incorporate both auditory and visual elements to convey information, such as televisions and video cassettes.

Academic Performance: The grades or scores students receive following evaluations from class tests or external examinations.

Learning: The process of acquiring new information or refining existing knowledge and skills.

Teaching: The intentional sharing of information and experiences organized within a field, aimed at stimulating students' intellectual and psychological growth.

CHAPTER TWO

LITERATURE REVIEW

Introduction

In this chapter, related literature to the topic will be discussed under the following sub-headings:

- ★ Theoretical Framework
- ★ Conceptual Framework
- ★ Empirical Studies
- ★ Summary of Literature Review

Theoretical Framework

This research study is based on Jerome Burners Learning theory propounded in 1960. This theory was adopted because Jerome Burners Learning theory focused on the idea of education through exploration, According to Bruner's constructivist approach, learning is an active process in which students build new concepts out of what they already know. By carefully arranging instructional materials in a way that allows students to build on their prior knowledge and go beyond the curriculum to independently uncover the fundamental ideas which will aid effective teaching and learning process. According to Bruner accessibility and application of instructional materials for and gaining knowledge of fundamental science, applying Brunner's constructivist theory to the classroom will

improve and maintain students' attitudes toward the learning environment while also assisting them in paying close attention to the concepts they are learning.

Jerome Burners Learning theory

Bruner presents the idea of education through exploration. According to Bruner, the learner is given the chance to independently ascertain the facts. According to Bruner, increasing the amount of information presented won't improve an issue's ability to be solved effectively. The idea places a strong emphasis on cognitive efficiency. As a result, Bruner's theory of learning was sometimes referred to as Bruner's theory of cognitive growth. According to Bruner, learning by discovery starts when a scientific teacher consciously creates a problem and presents it to the class by pointing out discrepancies or inconsistencies in the sources of knowledge they are using to educate. Bruner claims that these contradictions cause intellectual discomfort, which in turn inspires (i.e., motivates) the pupils to make their own independent discoveries through cognitive restructuring (i.e. internal restructuring). Because of the intellectual discomfort caused by the discrepancies, the learner tries to use mental processes, or discovery activities, to sort through the confusion by making assumptions, measuring, classifying, inferring, and stating problems Hofstein & Lunetta, (2014).

The learner can produce facts from his or her experiences of desperation through mental processes. The student's experiences from the mental processes allow them to perceive the difference. Bruner distinguishes between two types of discovery processes, which are

as follows: Assimilation is the process via which a learner quickly assimilates new information when they recognize it as being similar to one of the components of the preexisting knowledge structure, or cognitive structure. When a new circumstance that is, fresh knowledge is incompatible with the current, accommodation must be made knowledge structure, or cognitive structure In order to make room for the new information, the learner first reorganizes or restructures his or her cognitive framework. According to Bruner, pupils should use their own mental processes to discover facts on their own. The three categories of human action for learning, or the three information processing systems, are highly valued in the theory Fafunwa & Ugwu, (2015). These are: A type of motor activity known as "enactive representation" in physical terms. An ionic depiction is an imagery. Symbolic pursuits Because the three tasks are interdependent, completing one does not require giving up on the others entirely.

During the enactive period, the children uses neuromuscular actions to directly control the learning materials. During the ionic stage, the infant processes mental pictures of items, but refrains from direct manipulation. A young toddler uses language at the symbolic level. According to this interpretation, a child who exhibits impairments in learning, particularly in symbolic representation at the secondary school level, may have bypassed early phases of development, such as the ionic and enactive stages. Therefore, it is essential to close the gap by offering substantial assistance that will make up for the shortfall. Since issue solving is the foundation of learning by discovery, promoting

discovery learning in science education also helps with problem solving (Akinmoyewa 1992). One of the main goals of science teaching and learning is to foster creativity in the student, which is another benefit of discovery learning.

Using Jerome Bruner's Theory of Learning in Science

Science teachers should purposefully pose questions to their students such as apparent contradictions or inconsistencies between the sources of knowledge they use to educate. Problem solving will be aided if science professors promote discovery learning in their classes. Creativity is one of the main goals of science education. As a result, creativity is encouraged by exploration learning. Concepts should be presented to students in a fashion that makes sense outside of the context in which they are being learned. Science concepts are easier to remember when one has information from discovery learning. Instructors need to push their pupils to make more methodical use of their intuition. Bruner is in favor of a comprehensive overhaul of the curriculum at every educational level. Bruner promoted the use of a basic curricular structure to start with basic contents and progress to more complicated ones over time Kamarainen & Grotzer, (2019).

Thus, learning should go from the simple to the complex, from the concrete to the abstract, and from the particular to the general. Instruction ought to be inductive. Bruner is in favor of a curriculum that is spiral, just as the science curriculum we currently use at all educational levels. According to Bruner's constructivist approach, learning is an active process in which students build new concepts out of what they already know. By

carefully arranging the resources in a way that allows students to build on their prior knowledge and go beyond the curriculum to independently uncover the fundamental ideas, instruction can be made more effective. Concerning the current investigation: The accessibility and application of educational resources for and gaining knowledge of fundamental science. Applying Brunner's constructivist theory to the classroom will improve and maintain students' attitudes toward the learning environment while also assisting them in paying close attention to the concepts they are learning. Second, instructions at all levels should be designed with the learning maturational development or cognitive operation in mind, according to Bruner's theories of cognitive development and learning by discovery Ajuwa, (2010). The current study, which examines the impact of improvised educational materials, is closely tied to Bruner's idea. This is due to the fact that using student-produced improvised materials effectively requires the learner to actively work through challenges on his own. Thus, the current investigation is supported by Bruner's theory.

Conceptual Framework

Alternative forms of communication that a classroom teacher can employ to help students understand a subject throughout the teaching and learning process are referred to as instructional resources. The 'talk-chalk' method has been a mainstay of classroom instruction for teachers historically. However, educational resources now assist in offering diversity in the ways that messages are conveyed. In addition to expanding the

range of sense organs we employ when employing instructional materials, teachers and students also expand the range of materials available for congregating the same message through the same organ. For example, a teacher can employ stimulators or actual things to help teach a subject Ajuwa, (2010) .

Thus, instructional materials are the medium of trade that facilitates the transfer of messages between a sender and a recipient. Egede (2014). Instructional materials not only increase the variety of materials that can be utilized to teach students the same lesson, but they also make communication more "process" oriented. They promote involvement, particularly when pupils are permitted to handle the tools being used. In a contribution of his own, Osuala (2020) stated that it not only fosters student motivation and interest but also increases respect for teachers' subject-matter expertise. Aginna-Obu (2020) describes instructional materials as either concrete or both to the sense organs during education. The character of the education and a high degree of teachers and expertise in the way of teaching the subject matter are required due to the wide range of skills in the ordinary classroom. This has been cut short by the lack of teaching resources in schools. Nonetheless, a teacher's constant objective, no matter where he is, is to provide lessons that are profoundly engaging, thought-provoking, and challenging for their students. This will assist the instructor in tailoring both the content and the learning approach to each student's particular needs. The most efficient way to accomplish this is by using

educational resources. It is crucial to emphasize the value of instructional materials and their use in all learning and teaching environments.

Equipment and other instructional materials to some extent determine the method the teacher uses in teaching biology; the method could be demonstration, experimental, discussion, etc. All teachers and school administrators agree that in addition to the chalkboard and textbooks, which are frequently available for the teacher to use, there are other materials that aid or are capable of complementing the teacher's effort in teaching/learning process. These materials are commonly referred to as "instructional materials." One of the reasons why students in our secondary schools occasionally find it difficult to comprehend immediately what is being taught lack of readily available teaching resources that would enable students to understand the lesson's content. Teaching aids are "the guidance of learning activities" that "a teacher uses to motivate and arouse student's desire to learn," according to Orji (2020). Idea for Educational Resources Over the years, instructional materials have undergone name changes and conceptual changes. It has also been referred to as curricular materials, media materials, instructional or educational facilities, learning resources, educational technology, and teaching aids. Ogwo and Oranu (2006) describe instructional materials as any tool used by educators to convey information, assist students in acquiring skills and knowledge, and enhance their comprehension.

They assert that all of the components of instructional materials are models, objects, illustrations, films, charts, graphs, and specimens. According to Dike (2018), instructional materials are a collection of resources that a teacher might utilize in the classroom to broaden the range of experiences available to his students. The way that different authors understand the concept of instructional materials varies. Olaitan, Nwachukwu, Igbo, Onyemaechi, and Ekong (2020) defined instructional materials as any tool created or obtained to help teachers impart structured knowledge, skills, and attitudes to students in a learning environment. They define instructional materials as those tools for skill development and practical application that support the teaching, learning, and assessment of vocational technical skills in vocational technical education. Electronic systems, tools, equipment, and other resource materials that could be used to guide and regulate vocational training are examples of instructional materials technological processes as well as to strengthen the instruction and acquisition of particular talents. According to Mkpa (2018), instructional materials are any of the several information carriers used in the delivery of instruction. Among these, he named models, photographs, computers, instructional aids, textbooks, radios, and televisions. Additionally, he came to the conclusion that students can learn without a teacher if they have access to media that may convey credible information and that there are alternative forms of learning besides traditional classroom settings.

According to Ugonabo (2018), instructional materials are those that optimize learning across a range of technological domains. Chalkboards, models, charts, overhead projectors, maps, and simulations were among the materials he mentioned. According to Nwandu (2014), instructional materials are resources that a teacher or student can utilize alone or in combination with other resources combine formally to facilitate the acquisition of information, skills and morality. Ike (2015) described instructional materials as information carrying technologies that can be employed for instruction. He went on to say that while a teacher can describe a bucket, it is very difficult to accurately communicate a bucket to children in the absence of an image for clarity. Students can better understand the lesson by using the instructional material provided by the picture of this bucket. According to Ekong (2014), instructional materials refer to any readily available, easily accessible, practical, and skill-oriented resources that support learning and knowledge gain. These resources also help teachers impart knowledge, skills, attitudes, and facts to students inside the educational system. According to Ekong (2014), these are substances or equipment that is necessary for vocational technical education in schools. To meet the goals of instruction, these resources must be used in the teaching process. Olaitan (2012) issued a warning, stating that certain skills that may be necessary for admittance into a certain vocational occupational area may not be taught if specific materials, tools, and facilities are not used in the teaching of vocational technical topics in schools.

This implies that in order for students to acquire vocational skills, these instructional materials are required. According to Azikiwe (2014), instructional materials are those tools utilized to successfully and as effectively as possible accomplish the educational objectives. She believes that when teachers employ them, the quality of instruction is facilitated. Moore (2014) defined educational resources as tools that are offered in a variety of forms, stimulating, inspiring, and grabbing the attention of the student. Instructional materials have also been referred to as resource resources. According to Obianwu (2018), instructional materials are those tools, machinery, and resources used in educational technology that concentrate on more effective ways to maximize educational input and output for the advantage of educators and students. According to Obianwu 28, resource people who are invited to teach a class of students one or two classes are considered resource materials. Since real items are so important, Mkpa (2019) recommended that teachers employ representations of real-life circumstances when there aren't any available. According to Mkpa (2018), these real-life representatives are tools, resources, and methods that assist the instructor in adopt a practical approach to their role as a teacher. Real-world situational representations are created as models, diagrams, sketches, dioramas, or mock-ups. Mkpa (2018) went on to say that the goal of instructional materials is to support teachers in successfully and meaningfully communicating the intended message to students.

Writing on the significance of teaching aids in education, Egede (2014) noted that both dull and bright students struggle to fully understand certain concepts unless the teacher uses teaching aids. He also noted that a dull student cannot learn many things if they are presented to him verbally. Accordingly, Mkpa (2018) defined teaching aids as those tools that instructors use to help students comprehend the material extra. In the teaching and learning process, he claimed, they are tools or objects that the pupils can see, hear, touch, or smell. A teaching aid is also described as "something that aids in the teaching of a topic" by Ike (2015). In his view, this definition suggests two things: It doesn't do the work entirely because some of it is done by other means, most often by a teacher. The aid is given out by the teacher. The assistance functions because a portion of the teaching task assigned to it is completed effectively. Educational media is another phrase that can be used to describe instructional resources. According to Ukoha (2016), educational media is a means of delivering the knowledge, skills, and attitude that educators want to impart to students. He created a list of media that included tools, machinery, supplies, and equipment intended to help with teaching and learning in order to achieve the stated goals. According to Ukoha, some of these resources include actual things, specimens, moving and still images, photos, electronic gadgets, mechanical apparatuses, printed materials, and other methods that promote learning through the production of visual, aural, and audio-visual sensations. Additionally, according to Ukoha (2016), educational media materials especially print media are used to record, maintain, retrieve, and transfer

educational knowledge. In addition, resource centers and libraries can store and preserve educational information using films, slides, transparencies, microfilms, charts, photos, videocassettes, audio-visual cassettes, and computer diskettes. According to Egede (2004), instructional media that are utilized to recover information include television, radio, recorder and opaque projectors.

Historical Background of Science and Instructional Materials

William Sharp was the first person to be officially recognized as having taught science in a British public school. He resigned his position at Rugby School in 1850 after adding science to the curriculum. It is said that Sharp created a paradigm for science instruction that is used in all British public schools. The British Academy for the Advancement of Science (BAAS) released a report in 1867, which marked the following stage. BAAS encouraged "pure science" education and the development of a "scientific habit of mind." The progressive education movement of the day endorsed the theory that the sciences could shape the mind. Pre-professional training in secondary science instruction was given distinct emphasis by BAAS. Future BAAS members could be ready in this fashion. The scarcity of competent teachers hindered science education's early development. The establishment of the first London School Board in 1870, which addressed the curriculum, was one significant advance. Another was the start of programs to provide the nation with qualified science instructors. Before science education became standardized in the US in the 1890s, it was a dispersed set of courses. In the United States, scientific curricula came

about progressively as a result of a protracted ideological conflict between citizen science and pre-professional training. The National Education Association established a Committee of Ten in 1892 as a consequence of a conference of thirty elite secondary and college educators in Florida. This committee was given the power to set up upcoming meetings and designate subject matter committees.

One of the main disciplines covered in secondary education in the US. Charles Eliot of Harvard University served as the committee's chairman and was joined by eight other educators, all of whom were men. Nine conference committees (in the fields of Latin, Greek, English, Other Modern Languages, Mathematics, History, Civil Government and Political Economy, and three sciences) were appointed by the Committee of Ten during their meeting. Science was represented by three conference committees: physics, astronomy, chemistry, natural history, and geography. The Committee of Ten appointed ten eminent experts from secondary schools, colleges, and normal schools to serve on each committee. Every committee convened at a distinct American site. The three-day meeting of the science committee took place in the Chicago region. The Committee of Ten received committee reports and convened for. To produce an extensive report, four days were spent in New York. The findings of the work of these conference committees were published by the NEA in 1894. The Committee of Ten stated that the aim of high school was to equip all students with the necessary skills to succeed in life and make positive contributions to both their own and society's well-being. Preparing certain

students for success in college was another objective. This committee disregarded science study performance when determining college admission in favor of the citizen science strategy, which emphasizes mental training. In the UK, the BAAS supported their longer-standing model.

The curriculum that was accepted in the US was defined as follows: Simple natural occurrences should be the main emphasis of elementary science, with experiments conducted "in-the-field." auxiliary science should concentrate on laboratory work and the lists of particular experiments that the committee has developed. instructing students in concepts and facts Getting ready for college From the beginning to the present, the shared mental training and pre-professional training formats have dominated the curriculum. But in the late 20th century, there has been an increasing push to include a humanistic perspective in education, as seen by the inclusion of the arts (S.T.E.A.M.), science, technology, society, and environment (Aikenhead, 1994). Goals for scientific education that connect science taught in the classroom to real-world applications and societal ramifications are outlined in reports by the National Committee on scientific Education Standards and Assessment and the American Academy for the Advancement of Science (AAAS), including Project 2016.

The use of instructional materials dates back to ancient civilizations, where written texts and images were used to teach skills and knowledge. In ancient Egypt, hieroglyphics

were used to teach writing and mathematics, while the ancient Greeks used clay tablets and wax tablets for teaching.

During the Middle Ages, instructional materials were mainly used in religious settings. Monks created illuminated manuscripts to teach religious doctrine, and the use of pictorial representations, such as stained glass windows, was popular for teaching biblical stories.

The invention of the printing press in the 15th century revolutionized the production and distribution of instructional materials. The use of printed books and pamphlets enabled the mass production of educational materials, making them more widely accessible. This led to the development of textbooks, which became a common instructional tool in schools Alexander, (2014).

In the 19th century, the use of visual aids, such as maps, charts, and diagrams, became popular in classrooms. This was followed by the introduction of audiovisual materials, such as films and audio recordings, in the early 20th century. These new technologies allowed for more interactive and engaging instruction.

In the mid-20th century, the development of computers and the internet further expanded the possibilities for instructional materials. The use of multimedia, virtual reality, and online learning platforms gave teachers and students access to a wide range of resources and learning opportunities.

Today, instructional materials continue to evolve with the advancement of technology. There is a growing emphasis on digital and interactive materials, such as e-books, interactive whiteboards, educational apps, and online simulations. These modern instructional materials are designed to enhance learning and engage students in a more active and personalized way Eze & Ezemagu, (2018).

Importance of Science Teaching in Schools

Any country's progress depends heavily on science education in many different ways. According to, a physics education graduate can work for themselves. Numerous physics graduates possess sufficient electronics knowledge to enable them to serve as independent electronic technicians after completing a brief apprenticeship program. For example, semiconductors are so essential to modern technology that, with the right knowledge, one may make a career off of them. Any physics graduate should be familiar with semiconductor physics. In a developing nation like Nigeria, semiconductors are crucial; the ceramics sector can benefit from them, and graduates with a strong background in physics education can have a solid reputation in the ceramics business. Information and communication technology would not be conceivable without science education. Without science education, science and technology would not be conceivable Hofstein & Lunetta, (2014).

For example, engineering, medicine, architecture, and other fields would not be possible if there was no one to teach students the fundamental subjects required for these courses.

Education in biology is crucial for every developing nation, such as Nigeria. Many biological education graduates work for themselves as independent contractors or as labor employers; many also operate their own schools where people can come to work and make a living, and some are involved in the fishing industry Ajibade 2020. Chemistry department students at several education colleges learn how to create dye and white board markers; graduates of these programs can start their own white board. After graduating from these programs, graduates can start their own white board marker company. Many schools no longer need to purchase white board markers for use outside, and they may create just as many for other schools, if they receive funding. The following are Importance of Science teaching in Schools Johnstone & Al-shuili, (2011).

Fosters critical thinking skills: Science education encourages students to ask questions, make observations, and form hypotheses. This helps develop critical thinking skills, which are essential for problem-solving in all aspects of life.

Promotes curiosity and wonder: Science is all about exploring the unknown and discovering new things. Proper science education in schools can spark curiosity and a sense of wonder in students, which in turn can lead to a lifelong love for learning.

Develops scientific literacy: In today's modern world, it is crucial to have a basic understanding of scientific concepts to make informed decisions about important issues such as climate change, healthcare, and technology. Science education in schools helps students develop scientific literacy, which is essential for informed decision-making.

Encourages creativity and innovation: Science education involves hands-on experiments and projects, which can stimulate creativity and innovative thinking in students. It allows them to think outside the box and come up with unique solutions to problems Wikipedia (2016).

Connects real-life application: Science education teaches students about the practical application of scientific concepts in everyday life. This can help them see the relevance and importance of science in their daily lives and understand the world around them better.

Prepares students for the future: With technology advancing rapidly, the job market is constantly evolving, and many new careers are emerging in fields such as biotechnology, environmental science, and data analysis. Science education in schools can prepare students for these future careers by providing them with a strong foundation in scientific principles.

Develops teamwork and collaboration skills: Science education often involves group work and collaboration, which can help students develop teamwork skills, communication, and leadership abilities. These are essential skills in both academic and professional settings.

Fosters environmental awareness: Science education also teaches students about the environment, sustainability, and the impact of human activities on the planet. This can

help create environmentally conscious citizens who are aware of their responsibility towards the Earth Wikipedia (2016).

Encourages experimentation and risk-taking: Science education involves trial and error, which can help students develop a growth mindset and understand the importance of taking risks and learning from failure.

Supports national development: A strong foundation in science education is crucial for a country's development. It helps produce a skilled and knowledgeable workforce, promotes scientific research and innovation, and drives economic growth.

Application of Updated teaching Materials in Biology Teaching.

One technique to reduce equipment and material loss and to expand the scope of inquiry on a budget is to improvise educational materials. A sincere attempt to develop a suitable replacement or alternative to traditional science resources is the improvisation of teaching materials. Owing to the current status of the economy in our country, educators, students, administrators, and communities should collaborate to improvise lesson plans in order to:-Grow instructors' and students' improvisational skills. This will spark enthusiasm and drive for homegrown technology. possess tangible, real-world connections between theory and science Eliminate the threat of insufficient or nonexistent science teaching resources Make teachers and students aware that there are alternatives to some of the traditional science teaching resources. Utilize homemade teaching resources to help students meet the established learning objectives Lunetta, (2014).

Teachers of basic science ought to research whether resources could be substituted without; High expense Many challenges in managing and a loss of creativity in the ideas that need to be taught In the classroom, improvised teaching resources make biological ideas more engaging for both teachers and students. Ibitoye (2021) Because they are manufactured on the go, improvised materials are typically straightforward and may not have flawless finishing from approved local raw materials for Students studying biology and other sciences benefit from improvised teaching materials because they make science relatable to everyday life and may even be inspired to use these materials for their own investigations and learning activities. Johnson (2020). Authorities in Schools' Role in Improvisation The following are the essential responsibilities of the school administration: to provide the teachers with financial support so they can create makeshift materials. Ask parents for help in obtaining resources for improvisation or supplies that can be made on the spot. Give meritorious instructors encouragement. To make the most of the improvised materials throughout their limited lifespan, provide storage spaces for them. Seek the assistance of community specialists to aid with the improvisation.

The Government's Function in Improvisation At all educational levels, the federal and state governments have a significant part to play in the improvisation exercise. These are a few of them: Curriculum designers ought to include improvisation as a required course in every scientific discipline (Olarewaju, 2014). The government can offer funds or cash to encourage educators and writers of books about improvisation. The government can

launch a public education campaign emphasizing the value of improvisation to society as a necessary component of technological advancement.

The Importance of Instructional Materials to the Teacher

Because they pique students' interest, which in turn spurs learning and encourages the transfer of technology, instructional materials are essential to teaching and learning. According to Ibe-Bassey (2022), if a teacher employs a model, students will pick up on it when he offers a stimulus in the classroom with the intentional goal of eliciting a good behavior. Obanya (2004) noted that a number of studies conducted in several parts of Nigeria revealed that practically all courses had utterly terrible scores on senior secondary school certificate exams. This supports Ahmed's (2023) claims that learning and instruction occur in a conducive atmosphere without access to necessary resources in the majority of Nigerian secondary schools. According to Ibitoye (2021), the creation of innovative educational resources will undoubtedly result in the application of materials.

This suggests that having access to educational resources is equivalent to using them. The teacher experiences a sense of pleasure and satisfaction when the stated objectives are achieved with the help of the resources. As a result, it is expected of the teacher to take all reasonable steps to improve the learning environment, including making effective use of instructional resources. In his submission, Eniayewu (2015) makes the case that using instructional aids to give instruction is crucial for raising academic standards and helping students gain more knowledge. To raise academic standards in Nigerian schools,

creative and talented educators could create the essential teaching materials (Abdu-Raheem and Oluwagbohunmi, 2015). Teachers must be committed to this; they must improvise where and when none are accessible. Ibitoye (2021) stated that educational authorities, despite their wealth and generosity, are not always able to supply their schools with what they require. To the greatest extent possible, teachers should innovate in order to accomplish their educational objectives while still utilizing their manipulative skills (Oso, 2011). Therefore, by making the most of what they can obtain or create from the materials that are available, educators and schools should make educational materials accessible. by giving him/her the tools to enhance his pupils' educational opportunities. giving his or her students access to reliable sources of knowledge. Give the instructor the tools to introduce the class to a variety of educational activities. By offering lessons and response advice to both individual students and small groups, they help teachers become more efficient.They supply the classroom with resources and subject matter expertise. They make it possible for students or group members to benefit equally from the same teaching experience. Instructional materials are essential tools in the teaching and learning process. Here are several reasons highlighting their importance to teachers:

Instructional materials such as videos, hands-on activities, and visual aids can make lessons more engaging for students, helping to capture their interest and maintain their attention. Well-designed materials can clarify complex concepts, making them easier for students to understand. For example, diagrams, charts, or models can illustrate ideas that

are difficult to convey through text alone. Different students have different learning preferences. Instructional materials allow teachers to address various learning styles—visual, auditory, kinesthetic by providing multiple ways to access and engage with the content. Instructional materials help to provide a framework for lessons, guiding teachers on how to present information and manage classroom activities effectively. This structure can lead to more organized and coherent teaching Omojuwa, (2021).

Encouraging Active Learning: Materials that promote hands-on or collaborative activities encourage students to take an active role in their learning, helping to develop critical thinking and problem-solving skills. Various instructional materials can be used to assess student understanding and progress. For instance, quizzes, worksheets, or interactive activities can provide feedback to both students and teachers. Instructional materials can be adapted to meet the needs of diverse learners, including students with disabilities or those who require additional support, helping to create a more inclusive classroom environment. Teachers use instructional materials to deepen their own understanding of the subject matter, which can also positively impact their teaching effectiveness. Pre-prepared materials can save teachers time in planning and delivery, allowing them to focus more on teaching and less on creating resources. Fostering Collaboration: Instructional materials can encourage teamwork among students, as they often involve group work or discussions, helping to build social skills and collaboration. By utilizing

effective instructional materials, teachers can improve student learning outcomes and create a more dynamic and inclusive classroom environment Okebukola, (2017).

The Importance of Instructional Materials to the Students

Students might receive comparatively consistent attention and opportunities to practice and gain skills thanks to instructional materials. They adapt instructional activities to each student's unique learning style by making them rich and flexible. Students can learn concepts and information more easily and effectively by using their senses smell, hearing, touch, taste, and sight in combination. Through educational resources, pupils might perceive connections that are challenging to understand in isolation. When Students see actual shapes, for example, they are better able to recognize and distinguish between them. It enables kids to mentally notice the forms' similarities and differences by comparing and contrasting them. Certain topics would have just escaped the learner's grasp if not for the use of educational resources that offer valuable experiences through emulation Balogun, (2015).

Students could learn about topics that are too little, too risky, or simply not practical to bring into the classroom by using instructional resources. For instance, a mountain, a waterfall, or a lion. With the right teaching resources, any of these can be successfully taught to pupils in the classroom. (J. O. Omojuwa, 2021) Learning is facilitated by instructional materials in the following ways: Boost curiosity in learning Ensure that the students are paying attention. Give the students the chance to engage with their physical

and social surroundings (e.g. during excursion). Give students the chance to study independently and on their own terms. Provide a solid foundation for intellectual thought Provide opportunity for students to hone their skills and abilities Advancement of knowledge. (Manual NTI, 2016) The lack of instructional resources in Nigerian secondary schools causes students to score poorly on government exams, even though these materials are crucial instruments that can facilitate practical learning and information acquisition. (In 2014, Abdul-Raheed). One cannot stress enough how important it is to use low-tech media. It is the backbone of the educational process and produces enduringly fruitful results. One cannot stress enough how important it is to use low-tech media. It is the backbone of the educational process and yields extremely lucrative results. NB: Using homemade teaching materials helps students engage with one another while also helping the teacher financially. It forces pupils to apply their cognitive faculties when studying and teaching processes.

Instructional materials play a crucial role in the learning experience of students such as Enhancing Understanding: Instructional materials help to break down complex topics into more digestible pieces, aiding students in grasping difficult concepts more easily. Interactive and visually appealing materials can capture students' attention and stimulate interest, making learning more enjoyable and motivating. Students have varied learning preferences. Instructional materials provide multiple avenues for learning visual, auditory, and kinesthetic allowing students to engage with content in ways that best suit their

individual needs. Materials that promote hands-on activities or collaborative learning encourage students to actively participate in their education, fostering deeper understanding and retention of information Adeyemi, (2016).

Accessible instructional materials empower students to take charge of their learning. They can review materials at their own pace and refer back to them as needed, promoting self-directed learning. Activities and resources that challenge students to analyze, evaluate, and create foster critical thinking skills, which are essential for problem-solving and decision-making. Many instructional materials, such as quizzes or online platforms, offer immediate feedback on student performance, helping them identify areas for improvement and reinforcing their learning Abdulwahab, (2013).

Instructional materials that require group work or discussions help students develop teamwork and communication skills, preparing them for collaborative environments in their future education and careers. Engaging materials often help improve memory retention. When students interact with a variety of formats like videos, infographics, or interactive simulations they are more likely to remember the material. Inclusive instructional materials cater to a wide range of abilities and backgrounds, ensuring that all students have the opportunity to engage meaningfully with the content. By utilizing effective instructional materials, students can enhance their learning experiences, leading to improved academic outcomes and greater overall success in their educational journeys.

Instructional Materials for Teaching and Learning Biology

It goes without saying that teaching is merely a tool for learning and that learning is fundamentally a social activity. As a result, it becomes essential for teachers to employ all kinds of equipment to assist students in learning. These tools are known as instructional aids or instruments or instruments. NERDC (2019). Resources for teaching and learning are numerous and diverse, encompassing a range of items, buildings, procedures, places, and people. It provides information to teachers and learners in order to meet their needs in teaching and learning. These resources are essential tools that a basic science teacher needs to accomplish the goals of their instruction. According to Nzewi and Nwosu (2019), a resource in the teaching process is anything or anyone that a teacher can consult for guidance or support.

For instance, you have materials for teaching and learning. educators, physicians, nurses, Material resources, such as a chalkboard; non-printed materials, such as illustrations and photographs; Community assets, such as farms and hospitals. Effective teaching and learning of basic science require these resources (NERDC, 2019). The tools and supplies a teacher employs to emphasize, illustrate, and explain a subject to students in order to help them understand it are referred to as teaching materials or aids. Among these supplies and tools are common, basic items that are readily available in the area (Nzewi and Nwosu 2019). According to Ahmed (2017), the terms instructional materials and teaching aids can also be used to refer to teaching materials. It should be mentioned that

the educational process itself cannot and will not be replaced by instructional materials or teaching aids. But the worth The purpose of teaching materials and resources for the teaching and learning process is to give teachers the tools they need to help students broaden their horizons and pursue firsthand experiences. Resources for teaching aid in the provision of materials and chance for experimentation. According to Nzewi and Nwosu (2009), these guarantee student participation in the class, which encourages efficient learning. Nigerian schools are implementing a new scientific curriculum that is activity-based and places a strong emphasis on developing useful skills for lifetime learning. In order to find and use relevant instructional resources for teaching and learning, teachers must exercise creativity (NPE, 2014). These are obstacles or variables that make it difficult to find and use the right instructional materials for teaching and learning (NERDC, 2019).

Effective instructional materials are crucial for teaching and learning biology, as they can enhance understanding, engage students, and facilitate the exploration of complex biological concepts. Here are some key types of instructional materials that can be used in biology education:

Textbooks and Reference Books: Comprehensive biology textbooks provide foundational knowledge, covering essential topics such as cell biology, genetics, ecology, and evolution. Reference books can offer in-depth information for advanced topics.

Laboratory Equipment and Supplies: Hands-on laboratory experiences are essential in biology. Equipment such as microscopes, Petri dishes, pipettes, and specimens (e.g., plants, animals, or microorganisms) allow students to conduct experiments and observe biological processes firsthand Christensen, (2016).

Online Simulations: Platforms like BioMan Biology or HHMI Biointeractive offer interactive simulations that allow students to explore biological phenomena, practice experiments, and visualize processes like cellular respiration or photosynthesis.

Educational Videos: Documentaries, YouTube channels, and TED Talks (e.g., Crash Course Biology) provide visual explanations and can enhance students' understanding of biological concepts through compelling storytelling and visualization.

Charts and Diagrams: Colorful and clear diagrams, such as those illustrating the cell cycle or the structure of DNA, can help students visualize complex processes and structures Knezek, (2024).

Posters: Educational posters can be used to display important biological processes, relationships within ecosystems, or anatomical structures in a visually engaging manner.

Interactive Notebooks: Students can create interactive notebooks that combine handwritten notes, diagrams, and foldable elements. This hands-on approach promotes active learning and allows for personalized study aids.

Field Trip Materials: Organizing field trips to natural habitats, nature reserves, or laboratories provides real-world context for biological concepts. Materials such as

worksheets, observation checklists, and field guides can be used during these trips to engage students further Wiggins & McTighe, (2005).

3D Models: Molecular models, anatomical models (like a human skeleton or plant structures), and interactive anatomy apps (like 3D anatomy software) allow students to explore and understand complex structures in a tangible way.

Biology Kits: Hands-on biology kits that include experiments related to genetics, ecology, or cellular biology can engage students in interactive learning.

Quizzes and Games**: Interactive quizzes, Kahoot games, and flashcards can reinforce learning and provide a fun way to review key concepts and terminology Hale, (2016).

Case Studies: Utilizing real-world case studies or current biological research can help students apply their knowledge, fostering critical thinking and an understanding of the relevance of biology to everyday life.

Online Learning Platforms: Tools like Google Classroom or Moodle can be used to provide access to course materials, facilitate discussions, and assign interactive activities, making it easier for students to learn at their own pace. Incorporating a variety of instructional materials can provide a more comprehensive and engaging learning experience, catering to different learning styles and helping students achieve a deeper understanding of biology Oso, (2011).

The Use of Instructional Materials and Effect on Students Academic Performance in Biology

Academic performance is defined as a successful outcome or achievement in a specific field of study. Grades, marks, and the results of descriptive commentary serve as indicators. Academic performance also includes how well students manage their coursework and how well they handle or complete the assignments assigned by their teachers within a set period of time or academic year. Academic self-concept is a term coined by Fajola (2008) to describe a person's understanding and self-perception of their academic accomplishments and their belief that they can effectively complete a task at a specific level. According to Fajola (2018), academic self-efficacy is a context-specific assessment of one's own perceived skill in a given academic topic, whereas academic self-concept is more past-oriented, aggregated, and relatively stable.

Additionally academic self-efficacy, on the other hand, is a context-specific and relative future-oriented assessment about one's confidence for effectively completing a forthcoming subject-specific academic task. It is a steady judgment about one's self-perceived ability in a particular academic area. According to Rothstein (2022), learning results not only from formal education but also from peer pressure, families, and communities. Sociocultural and socioeconomic factors can have an impact on education and academic success. The relative importance of home- and school-related factors has been the focus of a significant amount of study on the determinants of academic attainment. Others countered that research has shown a significant impact on students'

performance from both the home and school environments. According to Musek (2021), there are two major categories of definitions for academic success.Since the first one uses numerical knowledge scores to gauge how well a student has adapted to academic work and the educational system, it may be seen as being more objective. The second group is more subjective because it bases its assessment of academic success on the student's attitude toward both himself or herself and their academic accomplishment, as well as the attitudes of important others toward the student's success and themselves. The significance of educational resources in the teaching of basic science is the main topic of this study.

Instructional materials play a crucial role in enhancing students' academic performance in biology. These materials can include textbooks, laboratory equipment, multimedia resources, and other tools that help students understand and apply biological concepts effectively. Here are some ways in which instructional materials can impact students' academic performance in biology:

Visual aids: Visual aids such as diagrams, charts, and videos can help students better understand complex biological processes and concepts. These materials can make abstract ideas more concrete and easier to grasp, leading to improved comprehension and retention of information Bates, (2015).

Hands-on activities: Laboratory equipment and experiments allow students to apply theoretical knowledge in a practical setting. Hands-on activities help students develop

critical thinking skills, problem-solving abilities, and a deeper understanding of biological concepts. This can lead to improved academic performance as students engage actively with the subject matter.

Interactive resources: Interactive resources such as online simulations, quizzes, and games can make learning biology more engaging and enjoyable for students. These materials can help students reinforce their understanding of key concepts, identify areas of weakness, and practice applying their knowledge in different contexts (Rovai, 2022).

Differentiated instruction: Instructional materials can be tailored to meet the diverse learning needs of students. Teachers can use a variety of resources to accommodate different learning styles, abilities, and interests, ensuring that all students have the opportunity to succeed in biology Lee, (2015).

Real-world connections: Instructional materials that highlight the relevance of biology to everyday life and current events can motivate students to engage with the subject matter. By connecting biological concepts to real-world applications, students can see the practical implications of their learning and develop a deeper appreciation for the subject. The use of high-quality instructional materials can have a positive impact on students' academic performance in biology by enhancing their understanding, engagement, and motivation to learn. Teachers should carefully select and integrate a variety of resources to support student learning and help them achieve success in the subject Hale, (2016).

Empirical Studies

A study looking into how instructional materials affect Delta State SS 2 biology students' retention and academic performance. 86 SS2 biology students, chosen at random from a population of 5,626 pupils from 18 public schools, made up the study sample. The biology achievement test (BAT), which was created by the researcher using previous WAEC questions, was validated by senior biology teachers in Delta State and senior lecturers in science, English, and statistics at Ahmadu Bello University. The instrument's 0.65 coefficient of reliability was verified by testing Crooks, (2012). Two groups the experimental group and the control group are included in the quasi-experimental design. While the control group received training without the use of instructional materials, the experimental group received treatment any educational resources. Statistics from the t-test were used to examine four null hypotheses. The following important conclusions were drawn: The mean academic achievement scores of pupils who were taught using instructional materials (EG) and those who were not taught using instructional materials (CG) varied significantly.The mean achievement scores of male and female students who were taught biological concepts utilizing instructional materials did not differ significantly. The mean retention scores of students taught using instructional materials and those taught without exhibit a statistically significant difference. When it comes to the ability to retain information, male and female students who use instructional materials differ significantly. Several recommendations were given in light of these findings, one

of which is that educators should utilize educational resources. Some recommendations were given in light of these findings, one of which is that teachers employ instructional tools to help with secondary school biology instruction.

This study looked into how instructional resources were used and available for biology instruction in senior secondary schools in Talata Mafara Town, Zamfara State. For the study, a descriptive survey research approach was chosen, utilizing quantitative data. All of the biology department heads from Talata Mafara Town's senior secondary schools six public and four private were included in the population. Because of its modest size, the entire population made up the study's sample. Using Cronbach's alpha, a validated questionnaire with a reliability index of 0.63 was employed as a tool for gathering data. Frequency counts and percentages displayed in tables and charts were used to analyze the data that were gathered. For this study, five research questions were used Wiggins & McTighe, (2015).

The study's conclusions showed that while some of the necessary teaching resources are reasonably accessible, biology teachers do not always use them. The majority of Talata Mafara Town's schools lack biology labs and multimedia-related instructional resources. Lack of fund for procurement and large class size coupled with lack of in-service training for serving biology teachers were major factors identified to inhibit effective provision and utilization of instructional The study's conclusions included the following recommendations: the Zamfara State Government should construct biology laboratories

and provide instructional materials, particularly multimedia-related ones, in all Talata Mafara senior secondary schools; the government and other pertinent stakeholders should encourage and sponsor the professional development of biology teachers; and biology teachers in Talata Mafara Town should make an effort to use the available instructional materials Shute, (2008).

Summary of Reviewed Literature

The review of literature was presented under theoretical framework, conceptual framework, review of empirical studies and summary literature review.

In the theological framework, It was noticed that Jerome Burners Learning theory focused on the idea of education through exploration, According to Bruner's constructivist approach, learning is an active process in which students build new concepts out of what they already know. By carefully arranging instructional materials in a way that allows students to build on their prior knowledge and go beyond the curriculum to independently uncover the fundamental ideas which will aid effective teaching and learning process.

According to the conceptual framework, instructional materials are a collection of resources that a teacher might utilize in the classroom to broaden the range of experiences available to his students. Students can learn concepts and information more easily and effectively by using their senses smell, hearing, touch, taste, and sight in combination via the use of instructional materials. Instructional materials play a crucial role in enhancing

students' academic performance in biology. These materials can include textbooks, laboratory equipment, multimedia resources, and other tools that help students understand and apply biological concepts effectively.

Regarding the empirical framework, A study looking into how instructional materials affect Delta State SS 2 biology students' retention and academic performance. 86 SS2 biology students, chosen at random from a population of 5,626 pupils from 18 public schools, made up the study sample. The biology achievement test (BAT), which was created by the researcher using previous WAEC questions, was validated by senior biology teachers in Delta State and senior lecturers in science, English, and statistics at Ahmadu Bello University. The instrument's 0.65 coefficient of reliability was verified by testing.

The findings of these studies have demonstrated that it is insufficient to instruct students without the use of instructional materials, however these studies did not look into availability and usage of instructional materials and how it affect students' academic performance. Therefore, the purpose of this study is to investigate the availablility and usage of Instructional Materials in teaching Biology in Senior Secondary Schools in the Ovia North local government area of Edo State.

CHAPTER THREE

METHODOLOGY

This Chapter describes the methodology used in the research under the following:

- Research Design
- Population of the Study
- Sample and Sampling Technique
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Methods of Data Collection
- Method of Data Analysis.

Research Design

The Research Design that was adopted for this study is Descriptive Survey design. Descriptive Survey design is a type of research design that aims to obtain information to systematically describe a phenomenon, situation or population. More specifically, it helps answer the what, when, where, and how questions regarding the research problem, rather than the why.

Population of the Study

The population of the study comprise of all the 16 public schools in Egor local government area of Edo State.

Sample and Sampling Techniques

The entire population of the study will form the sample . The censor sampling technique will be used

Research Instrument

The research instrument was a checklist and observation schedule. A research instrument checklist is a tool used by researchers to systematically evaluate and collect data in a structured and organized manner. It typically serves as a guide during the data collection phase of a study, ensuring that all essential aspects of the research are addressed. The checklist outlines the specific items or criteria that need to be assessed, ensuring that no important detail is overlooked. Both checklists and observation schedules are essential tools in research and data collection, helping ensure thoroughness, consistency, and organization in gathering information.

Validity of Instrument

The face of the instrument was determined by my supervisor and expert opinions of two Lecturers in curriculum and instructional technology. Their corrections and recommendations were incorporated in the final version of the instrument.

Reliability of the Instrument

To determine the reliability of the instrument, it was pilot- tested by administering twenty questionnaires to students who were not part of the study. The data obtained were analysed using Cronbach Alpha. The Reliability coefficient value was found to be 0.82. This value indicated that the instrument is reliable for collecting data for the study.

Method of Data Collection

The researcher with the help of two research assistants visited the sampled schools. The researcher, the research assistants work closely with the Biology teacher in soliciting the cooperation of the school and students chosen for the study and with the help of the Biology teacher questionnaire was administered to the respondent in the selected Schools. The respondent was required to answer the research instrument. "availability and use of instructional materials on students' academic performance in Biology Questionnaire (AUIMSAPB)" was used to collect data, which included two (2) sections. SECTION A: Demographic information, School type and Gender. SECTION B: Items on the

availability and use of instructional materials on students' academic performance in Biology.

Method of Data Analyses

To ascertain the degree to which each statement in the questionnaire item was accepted or rejected, the data were analyzed using the Simple percentage.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

The data are presented and analysed to provide answers to the research questions that guided the study.

Presentation of Results

Research Questions 1. What is the availability of instructional materials for teaching Biology in secondary schools?

Table 1: Descriptive statistics on availability of instructional materials for teaching Biology in secondary schools.

S/N	ITEMS	AVAILABLE (%)	NOT AVAILABLE (%)
1.	Biology Laboratory Equipments	59	41
2.	Models of Human Anatomy	37	53
3.	Charts/Diagrams of Plant and Animal Cells	58	42
4.	Flashcards for Definitions and Concepts	61	39
5.	Specimens (e.g., plants, animals for observation)	55	45

According to the results shown in the above table, 59% Biology Laboratory Equipments are available, Models of Human Anatomy 37% available, Charts/Diagrams of Plant and Animal Cells 58% available, Flashcards for Definitions and Concepts 61% available, while Specimens (e.g., plants, animals for observation) 55% available.

Research Question 2. To what extent do Biology teachers in secondary schools use instructional materials in their teaching practices?

Table 2: Descriptive statistics on extent Biology teachers in secondary schools use instructional materials in their teaching practices.

S/N	ITEMS	ALWAYS (%)	OFTEN (%)	SOMETIMES (%)	NEVER(%)
6.	Biology Laboratory Equipments	17	33	37	13
7.	Models of Human Anatomy	13	46	29	8
8.	Charts/Diagrams of Plant and Animal Cells	21	54	18	7
9.	Flashcards for Definitions and Concepts	28	42	17	13
10.	Specimens (e.g., plants, animals for observation)	38	35	14	13

According to the results shown in the above table, 50% of respondents accepted that they always use Biology Laboratory Equipments, Models of Human Anatomy (59%), Charts/Diagrams of Plant and Animal Cells (75%). Flashcards for Definitions and Concepts (70%), 73% agree that always use Specimens (e.g., plants, animals for observation) in their teaching practices.

Research Question 3. What are the factors that influence the use of instructional materials by Biology teachers in secondary schools?

Table 3: Descriptive statistics on factors that influence the use of instructional materials by Biology teachers in secondary schools?

S/N	ITEMS	(SA)%	(A)%	(D)%	(SD)%
11.	Availability of instructional materials.	29	30	30	11
12.	Teacher's Knowledge of Available Materials	17	45	35	3
13.	Teacher's willingness	22	51	25	2
14.	Limited funding for purchasing instructional materials	27	56	14	3
15.	Time Constraints	15	47	33	5

According to the results shown in the above table, 59% of respondents accepted that availability of instructional materials is a factors that influence the use of instructional materials by Biology teachers in secondary schools, 62% respondents accepted that teacher's Knowledge of Available Materials is a factor, 83% feel teacher's willingness is a major factor, Limited funding for purchasing instructional materials (62%), Time Constraints (62%).

Discussion of Findings

From research question one, The study reveal that there are notable variations in the availability of different educational tools that are essential for effective teaching and learning in Biology. the results highlight that while some Biology laboratory resources are reasonably available, there are significant gaps, especially in the availability of models of human anatomy and specimens for observation. This is in line with the finding of Okoli and Osuafor (2020) that almost all the required biology instructional materials are not available in the schools.

From research question two, the result of the study also revealed that teachers in Egor local government area of Edo State are actively incorporating key Biology educational instructional materials into their teaching practices, with a particular emphasis on charts, diagrams, flashcards, and specimens for observation. The relatively high usage rates for models of human anatomy and specimens for observation are particularly promising, as they facilitate hands-on learning and visual comprehension. However, there is room for improvement in the use of laboratory equipment and models of human anatomy, where usage could be increased. This findings are in disagree with the findings of Nwankwo et al (2021) who observed that teachers do not make effective use of instructional materials because the equipment are inadequate.

From research question three, the result of the study reveal that several factors influence the effective use of instructional materials in Biology classrooms in secondary schools.

While the availability of instructional materials is an important factor, teacher willingness, knowledge, and training are equally crucial for ensuring that materials are utilized effectively. Furthermore, issues such as limited funding and time constraints also significantly impact the use of these materials.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

This study's primary goal is to investigate the Availability and use of instructional materials for teaching Biology in egor local government Area of Edo state. Biology students from secondary schools in Egor local government Area of Edo state made up the study's population. It was conducted using a simple random sampling and structured study questions. My supervisor validated the instructment. The researcher delivered the questionnaires to biology students in four secondary schools in Egor local government Area of Edo state state and gathered the responses. simple percentage were used to analyze the data.

The analysis's findings indicated that while instructional materials are available in many schools in Egor Local Government Area, the degree to which they are used effectively depends on several factors, including teacher training, motivation, and resource availability. The study suggests that in order to improve the use of instructional materials in teaching Biology, it is essential to address issues related to funding, teacher preparedness, and time management. Schools should be provided with the necessary resources, and teachers should be supported through professional development programs to enhance their ability to integrate instructional materials into their teaching practices.

Conclusion

The study on the availability and use of instructional materials for teaching Biology in secondary schools in Egor Local Government Area of Edo State has provided valuable insights into the current state of resources available to educators and how these resources impact teaching effectiveness. From the findings, it is clear that while there is a reasonable level of availability of instructional materials such as flashcards, charts, and diagrams, other essential teaching tools, like models of human anatomy and specimens for observation, remain limited in many schools. This scarcity of materials poses a significant challenge to effective Biology instruction. The research also emphasizes that the availability of instructional materials is not the sole determinant of their use. Teacher factors, including knowledge of available materials, willingness to use them, and professional motivation, significantly affect how these materials are integrated into teaching practices. Furthermore, external factors such as limited funding and time constraints emerged as critical barriers, hindering the full utilization of available resources.

Recommendations

The following suggestions have been made based on the study's findings:

1. The government should make an effort to hire qualified teachers who can effectively teach students with the use of Instructional materials.

2. The government and private Schools owners should provide adequate instructional materials in schools.

3. Teachers should schedule time to ensure that students learn and interact effectively with Instructional materials.

4. Students should be taught with the use of Instructional materials in the classroom.

5. Teachers should have a well prepared instructional materials for every lessons to effectively teach their Students.

6. Teachers should be trained on the use of instructional materials in teaching science subjects in schools.

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APPENDIX

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	0.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.710	10

CHECKLIST

AVAILABILITY AND USE OF INSTRUCTIONAL MATERIALS FOR TEACHING BIOLOGY IN SECONDARY SCHOOL IN EGOR LOCAL GOVERNMENT AREA OF EDO STATE.

Keys: Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)

Please kindly tick (√) the appropriate box.

Research Questions 1. What is the availability of instructional materials for teaching Biology in secondary schools?

S/N	INSTRUCTIONAL MATERIAL	AVAILABLE	NOT AVAILABLE
1.	Biology Laboratory Equipments		
2.	Models of Human Anatomy		
3.	Charts/Diagrams of Plant and Animal Cells		
4.	Flashcards for Definitions and Concepts		
5.	Specimens (e.g., plants, animals for observation)		

Research Questions 2. To what extent do Biology teachers in secondary schools use instructional materials in their teaching practices?

S/N	INSTRUCTIONAL MATERIAL	ALWAYS	OFTEN	SOMETIMES	NEVER
1.	Biology Laboratory Equipments				
2.	Models of Human Anatomy				
3.	Charts/Diagrams of Plant and Animal Cells				
4.	Flashcards for Definitions and Concepts				
5.	Specimens (e.g., plants, animals for observation)				

Research Questions 3. What are the factors that influence the use of instructional materials by Biology teachers in secondary schools?

S/N	Factors influencing the use of instructional material	Strongly agree	Agree	Disagree	Strongly disagree
1.	Availability of instructional materials				
2.	Teacher's Knowledge of				

	Available Materials				
3.	Teacher's willingness				
4.	Limited funding for purchasing instructional materials				
5.	Time Constraints				