

**INFLUENCE OF INSTRUCTIONAL MATERIALS ON ACADEMIC PERFORMANCE
OF BIOLOGY STUDENTS IN SENIOR SECONDARY SCHOOLS IN ENUGU EAST
LOCAL GOVERNMENT AREA OF ENUGU STATE**

BY

**ONAH, CHIAMAKA
GOU/U22/BIO/088**

**DEPARTMENT OF SCIENCE AND COMPUTER EDUCATION,
FACULTY OF EDUCATION, GODFREY OKOYE
UNIVERSITY, ENUGU, NIGERIA**

JULY, 2026

TITLE PAGE**INFLUENCE OF INSTRUCTIONAL MATERIALS ON ACADEMIC PERFORMANCE
OF BIOLOGY STUDENTS IN SENIOR SECONDARY SCHOOLS IN ENUGU EAST
LOCAL GOVERNMENT AREA OF ENUGU STATE****BY****ONAH, CHIAMAKA
GOU/U22/BIO/088****A PROJECT PRESENTED TO THE DEPARTMENT OF SCIENCE AND COMPUTER
EDUCATION, FACULTY OF EDUCATION IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF
SCIENCE IN EDUCATION (B.SC.ED)****SUPERVISOR: MR. J. C. EZE****JULY, 2026**

APPROVAL PAGE

This project has been approved for the Department of Science and Computer Education, Faculty of Education, Godfrey Okoye University Enugu, Nigeria.

By

Mr. J. C. Eze
Supervisor

Date

Dr. V. C. Ude
Head of Department

Date

Rev. Bro. Prof. Gregory Ekene Osuji
Dean, Faculty of Education

Date

External Examiner

Date

CERTIFICATION

I, Onah Chiamaka, an undergraduate student in the Department of Science and Computer Education, with the Registration number GOU/U22/BIO/088 has satisfactory completed the requirements for the Degree of Bachelor of Science in Education, the work embodied in this research project is original and has not been submitted in part or full for any other degree of this or any other university.

.....

Onah Chiamaka

.....

Date

DEDICATION

This research is dedicated to *Almighty God*.

ACKNOWLEDGEMENTS

The researcher is immensely grateful to the supervisor, Mr. J. C. Eze for his guidance throughout the various stages of this work. The researcher's gratitude also goes to the Head of Department, Dr. V. C. Ude, who has been there for her in both encouragement and moral support.

The researcher also thanks the Dean, Faculty of Education Rev. Bro. Prof. Gregory Ekene Osuji for his fatherly support throughout the duration of this work. The researcher's appreciation also goes to lecturers in the Departments of Science and Computer Education, Dr. Eziokwu, Dr. Mark, Ugwoke, Dr. Odike, Mr. Ugwu and Mr. Eze, Mrs. Purity, for their assistance which contributes to the successful completion of this work.

The researcher's gratitude goes to her parents, Mr. and Mrs. Onah for their financial and moral support. The researcher also appreciates the amazing siblings, Kosi and Ngozi for their support both financially and otherwise. Finally, the researcher thanks the Almighty God for His infinite love and protection throughout the duration of this work.

TABLE OF CONTENTS

Title Page	i
Approval Page	ii
Certification	iii
Dedication	iv
Acknowledgements	v
Table of Contents	vi
Abstract	viii
 CHAPTER ONE: INTRODUCTION	
Background to the Study	1
Statement of the Problem	7
Purpose of the Study	8
Research Questions	8
Scope of the Study	9
Significance of the Study	9
 CHAPTER TWO: REVIEW OF RELATED LITERATURE	
Conceptual Framework	11
Theoretical Framework	24
Empirical Studies	26
Summary of Review of Related Literature	28
 CHAPTER THREE: RESEARCH METHOD	
Research Design	30
Area of the Study	30
Population of the Study	31

Sample and Sampling Technique	31
Instrument for Data Collection	31
Validity of the Instrument	32
Reliability of the Instrument	32
Method of Data Collection	32
Method of Data Analysis	33

CHAPTER FOUR: PRESENTATION OF FINDINGS

Interpretation of Findings	34
Summary of the Findings	38

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS AND SUMMARY OF THE STUDY

Discussion of Findings	39
Conclusions	41
Educational Implications of the Study	42
Limitations of the Study	42
Recommendations of the Study	42
Suggestions for Further Studies	43
Summary of the Study	43
References	45
Appendix	49
Questionnaire	50

ABSTRACT

This study focused on the influence of instructional materials on academic performance of Biology students in senior secondary schools in Enugu East Local Government Area of Enugu State. Four research questions guided the study. This study adopted descriptive survey research design. The population of the study is 1460. The study's sample consisted of 200 respondents. The instrument used to collect the data was questionnaire. Three experts face validated the instrument. The reliability coefficient was computed using Cronbach Alpha, which gave a result of 0.93. The data were analyzed using mean score and standard deviation. The findings revealed that there is need to make instructional materials available and effectively utilized, so as to enhance the academic performance of Biology students. The following recommendations were made: A seminar or workshop on the use of diverse instructional materials should be organized to acquaint teachers on how to use them to teach especially Biology because of its value in educational system. A committee should be set up to monitor the teachers on the usage of instructional materials like audio visual materials in the teaching of Biology. Education managers should ensure that Biology teachers have educational qualification in Biology as a way of acquainting them with the principles and administration of instructional materials in secondary schools. School administration should ensure that instructional materials are made available for teachers and that they are adequately equipped with the technical know how on how to use them to teach effectively and efficiently.

CHAPTER ONE

INTRODUCTION

Background to the Study

Education in Nigeria has been recognized not only as a tool for nation building but also as a source from which individual Nigerians can realize their goals and aspirations. The vision of every society in modern time is that education should be used as a tool for social change. In other words, if a country desires to bring about a new philosophy, a new orientation, a new social order or a new thinking pattern, the vehicle for such a change is education. It is an investment as well as an instrument that can be used to achieve a more rapid economic, social, political, technological, scientific and cultural development in a country to effect a desired change, through good academic performance (Ocho, 2020).

Academic performance is the outcomes of education, that is extent to which a student, teacher or institution has achieved their educational goals. Academic performance is commonly measured by examinations or continuous assessment; though there is no general agreement on how it is best tested or which aspects are most important. Academic performance refers to the ability of students to study, remember facts and be able to communicate their knowledge verbally or through writing (Chiwelo, 2021). In other words, academic performance refers to how students deal with studies and how they cope with or accomplish different tasks given to them by their teachers.

Here academic refers to performance in tests and examinations. Example a student having A in school examination, the student have better academic performance that those who have B in the same examination. Those having good academic performance have greater chances of being

employed, enjoying employment, earning better remuneration, less inclined to social assistance and less prone to criminal behaviour thus become positive contributors in future life.

It is this consideration which make researchers assert that to prepare the youths adequately for the challenges and demands of the 21st century, performance in academics cannot be relegated, as good academic performance enhance students confidence, makes them more confident in themselves, leads them to choose wide variety of careers and minimize depression in students, makes them feel happy.

There has been a great amount of discussion regarding the metrics of assessing students level of academic performance. In support of the argument that level of academic performance of a student is determined by performance tests / Examinations, observations and, etc, Adesoye (2022) is of the opinion that the indicator or metrics of students level of academic performance include tests/examinations and classroom observations. In corroboration with this, Aremu (2021) noted that academic performance is a cardinal element of teaching and learning activities, measured in terms of the degree to which certain standards of excellent are met and in terms of grades achieved in examinations; and serves to evaluate the extent of mastery of subject matter and skills on applying a body of knowledge. This concern has resulted in variety of concepts related to students academic success such as students seriousness and development of students in using classroom teaching aids, etc., teacher effectiveness, and the position outcome of performance of student in classroom teaching and learning.

Secondary schools not only occupy a vantage point in the educational system in Nigeria, it is also the link between the primary and the tertiary levels of education. Education at secondary school level is supposed to be the bedrock and the foundation towards higher knowledge in tertiary institutions (Asikhai, 2020). This view is supported by Kombaet (2022) who posit, that secondary

school is pivotal in human capital formation and development. Durujiet (2023) emphasises that secondary education is important because tertiary institutions draw from their students. The importance of secondary education is geared towards providing all primary school leavers with the opportunity for education of a higher level irrespective of sex, social status, religious or ethnic background, hence the need for teaching of Biology (Ogoegbulem, 2022).

Biology is the science of life which deals with structural complexity of organisms in their environment. It is a branch of natural science that deals with the study of living organisms, including their structure, functioning, evolution, distribution and interrelationship (Eze, 2020). Biology occupies a unique position in the curriculum of our educational system. The secondary school biology curriculum in Nigeria is designed to continue students investigation into natural phenomena, to deepen students understanding and interest in biological science and also to encourage students ability to apply scientific knowledge to everyday life, in matters of personal, community, health and agriculture among other (Federal Ministry of Education, (FME, 2014). These objectives can never be attained without a teaching strategy that will enable students to develop appropriate skills and knowledge in biology.

Biology as one of the major science subject is of paramount importance to every nation including developing ones. A sound working knowledge of biology is requisite for entrance into such professions like Medicine, Pharmacy, Agriculture, Nursing among others. Therefore a sound theoretical and practical knowledge of Biology is very necessary for the management of our natural resources, provision of good health facilities for the masses, adequate food supply and favourable environment. Most students in secondary schools prefer biology to other science subject because it has less mathematical calculation unlike physics and chemistry and in most cases deals with non-abstract concept. In some cases it may remain the only science subject done

by most arts students, (Ofoegbu, 2021). This accounts for the reason why students that offer biology are usually higher than the number that offers other science subjects respectively. Teaching of Biology requires many approaches including the utilization of instructional materials.

Instructional materials could be defined as "training or educational materials aimed both at sense of hearing and at sense of seeing, such as movies, records, pictures etc. Used in classroom, instruction, in libraries etc. As Dike (2002) also defines it as materials, which do not need just reading to interpret them. This materials interpret information by utilizing the sense of hearing such as sound, or seeing (visual resources), or both senses.

The range of these resources is indeed an impressive element. Anzaku (2021) claims that the word instructional materials typically refers to those audio visual resources, which can carry meaning without total reliance on language or written words. It should be concluded that books and reference sources do not fit in this categories of Audio visual materials, but illustrations does. Certain AV materials, such as presenting a story or doing the diorama and certain events and methods are process and experience in nature. Certain instructional materials like motion pictures, needs an apparatus to unleash its inherent value.

The importance of Instructional materials in the teaching and learning processes cannot be over emphasized. Below are some of the roles instructional materials play in teaching and learning; basing learning in sense experience, extending experience, encouraging participation, stimulating interest, individualizes instructions, serve as a source of information, making leaning permanent (Samuel, 2022). Instructional materials are very important and useful in education because, the normal learner in so far as the functions of his preceptor mechanisms are concerned, gains understanding in terms of multiple impression recorded through the eye, ear, touch and

other series (Ngozi and Isaac, 2021). This is to say that instructional materials are the equipment through which that function can occur, that is does not occur in isolation, rather through a balance pattern from any preceptor mechanism that are stimulated by external occurrences. The reason for this attitude may be because teachers engage themselves in so many other relevant or irrelevant activities. Often time some teaching goals depend on material for planning and utilization of instructional material for some teacher the production of instructional material is only for passing their examination and not for actual use in the classroom.

In the teaching and learning process in biology instruction, instructional materials is necessary for successful teaching and learning process (Ugwuanyiu, 2020). Materials, instructional materials make concepts relatively simple and therefore, teaching and learning of biology become an interesting and worthwhile undertaking (Ogbonna, 2020). However, Instructional materials are those materials that only appeal to sense of sight (Miller, 2020).

Instructional materials, like other kinds of teaching materials is the process or a tool to help learners understand a certain or difficult issue. Visual materials make learners attracted and interesting. Also, visual materials makes it easy for teacher to explanation any concept or idea they may have. Visual materials are teaching aids which are employed in the classroom environment to foster students interest in learning particularly in teaching and learning of biology. Students learn well when they are effectively inspired through different visual aids.

For instance; chalk, blackboard, white board, textbooks, diagrams, maps, pictures, charts, and graphs, for instance (Acho, 2019). Visuals materials are not similar with auditory materials; rather auditory materials is anything that appeals to sense of hearing while visuals materials is everything thatappeals to sense of sight, on the other hand audio visual materials appeal to sense of hearing as well as sense of sight simultaneously. These materials play a role complementary to

or supportive of the verbal activities of the teacher during the learning process, such materials including:- television, computer, laptop, smart phones, filmstrip, slides, movie projector, sound films, vclassroom, multimedia, VCD player, LCD Projector, amongst other (Eze, 2020).

The use of audio – visual materials in teaching and learning comes into the branch of knowledge known as Educational Technology. They aid learning and help in realization of educational objectives. Amin (2020) observed that “teachers now use instructional materials in a more scientific way”. Teachers use them to structure and evaluate their teaching. The use of audio – visual materials like film strips, slides, opaque projectors was recognized as important tools for teaching and learning especially in teaching and learning of Biology. The aims for setting up audio – visual centers is to reduce teaching deficiencies in certain syllabus courses, to provide examples of good teaching which can help upgrade the general ability of classroom instruction, to provide ideal materials that are not generally available in the classroom (UNESCO, 2023).

The use of Audio visual materials in teaching Biology in Senior Secondary School especially in Enugu East cannot be under-estimated. It makes whatever amount of work being done at Senior Secondary School easy and fast. It promotes greater acquisition and high retention of actual knowledge. They provide increased interest and integrated experience. Vikoo (2022), observes that the most suitable Audio visual materials for the effective teaching and learning of the Biology at this information age are audio – visual materials. He describes the audio – visual materials as the instructional system which uses the operations of the scientific and technological equipment combining both visual projections and sound productions to provide tangible experiences to learners. Some of such materials are computer assisted instruction, video-taped instruction and film shows. Baldeh (2020), states that instructional materials have been introduced, tested and tried in the school system and found effective. Rowtree (2022), still,

describes audio – visual materials as the most fitted materials to aid the teachers to inculcate competence in the students. It uses electric method to enhance learning.

In Nigeria, Government made efforts to establish various instructional materials centers in different states because of the aims mentioned above. Despite the government efforts, several factors are seen as problems to achieve the instructional programme in Nigeria. Some of these factors include, “lack of fund, appropriate man power, technical knowhow. Okwor (2022), opined that instructional equipments are lying unused in shelves and cupboards in many schools due to not having technical knowledge to apply in the operations. The problem is therefore, that even when government and schools are able to provide the expensive instructional materials, the ability required for the effective usage may be lacking. Above all, the researcher tends to find out the influence of instructional materials on academic performance of Biology students in senior secondary schools in Enugu East Local Government Area of Enugu State.

Statement of the Problem

Quality education which bridges the gap between developed and developing nations should be urgently provided to increase students level of achievement of the required standards and instruction materials is essential instrument in the delivery of quality education. The inability to access instruction materials in schools, inexperienced teachers, the paucity of fund for the provision of these materials has impeded effective use of instruction materials leading to low level of achievement by the students in Biology as a subject. A WAEC chief examiner report in June 2016/2017 examination results indicated that the candidates scored poor marks in Biology, may this be attributed to the teachers failure to teach with instruction materials or non-availability of such materials in our school?

The poor performance of the secondary schools students in Biology (as evidenced by the poor results in June 2016/2017 WAEC in Enugu East zone) suggest that they have not adequately acquired basic concepts in the course, or that the teachers have neglected using them in their teaching method, hence it can be reasonably asserted that failure of utilizing these materials is an impediment to the effective teaching of Biology resulting in poor performance.

The study therefore, aim to ascertain the effect of instruction materials on Biology students academic performance in secondary school within Enugu East Local Government Area of Enugu State.

Purpose of the Study

The purpose of this research is to determine the influence of instructional materials on academic performance of Biology students in senior secondary schools in Enugu East Local Government Area of Enugu State.

Specifically, the study sought to:

1. determine the available instructional materials used by teachers in teaching Biology in senior secondary schools in Enugu East Local Government Area of Enugu State.
2. determine the influence of using visual instructional materials on academic performance of students in Biology in senior secondary schools in Enugu East Local Government Area of Enugu State.
3. to determine the influence of audio-visual instructional materials on academic performance of students in Biology in senior secondary schools in Enugu East Local Government Area of Enugu State.

4. find out the challenges faced by teachers in the use of instructional materials in the teaching of Biology in senior secondary schools in Enugu East Local Government Area of Enugu State.

Research Questions

The following research questions guided the study,

1. What are the available instructional materials used by teachers in teaching Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?
2. To what extent does visual instructional materials influence academic performance of students in Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?
3. To what extent does audio-visual instructional materials influence academic performance of students in Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?
4. What are the challenges faced by teachers in the use of instructional materials in the teaching of Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?

Scope of the Study

This study has three major scope. The study is Geographical Scope, Content scope and Level scope. This study focuses on geographical location to restrict it self to Senior secondary schools in Enugu East local Government Area of Enugu State, in order to investigate the extent to which instructional materials can impact the academic performance of students in Biology in

senior secondary schools in Enugu East local Government Area of Enugu State. The study content is to determine how many instructional materials is used by biology teachers.

How far teaching Biology with visual Instructional materials helps in improve the academic performance of student in biology. While the study is focused at the Level to investigate the extent of impact that can be found in Biology students SS2 in Senior secondary schools in Enugu East local Government Area of Enugu state.

Significance of the study

This research has been given to both a theoretically and practically importance. Theoretical implication The importance attached to the results of the study, on this work could serve as a step to contribute to empirically relevant data as an empirical data for identifying and explaining the variable role of instructional materials and their influence on the student in secondary schools. This study is based on the assumption of constructivism theory by john dewwey 1933 constructivist appear to conceive the world from perspective where a learner has no option but to carry over personal experiences to product the outcome.

Practically, this study will be of benefit when published to the government, school administrators, teachers, future researchers and the students.

If the finding of this study is published, it will enable the government to understand the benefits of instructional materials and be able to make them available to secondary schools.

The findings of this study will also assist the school administrators in providing leadership role to the school staff in the development of improved facilities through regular workshops/seminars to enable the staff have more knowledge and skills to direct the school activities to have the capacity of utilizing the tools.

This study will serve as a reference material to teachers who wish to find out the impact of instructional materials on student academic performance in Biology in senior secondary school. It will also enable the teachers to understand that the success of any teaching –learning activities is determined by how much the students are able to learn or gain from teaching. This can be achieved through the use of appropriate audio –visual materials.

The findings of this study will serve as a reference to future researchers who wish to embark on further research on similar field. It will enable researchers to understand the impact of comprehension, demonstration, and co-operation in the use of instructional materials in teaching and learning of Biology in senior secondary school.

The students will benefit from the research as it will enlighten them on how to participate and learn easily and appropriately from audio- visual materials.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The literatures related to this study will be reviewed under the following sub-headings:

Conceptual Framework

- Academic Performance in Biology
- Biology
- Concept of Instructional Materials
- Visual Instructional Materials in Biology Teaching
- Audiovisual Instructional Materials and Academic Performance in Biology

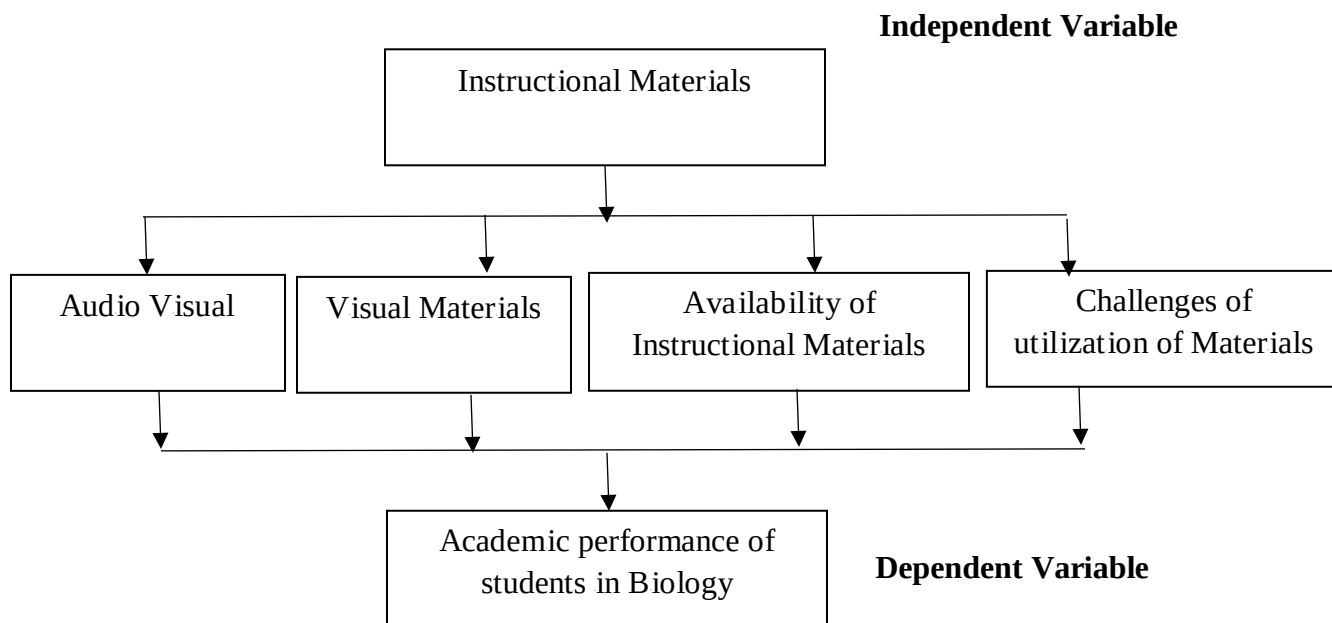
Theoretical Framework

- Constructivist Theory by John Dewey in (1933)

Empirical Studies

Summary of Literature Reviewed

Conceptual Framework



Schematic diagram showing the conceptual framework

Academic Performance

In the literature reviewed, the term Academic Performance seems to appear in diverse forms such as scholastic performance, school achievement, achievement or performance. It refers to how well an individual, group of people, institution, college or a university is doing when undertaking the activity of learning or a standard task; this measure is reflected in students examination marks or scores (Cary & Dave, 2020). Academic performance in schools, colleges, universities or an individual or group is best expressed by an assessment of the capability in which school, college, university, an individual or a group of people performed when provided with learning opportunities and activities or measured by success rates achieved in objective assessments, i.e. Examinations (Ewumi, 2020).

The term Academic performance can also be defined as performance on a test, the amount of information that is successfully learned, quantity and quality of desired outcomes, time required for solving a task or rate of problem solution, quality of reasoning and Critical thinking, retention of knowledge and application of skills, and creativity of response(s) (Stock & Murray, 2022; Mwaniki, 2022).

It acts as one of the important measures to determine the quality of education output. Education experts such as Mwaniki (2022) also define academic performance as students ability to study, retain facts and articulate information through both oral and writing media. In the opinion of Stocker & Murray (2022) academic performance defines the culmination of the education process; the level at which students, instructors and institution have fulfilled the learning objectives.

Biology

Science in natural Science is Biology. Biology derived from the two Greek words Bios and logy, which means Life and study respectively (Ezemoka, 2021). Therefore biology as concept refers to the study of life. As posited by Miller and Levine (2021) Biology is more or less the study of living things such as their structure, function, growth, origin, evolutionary trends and distribution, relationship, problems such as diseases, adjustment to the environment and solutions.

Hence, biology is a branch of natural science to the studying life through the use of inquire method of learning, discovery and so forth. Inquiry in biology promotes inquisitive mind in the students, fosters scientific thinking abilities in order to come up with scientific knowledge and the development of scientific habit like curiosity, open-mindedness creativity etc. Biology as the study of life provides opportunities to employ numerous of inquiry methods of learning. Biology is a natural science to the study of living organisms both plants and animals, which would lead to the management of environmental problems such as erosion, land, air and water pollution, desertification, water hyacinth etc, as revealed by Abugu (2020).

Biology has as cardinal objectives the preparation of the students to acquire (Federal Ministry of Education 2014) the capacity for appropriate laboratory and field work in biology, knowledge which is meaningful and pertinent, the capacity to make intelligent use of the scientific principles to improve the individuals living and community health and agricultural production and the acquisition of reasonable and Functional scientific attitudes.

Studying biology in secondary school can provides the student with a well of beneficial concepts and principles and theories that would see the student navigate through various life experiences and be able to cope after school life. Practical biology is defined as scientific study

of living beings; plants, animals and their environments through field study, observation and experimental work instead of theoretical approach (Magu, 2020).

Instructional Materials

Instructional Materials can be regarded as teaching and learning aids for the purpose of enabling learners to better understand lessons in classrooms, library, or the likes. It is seen as material which contains no reliance on the written text alone to present or explain the material, but can provide meaning via an auditory channel, a visual one, or some blend of channels. Indeed, the number of available types of Instructional Materials is surprising (Dike, 2022).

Instructional Materials in (Anzaku, 2021), is considered as the ones that present information without total dependency on written words. These may be presentable to the learners via audio media, via visual media or via audio-visual media. Instructional components may also be expressed in action, such as in a drama production or the creation of a diorama. Some items such as movies and filmstrips are presented using equipment. An example is the display of photographs. The use of field trips to expand learning experiences can also fall within instructional components. Anzaku (2021), states that Instructional Materials encompasses both material components and equipment; materials consist of the system or content of lessons, while equipment is the instructional aids or mechanism.

The Role of Instructional Materials is a paramount one. Below are some of the functions; It helps to ground learning on direct experiences of seeing and hearing; It expands our experiences of people, objects and places beyond what is possible through firsthand experience alone; It encourages full participation and motivation of learners. It promotes positive attitude toward the learning of particular school subjects or topics; It provides necessary stimulus and support for

learning. It offers learners with diverse ways to access information (Ngozi, Samuel, and Isaac, 2021); Instructional materials promote and ensure effective teaching and learning. Learning through multi-sensory approaches involving the ear and the eyes (as in instructional materials) is very effective and result in a relatively higher and prolonged retention than learning by reading alone. The child has to rely on seeing as well as hearing and in addition in some cases, on the use of his/her sense of touch to derive meaning from them (Eze, 2020).

Instructional Materials when effectively employed can enhance instruction as well as student learning in that they provide clear illustrations of facts, reduce reliance on the teachers oral explanations alone, simplify complex materials, maintain student attention, appeal to diverse learning styles, and ultimately serve as time-savers for both students and teachers (Oketunji, 2022).

The types of instructional materials are primarily classified into two categories, namely Visual and Audio-visual instructional materials.

Visual Instructional Materials

It is a mode of encouraging students to come out to the board to Draw some pictures and ask him/her to describe in simple English. To teach a lesson or a chapter in an effective way, divide the Board into two parts. Use the first part to introduce new terminology of the lesson by giving the family of that particular word and write grammatical points of the lesson and explain. The second part of the board is to be used to write the theme lines of each paragraph one by one so that a teacher can connect and consolidate all the points easily at the end.

Maps are useful material in training English speaking activities to describe route of some place and also used in an activity like Giving directions to the people who are new to the place.

This is one of the important teaching and training materials to motivate students to make posters on various issues and are to be displayed in the flannel board and also used to display collages prepared by students on different concepts. Collage will make students more active and enhance their logical thinking.

Biology laboratory is the platform where students can improve their listening and speaking skills. Describing a picture or a person is one of the activities in which a student can acquire Knowledge on various topics and present them before their Peer group. This activity trains the students how to manage a description of picture or personality more effectively. In addition to the above said visual materials, text books, flash cards, OHPs are playing pivotal roles in helping the trainer as well as the learner in teaching and learning processes of a new language. Thus, these are a bit old methods comparatively with some of the audio visual materials which are getting more prominence in present days.

Audio -Visual Instruction Materials

Globalization is a term which connects all countries with the express expansion and makes use of information and communication technology in business, communication, transportation and education etc. it has been playing a key role in all the stages of growth and progress and leave indelible mark on various core sectors of the society especially on education sector. Modern technologies have made teaching and learning processes much easier by connecting people from far places. Virtual class rooms are useful for fulfilling the gap between academic experts and distance learners through which the learner can get important guide lines from the skilled people by having internet connection. Online classes also can be arranged to clarify the doubts of the learner. Lectures can be recorded and telecasted when the learner is interested.

Television is one of the most useful teaching materials in teaching Biology. It provides diverse programs with realistic situations and scenes which will help the learner to develop listening skills, variations in pitch and voice and also beautiful expressions from good speakers. Many of the programs are broadcasted in simple Biology so that learner can show keen interest to learn. “Dawes (2023) rightly points out that new technologies have the potential to support education across the curriculum”. Teachers must have complete awareness in utilizing latest and advanced resources. Speeches of eminent persons and practice sessions on various areas like simple rhymes, moral stories can be stored and played whenever the learner is interested and also CD player is affordable to many rather than a computer. It is the most useful for the distant learners to get lessons easily.

The two important words which are used intensely in present days are globalization and information technology. As Harry Samuels argues, “Much more recent developments in social media and information technology are taking foreign-language education in new directions” .As world is accelerating towards inventing and using technological equipment in all the sectors. Education field is one of them to use advanced resources for making teaching and learning more fruitful. Computers with internet connection are used widely to teach language skills as well as training in different areas with assorted exercises. Online lectures, which bridge the gap between student and the trainer, also can be arranged from faraway places. The impact of Language Laboratories has been a good deal of experience in the sphere of communication. We exist on a multilingual and multicultural planet, which is being minimized to the extent of a township by the expansion of knowledge and machinery. The language laboratory software available to aid individuals to make use of tools effectively to communicate, it is not just for acquiring a particular language, but can be used for schooling more foreign languages resourcefully. The utilization of

language lab system has transformed the mode of teaching and learner can gain optimum level of knowledge of that particular information.

The general principle is that the more senses that are stimulated, the greater the learning. Devices and materials when used, tend to stimulate the greater number of senses. For that reason, good teachers have always used devices and instructional materials. By a device is meant any aid or tool to the learner other than the subject-matter itself.

A device is the incentives in method of teaching the stimulating and clarifying experiences the pupils mind of what he /she will understand by way of seeing. Since experience is the foundation of all learning, it should as well be assumed to the fact that concrete direct or first-hand experience is the most concrete basis of most learning experiences. The physical difficulty of relating concepts and idea to concrete situations on first-hand basis is sometimes an impossibility of which teacher has to compensate through the usage of words.

The experienced teachers are well aware that words used in classroom will not be enough to create lasting memories, rather good teachers is ever-alert for method and devise which make learning meaningful. Proper planning and selection of various teaching devices or instructional material will lead to the students with ample of experience from which learning can arise.

In the guidance of the student toward a development of his learning through their normal activities, the teachers will recognize very soon how extremely frequently he must use various types of visual, instructional materials. Teachers use of instructional material as teaching material, a use has been on increasing scale since 17th Century (Comenius, 1658 produced *Orbis Pictus*). Instructional materials are considered vital, because; it assists the teachers in bridging the physical gaps of conveying certain informations. Instruction material breaks the distance and communication barrier. The climate of faraway countries and the cultures can be brought into the

class through instruction material in the format of filmstrip and projection. Dike (2022) agrees that "Once the phenomenon is visualize, the picture and knowledge becomes very clear and permanent", and that " One picture is worth thousand words.

Instructional materials are rich opportunities for students to develop communication skill while actively engaged in solving meaningful problems. In other words, students certainly like it more and learn better if they are engaged in important and appealing activities. For example, involving students in bulletin board display will enhance their choice of colour and aid their understanding of the concept in question or when they join the teacher in dramatization of an event or a process Natoli, (2023).

Learning takes place effectively when the teacher sets out to provide learning situation in which a child will learn because of his natural reactions of the provided materials. During the process of learning, the teacher has to provide the learning situation to satisfy the natural reaction of the learner and this is through the use of instructional materials (Katherine (2022). The attention of the learner is caught and his interest is also won and he is ready to learn. Hills (2022) also contributing on the role of instructional materials in stimulating interest stated that “A friendly, accepting group climate is important in any learning situations, especially those materials that require students to reveal their ignorance and confront their fellow students”. When there is a climate of acceptance for learning, then learning is stimulated.

Instructional materials provide a means of individualizing instruction. This he said is possible through programmed learning and tapes which enable the learner to learn at his pace and also to work on his own Lestage (2022). Moreover, according to Dike (2022) the machine frees the teacher to work with individual students, since he or she is not now required to carry out routine drills. Production of resources by students is another way of individualizing instruction.

The child is to think, but he must have the information to with". This audio - visual resources serves, because, the information can be got from the good use of perceptual Audio visual materials especially those provided from our locality. When they are used in the class, their familiarity gives a background for understanding the information (Peterson, 2023). Mcnaught, (2023) also observed that instructional materials are very useful teaching and instructional as well as promotional instructional materials. He further stressed that where consistency of presentation is desirable, instructional materials are useful. They provide experiences not easily secured in other ways and hence contribute to the depth and variety of learning.

Instructional resources can play a major role of making learning permanent. Instructional methods do seem to facilitate the acquisition, the retention and the recall of lessons learned, because, they seem to evoke the maximum response of the whole organism to the situations in which learning is done (Gopal, 2023). And perceptual materials readily associate themselves with the unique experiential background of each individual. Natoli, (2023) stressed that instructional materials are important in the teaching and learning processes because "Having seen something, most people remember, for whatever that thing was, it conjures up an image at a mere mention and can be talked about freely.

Influence of the Use of Instructional Materials

The teacher who uses devices can usually maintain the full attention of the class. This is generally true in the lower grades. Devices should never be used by the teacher as mere attractions. Exposure to visual or instructional material and nothing more is not educative. Devices stimulate the imagination, of the students. Mental imagery can be used as a vehicle of thought and as a means of clarifying ideas.

The most widely accepted use of devices, whether visual or instructional, is its use in aiding understanding. Learning can be sped up by using models, movies, filmstrips, and pictorial material to supplement textbooks. Material devices give significance and colour to the idea presented by the teacher. Abstract ideas can be made concrete in the minds of the students by the use of devices. Diagrams and graphs, for example, are very useful in developing understanding in social studies and in mathematics. The graph is a good device in representing mathematical facts Natoli, (2023).

The use of devices, such as pictures and objects, arouses emotion and incites the individual to action. The teacher must select the right kind of device to excite the students to worthwhile intellectual activity. Asking the students to collect pictures representing water, air, land transportation will stimulates them to action.

The ability to listen can be developed best through the use of instructional materials. It is also the responsibility of the school, to provide training for our students to be good listeners. Training in the art of listening is one of the aims of instructional education. In determining the type of instructional materials to be used for the conveyance of information in Biology, the following factors were outlined by Bakare (2022). There is a concern that multitude of students in a class will have a negative impact in the student because most of them will not be able to see or hear what the teacher is teaching. The class may be noisy and rowdy, it would be more logical and efficient to use microphone in this kind of situation for the presentation of information. If the subject matter is such that is diversified, it may involve the use of more than one audio visual material in order to achieve its objective. The topic of the subject must be considered in order to determine the kind of material to use.

Time is always limited and has its effect upon the kind of material to be used, if there should be ample time, the teacher is more likely to use other techniques that encourage maximum participation of the students. But when there no time, the teacher is limited from the strategies and would engrave to talking and the use of chalkboard only. The kind and extent of physical facilities and the instructional materials available will determine the effectiveness of the teacher. This is one of the major factors that affect the use of audio visual materials in teaching Biology in secondary schools.

Most teachers have personal reference and more security conscious in using some of the selected materials. Nevertheless, the teacher should use the method that which is suitable for her. This does not mean that she should not be sensitive to other development that supplement or improve upon the instructional materials she frequently uses.

Similarly, Balogun (2022) explained school environment as the physical and material resources, otherwise known as infrastructural facilities available to teaching and learning processes. Fakomogbon (2020) also observed that one of the causes of failure in Nigerian secondary school is inadequate school resources. He further explained that it cannot be over-emphasized that the provision of adequate performance in schools. Most of our schools lack necessary infrastructural facilities required for effective teaching and learning of Biology.

In the present study emphasis is laid on the effects of instructional materials in the teaching and learning of Biology. For effective teaching and learning to occur, it would require the use of audio visual instructional material for the teacher to be able to impart his knowledge to the learners. According to Barlo (2023), it would appear that most Biology teachers are of the opinion that effective learning is to a larger extent a product of the use of Instructional materials because they helps the teacher to bring the world to the classroom.

The literature search however indicates that to the best of the researchers knowledge there is a scarcity of researchable materials on this topic in the area of instructional materials in teaching and learning of Biology in Nigeria and beyond the researcher, hence the decision of researcher to fill the identified gaps in the available literature in order to serve as a reference point for future researchers. Therefore, instructional instructional materials must be made to influence teaching and learning at the secondary school in Enugu East local government area of Enugu state

Theoretical Framework

This research uses John Deweys constructivist theory of 1933 as a basis. Constructivist Theory, developed by John Dewey in 1933, can be viewed as a personal construction where the student is asked to use their own experience in order to create something either an object or an outcome. Its an epistemological approach to learning.

Constructivists argue that knowledge cannot simply be transmitted from a teachers brain to a students brain and that knowledge is constructed by the learner.

Learning is defined as the construction of knowledge and understanding in which learners gain knowledge and understand the regularity of world events and information in an ongoing manner that may never be fully realized. It is also stipulated that learning becomes more meaningful for the student when he is actively constructing and accommodating meaning and using previously acquired knowledge to build new learning experiences. Interactive approaches to teaching and learning using instructional materials explain better the process in learning. There are five phases in Interactive Learning Approach, and these are: preparatory phase, exploratory phase, students question phase, students investigation phase and reflection phase.

Preparation: this first phase involves identifying previous knowledge that the students possess about the topics and then gathering of the available instructional materials together with the students. In preparation, teachers with instructional materials ask questions to and encourage students discussions that will motivate and stimulate student curiosity in order to grasp knowledge or information the students may have on the topic being taught. Students question: this phase involves questions and clarification that come from the students. Students investigation: this phase is all about how students can use investigative approaches like experimentation, asking questions or consulting with experts for example to gain insight or information about the questions chosen through exploration of books and research articles and also, asking experts.

Reflection: in the last stage, the students are expected to record and present the findings of the investigations, evaluate and reflect on how to come up with solutions. In addition to the previously mentioned phases, further questions and evaluations, which could also be discussions and sharing with students is encourage. Students select topic, plan it, work it out and reflect on it when using active instructional materials and then they finally apply the knowledge that is acquired from these learning exercises in their environment, under the teachers close guidance.

Thus, an approach based on instructional materials allows for exploration, problem solving and an increase in constructive interaction between the learners, their environments, and each other.

The theory is related to this present study because it conveys the teacher with the idea to construct an interactive learning approach for the student which will make the teacher to gain insight into the idea or knowledge of the student about a particular topic during teaching and learning process.

Empirical Studies

Many studies have been carried out on the application of instructional materials in teaching and learning.

The following research work were reviewed for the study: Barlo (2023), carried out a research study entitled: “The availability and utilization of instructional materials in teaching Biology in selected secondary schools in Lagos State” the target population was two hundred and fifty (250) secondary schools out of which, twenty five (25) secondary schools were selected as the sample using systematic sampling. The instrument used in collecting the data was questionnaire. Five (5) null hypotheses were stated which were tested using the learners of Biology. He finds out that the instructional material (audio visual) has negative relationship in the teaching and learning of Biology in the selected secondary schools in Lagos State. The gap therefore is that while Barlo (2023), research study was carried out in Lagos State, this present study is carried out in Enugu state. The study reviewed tries to find out the availability and utilization of instructional materials while the present study investigates the influence instructional materials has on students academic performance.

On the other hand, Popoola (2023) investigated the effect of instructional resources on the academic achievements of students in Ogun State. Five secondary schools in Abeokuta were used for this study. Questionnaires were designed to elicit responses on instructional resources that were available for the teaching and learning of each of the three school subjects he examined. He collected WASC examination results for five years and compared achievements of students in schools with adequate instructional resources and achievements of students in schools with inadequate material resources. He found a significant difference in the achievements of the two sets of students. The schools with adequate instructional resources performed better than those with

inadequate instructional resources. The gap therefore is that while popoola (2023), investigated on the effect of instructional resources on the academic achievement of students in Ogun State, this present study investigated on the influence of instructional materials on academic performance of students in Biology in senior secondary schools in Enugu East local government area of Enugu state.

Instructional materials influence the academic achievement of students in all subjects. Moronlola (2023) carried out a research in Ilorin local government of Kwara State. She also used questionnaires to tap information on the Instructional Resources Available for the teaching of ten subjects in ten secondary schools. She collected WASC examination results for the past five years and related these to students achievements in each of the ten subjects and to the amount of Resource Available for the teaching of the subject. She also reported a significant effect of instructional resources on the academic achievements of students in each of the subjects. The gap therefore is that while Moronlola (2023), research study was carried out in Kwara State, this present study is carried out in Enugu state.

The research study of Akolo (2023) who conducted a survey of instructional materials for eight Teacher Training Colleges in Kwara State and for twelve Teachers Colleges in Plateau State of Nigeria. His study considered such elements as equipment and resources owned by each of the selected teachers colleges, utilization of equipment and resources owned, and the number of teachers that had some measure of instructional related training. The study revealed that there was under-utilization of instructional equipment in some areas and non-utilization in other areas where the research was conducted. The gap therefore is that while Akolo (2023), conducted a survey on instructional materials for Eight Teachers Training Colleges in Kwara State and Eight Teachers

College in Plateau State of Nigeria, this present study is focused on the Influence of instructional, differ in population and sample size.

Research, has confirmed that the use of instructional materials has a great positive influence on teaching and learning. Oshadumi (2022), also carried out a research study entitled: “impact of instructional materials on students, and the Academic Achievement in Biology at secondary schools in Okene LGA, Kogi State”. The population was Seventeen (17) secondary schools out of which Ten (10) were selected as the sample by sample randomized. The instrument for data collection was questionnaire. Four (4) null hypotheses were stated which were tested using correlative coefficient test statistics at 1.00 level of significant. All the four hypotheses were rejected. The result showed that about 65% of the respondents made use of instructional materials effectively which had positive impact on the students, but also bring about an enhance respect for the teachers knowledge of the subject. Instructional materials are also described as concrete or both to the sense organ during teaching (Aginna-Obu, 2023). The gap therefore is that while Oshadumi (2022), research study was carried out in Okene local government of Kogi State, this present study is carried out in Enugu East local government area of Enugu state.

Summary of Reviewed of Related Literature

From the review of related literature which was presented under Conceptual Framework, it covers academic performance, Biology, instructional materials, visual Instructional Materials and Audiovisual Instructional Materials. Theoretical Framework was anchored on Constructivist Theory by John Dewey (1933), Empirically, works of some scholars were reviewed like Barlo (2023), Oshadumi (2022), Aginna-Obu, (2023), Popoola (2023), Moronlola (2023) and Akolo (2023). The findings revealed that many scholars argued that for academic performance of students to improve, there must be instructional materials that will give the students a clearer

picture of what the lesson is all about and as well, motivate the students to learn and saves the teacher the energy of much explanation during instructional process. Also the types of instructional materials were identified, under audio resources, visual resources and instructional resources in combination. Also the uses of instructional materials in teaching were explained such as; extending experience, stimulating interest, encouraging participation, making learning permanent, serves as a source of information. The factors that influence instructional materials were explained as; the space of time available for teaching with instructional materials, the number of students in a class, facilities and materials available. On this note, this study tends to establish an empirical base on the influence of instructional materials on academic performance of students in Biology in secondary school in Enugu East Local Government Area of Enugu State which is the gap this study tends to fill.

CHAPTER THREE

RESEARCH METHOD

This chapter discussed the method adopted in carrying out the study, which include; Research Design, Area of the Study, Population of the Study, Sample and sampling Techniques, Instrument for Data Collection, Validation of Instrument, Reliability of the instrument, Method of Data Collection and Method of Data Analysis.

Research Design

This study adopted descriptive survey research design. Descriptive survey research design, according to (Osuala, 2017), focuses on people, their opinions, attitudes, motivation and behaviors. Osuala further stated that descriptive survey identifies the present conditions, prevailing needs as well as provides information on which to base sound decision. This research design was applied because an intact number of populations were expected to be used.

Area of Study

This study was carried out in public senior secondary schools in Enugu East Local Government Area of Enugu State. Enugu East has its headquarters at the town of Nkwo Nike. Enugu East is made up of three zones/districts which are: Nike-Uno, Ugwogo and Mbuli Njodo. It has an area of 383 square kilometers and a population of 279,089 inhabitants at the 2006 census. Enugu East is one of the seventeen Local Government Areas that made up the Enugu Town Urban Area.

This area of study was considered appropriate for the present study because Enugu East local government area of Enugu state were among the privileged local government areas that received government assistance in the provision of Information Communication Technology

(ICT) and other teaching instructional materials. Hence, the researcher investigated whether those instructional materials influence academic performance of students in Biology in the senior secondary schools.

Population of the Study

The population of this study is 1460. The population consists of teachers and students of Biology in Enugu East Local Government Area of Enugu State. The population according to the census figure released by the Post Primary School Management Board (PPSMB) Enugu in 2025/26 was obtained from ten (10) secondary schools in Enugu East Local Government area. The total number of teachers of Biology in senior secondary is two hundred and fifty seven (57) teachers and 1,403 students which gave the total of 1460 as the population of the study (PPSMB, 2025/2026).

Sample and Sampling Technique

The sample size of the study is 200 respondents. The researcher used simple random sampling techniques in deciding the particular schools to investigate. Five (5) senior secondary schools out of 10 senior secondary schools in Enugu East local government area were sampled to give a fair representation of the schools in the local government. Twenty (20) teachers were randomly selected, four (4) teachers from each selected school, thirty six (36) students was randomly selected from each of the five selected secondary schools in Enugu East local government, giving a total of one hundred and eighty (180) respondents. Generally, two hundred (200) respondents was the sample size of the study.

Instrument for Data Collection

The instrument used for data collection was checklist and questionnaires which was developed by the researcher. It was structured based on the research questions which guided the study. The questionnaires items was structured using four points likert rating scale of Strongly Agree (SA), Agree (A), Disagree (D) Strongly Disagree (SD) for research question 1 and 4 while Very High Extent (VHE), High Extent (HE), Very Low Extent (VLE) and Low Extent (LE) for research question 2 and 3. Each research questions contained 5 cluster items which make the research to have a total of 20 cluster items.

Validation of Instruments

The two instruments checklist and questionnaire on influence of instructional materials were subjected to face validity by three experts; two from Science and Computer Education and one from Measurement and Evaluation. These experts are from the Faculty of Education of Godfrey Okoye University Enugu. The questionnaires items were critically examined and possible corrections and suggestions made were done by the researcher before final production of the two instruments.

Reliability of the Instrument

For the reliability of this study, the researcher employed Cronbach Alpha reliability test to ascertain the reliability of the questionnaire. A pilot study was conducted in five (5) secondary schools in Enugu North Local Government Area which were not part of the sample used in the study. The researcher after sharing out the questionnaire to the respondents to elicit their responses at different occasions collected it from them. The data obtained was used to compute the reliability

coefficient using the Cronbach Alpha which gave a result of 0.93. This showed there is high degree of association between the two results.

Method of Data Collection

The questionnaires were administered to students and teachers in the five (5) selected senior secondary schools in Enugu East Local Government Area of Enugu State by the researcher with the help of two research assistants that was given one-day training by the researcher on how to administer and retrieve the questionnaires. The questionnaire was collected on the spot by the researcher with the help of research assistant. 100% return rate of the questionnaire was achieved.

Method of Data Analysis

The data collected was analyzed using mean score and standard deviation. If Strongly Agree (SA) was rated 4, Agree (A) was rated 3, Strongly Disagree (SD) was rated 2, and Disagree was rated 1. To ascertain the benchmark for decision rule, $4 + 3 + 2 + 1 = 10$ divided by 4 scales equal to 2.50. The decision rule was that any items that receive a mean rating of 2.50 and above was regarded as accepted while any mean rating below 2.50 was regarded as rejected.

CHAPTER FOUR

PRESENTATION OF DATA AND RESULTS

This chapter is devoted to the analysis and interpretation of data collected in the process of this study.

Research Question 1: What are the available instructional materials used by teachers in teaching Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?

Table 1: Respondents responses on available instructional materials used by teachers in teaching Biology in senior secondary schools

N = 200

S/N	Available Instructional Materials used by Teachers in Teaching Biology	A	%	NA	%	DECSION
1	Chats	138	69.0	62	31.0	A
2.	Maps	131	65.5	69	34.5	A
3.	Chalkboard	110	55.0	90	45.0	A
4.	CDS	122	61.0	78	39.0	A
5.	Virtual classroom	179	89.5	21	10.5	A
6.	Projector	149	74.5	51	25.5	A
7.	Picture	7	3.5	193	96.5	NA
8	Computer	154	77.0	46	23.0	A

From the table above, it can be seen that responses from 1-5,6 and 8 with the percentage of 69.0, 65.5, 55.0, 61.0, 89.5, 74.5 and 77.0 are with greater percentage and shows that those instructional materials were available for teaching and learning of Biology which improve their academic performance in senior secondary schools in Enugu East Local Government Area of Enugu State.

Research Question 2: To what extent does using visual instructional materials influence academic performance of students in Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?

Table 2: Respondents responses on the extent using visual instructional materials influence academic performance of students in Biology in senior secondary schools

N = 200				
S/N	Extent visual instructional materials influence academic performance of students in Biology	MEAN (X)	STD	DECISION
9.	Charts are utilized to teach Biology in secondary school	3.3	0.66	Accepted
10.	My Biology teacher uses map to teach in the class	3.25	0.65	Accepted
11.	Chalkboard are used to teach Biology in secondary schools	3.1	0.65	Accepted
12.	My Biology teacher uses picture to teach Biology in the class	3.4	0.68	Accepted
13.	Virtual classroom are used to teach Biology in secondary schools	3.0	0.60	Accepted
14.	My Biology teacher uses projector to teach Biology in the class	3.3	0.66	Accepted
15.	Computer are used to teach Biology in secondary schools	3.25	0.65	Accepted
16.	CDs are used to teach Biology in secondary schools	3.1	0.65	Accepted
	Grand Mean	3.21	0.64	Accepted

From the table above, it can be seen that responses from 9,10,11,12, 13, 14, 15 and 16 with the mean scores of 3.3, 3.25, 3.1, 3.4, 3.0, 3.3, 3.25, 3.21 and standard deviation of 0.66, 0.65, 0.62, 0.68, 0.60, 0.65, 0.65, 0.64 were above cut off point of 2.5 and therefore accepted, which shows that charts, maps, chalkboard, pictures, and virtual classrooms, projector, computer, CDs are utilized for teaching of Biology which influence academic performance of students in Biology in secondary schools in Enugu East Local Government Area of Enugu State.

Research Question 3:

To what extent does audio-visual instructional materials influence academic performance of students in Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?

Table 3: Respondents responses on the extent audio-visual instructional materials influence academic performance of students in Biology in senior secondary schools
N = 200

S/N	Extent does audio-visual instructional materials influence academic performance of students in Biology	MEAN (X)	STD	DECISION
17.	Virtual Classroom are utilized during teaching of Biology in secondary schools	3.1	0.62	Accepted
18.	Television are utilized in teaching and learning of Biology in secondary schools	3.3	0.66	Accepted
19.	CD player are utilized in teaching and learning of Biology in secondary schools	3.4	0.68	Accepted
20.	My teacher utilize Computer with sound System while teaching of Biology in the class	3.7	0.74	Accepted
21.	Students uses Projector for presentation in the class while teaching of Biology in secondary schools.	3.3	0.66	Accepted
	Grand Mean	3.36	0.67	Accepted

From the table above, it can be seen that responses from 1,2,3,4, and 5 with the mean scores of 3.1, 3.3, 3.4, 3.7, and 3.3 and standard deviation of 0.62, 0.66, 0.68, 0.74, and 0.66 were above cut off point of 2.5 and therefore accepted that virtual classroom, television, CD player, computer and projector are utilized for teaching and learning of Biology thereby influence academic

performance of students in Biology in secondary schools in Enugu East Local Government Area of Enugu State

Research Question 4:

What are the challenges faced by teachers in the use of instructional materials on academic performance of students in Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?

Table 4: Respondents Responses on the challenges faced by teachers in the use of instructional materials on academic performance of students in Biology in senior secondary schools

N = 200				
S/N	Challenges faced by teachers in the use of instructional materials	MEAN (X)	STD	DECISION
1.9	Inexperience teachers to use the instructional materials in teaching and learning of Biology influence secondary school students.	3.35	0.65	Agreed
20.	Large class size influences the use of instructional materials in teaching and learning of Biology.	3.3	0.67	Agreed
21.	Inadequate power supply to operate the instructional materials in teaching and learning of Biology influence secondary school students.	3.3	0.58	Agreed
22.	Lack of fund to purchase instructional materials for teaching and learning of Biology in secondary schools influence academic performance of Biology Students	3.15	0.63	Agreed
23.	Teachers lack of improvisation experience in teaching and learning of Biology influence academic performance of Biology students in secondary schools	2.9	0.66	Agreed
	Grand Mean	3.2	0.63	Agreed

From the table above, it can be seen that responses from 19,20,21,22, and 23 with the mean scores of 3.35, 3.3, 3.3, 3.15, and 2.9 and standard deviation of 0.65, 0.67, 0.58, 0.63, 0.66, and 0.63 were above cut off point of 2.5 and therefore agreed with the statement that Inexperience teachers to use the instructional materials in teaching and learning of Biology influence secondary school

students. Large class size influences the use of instructional materials in teaching and learning of Biology. Inadequate power supply to operate the instructional materials in teaching and learning of Biology influence secondary school students. Lack of fund to purchase instructional materials for teaching and learning of Biology in secondary schools influence academic performance of Biology Students Teachers lack of improvisation experience in teaching and learning of Biology influence academic performance of Biology students in secondary schools are challenges faced by teachers in the use of instructional materials.

Summary of the Findings

- Percentage response of respondents shows that some listed instructional materials were available for teaching and learning of Biology which improve their academic performance in senior secondary schools in Enugu East Local Government Area of Enugu State.
- Utilized for teaching of Biology which influence academic performance of students in Biology in secondary schools in Enugu East Local Government Area of Enugu State.
- virtual classroom, television, CD player, computer and projector are utilized for teaching and learning of Biology thereby influence academic performance of students in Biology in secondary schools in Enugu East Local Government Area of Enugu State
- Teachers lack of improvisation experience in teaching and learning of Biology influence academic performance of Biology students in secondary schools are challenges faced by teachers in the use of instructional materials.

CHAPTER FIVE

DISCUSSION, CONCLUSION, EDUCATIONAL IMPLICATION, RECOMMENDATIONS AND SUMMARY OF THE STUDY

This chapter shows the result of the study, based on the data interpretations made in chapter four which are examined and inference drawn from there.

Discussion of the Findings

The discussion of the findings was treated under the following subheadings:

- Available instructional materials used by teachers in teaching Biology in senior secondary schools
- Extent using visual instructional materials influence academic performance of students in Biology in senior secondary schools.
- Extent audio-visual instructional materials influence academic performance of students in Biology in senior secondary schools
- Challenges faced by teachers in the use of instructional materials on academic performance of students in Biology in senior secondary schools

Available instructional materials used by teachers in teaching Biology in senior secondary schools

From the table 1, the results show that those instructional materials were available for teaching and learning of Biology in senior secondary schools in Enugu East Local Biology Area of Enugu State. This result is in line with the research work of Barlo (2018) who carried out a research study on the availability and utilization of instructional materials in the teaching of Biology in selected secondary schools in Lagos State. His result shows that the instructional materials has a negative relationship in the teaching and learning of Biology in the selected

secondary schools in Lagos State due to lack of availability. Eze (2020) revealed that instructional materials play a role complementary to or supportive of the verbal activities of the teacher during the learning process, such materials including:- television, computer, laptop, smart phones, filmstrip, slides, movie projector, sound films, vclassroom, multimedia, VCD player, LCD Project, amongst other.

Extent using visual instructional materials influence academic performance of students in Biology in senior secondary schools.

From the table 2, the results show that charts, maps, chalkboard, pictures, and virtual classrooms are utilized for teaching of Biology in secondary schools in Enugu East Local Government Area of Enugu State. This result is in line with the research work of Oshadumi (2019), who carried a research study on the influence of instructional materials on students, and the academic achievement in Biology in secondary schools in Okene L. G. A. of Kogi State. The result of his study shows that about 65% of the respondent made use of instructional materials effectively which has positive influence on the students and also enhance the teachers knowledge of the subject. Also Aginna-Obu (2020) described instructional materials as concrete or both to the sense organ during teaching. Ngozi, Samuel, and Isaac, (2021) revealed that Instructional materials promote and ensure effective teaching and learning. Learning through multi-sensory approaches involving the ear and the eyes (as in instructional materials) is very effective and result in a relatively higher and prolonged retention than learning by reading alone.

Extent audio-visual instructional materials influence academic performance of students in Biology in senior secondary schools

From the table 3, the results show that virtual classroom, television, CD player, computer and projector are utilized for teaching and learning of Biology in secondary schools in Enugu East Local Government Area of Enugu State. The results is in line with Dawes (2018) study which

rightly points out that new technologies have the potential to support education across the curriculum". Teachers must have complete awareness in utilizing latest and advanced resources. Speeches of eminent persons and practice sessions on various areas like simple rhymes, moral stories can be stored and played whenever the learner is interested and also CD player is affordable to many rather than a computer. It is the most useful for the distant learners to get lessons easily. Dawes (2023) also revealed rightly points out that new technologies have the potential to support education across the curriculum". Teachers must have complete awareness in utilizing latest and advanced resources.

Challenges faced by teachers in the use of instructional materials on academic performance of students in Biology in senior secondary schools

From the table 4, the results shows that inexperience teachers to use the instructional materials in teaching and learning of Biology influence secondary school students, large class size influences the use instructional materials in teaching and learning of Biology, inadequate power supply to operate the instructional materials in teaching and learning of Biology influence secondary schools, lack of fund to purchase instructional materials for teaching and learning of Biology in secondary schools, teachers lack of improvisation experience in teaching and learning of Biology influence secondary school students. This results is in agreement with the findings of Popoola (2020) who investigated the effect of instructional resources on the academic achievement of student in Ogun State. He compared achievement of students in schools with adequate instructional materials and achievement of students in schools with inadequate instructional materials. He found out that students in schools with adequate instructional materials has a greater academic achievement than students in schools with inadequate instructional materials and this is regarded as a challenge in the academics of students in schools with inadequate instructional materials. Bakare (2022) equally revealed that there is a concern that

multitude of students in a class will have a negative impact in the student because most of them will not be able to see or hear what the teacher is teaching.

Conclusion

It is observed that, to enhance the teaching and learning of Biology, instructional materials must be made available in schools because they stimulate teaching learning processes. Effective use of visual and audio visual instructional materials by the teacher will improve academic performance of the student in Biology. However, it is observed that there are factors that limit the use of audio visual materials in the teaching and learning of Biology in Enugu East Local Government Area of Enugu State.

Implications of the Study

The result of this study has obvious implication to the teaching and learning on Biology in secondary schools, therefore it is recognized that there is need to make instructional materials available and effectively utilized, so as to enhance the academic performance of Biology students. However, insufficient fund and noninvolvement of Biology in the provision and maintenance of instructional materials can destabilize the teaching and learning processes. On the other hand, lack of supervision of the teacher by the educational board contribute to the teacher's negligence in the use of audio visual materials that are readily available in the school, incompetence also limit the teacher to use of audio visual materials.

Limitations of the study

The researcher encountered some challenges on the process of carrying out this study. They include:

1. Inappropriate filling of the questionnaire by the respondents.

2. Some of the respondents fail to attend to the researcher while giving them the questionnaire.

Recommendations of the study

On the basis of the results obtained from the research and the literature reviewed, the following recommendations were made after examining the influence of instructional materials on academic performance of Biology students:

1. A seminar or workshop on the use of diverse instructional materials should be organized to acquaint teachers on how to use them to teach especially Biology because of its value in educational system.
2. A committee should be set up to monitor the teacher on the usage of instructional materials like audio visual materials in the teaching of Biology.
3. Educational managers should ensure that Biology teachers have educational qualification in Biology as a way of acquainting them with the principles and administration of instructional materials in secondary schools.
4. School administration should ensure that instructional materials are made available for teachers and they are adequately equipped with the technical knowhow on how to use them to teach effectively and efficiently.

Suggestions for further studies

In view of the information to the study, the researcher suggests that further studies should be carried out on:

1. The role of audio visual instructional materials in enhancing the quality of teaching and learning in secondary schools in Enugu East Local Government Area of Enugu state.

2. Problems encountered by the teachers in the use of audio visual instructional materials in teaching and learning Biology in secondary school in Enugu East Local Government Area of Enugu State.

Summary of the Study

This study investigated the influence of instructional materials on academic performance of students in Biology in secondary school in Enugu East Local Government Area of Enugu State, the researcher developed a descriptive survey with a sample size of two hundred (200) respondents from the five (5) selected senior secondary schools in Enugu East Local Government Area of Enugu State. The study examined three (3) research questions and analyzed using mean score.

Findings reveal that instructional materials are resource materials that enhance the teaching and learning of Biology, which should be made available in schools. The improvements of class room instructions largely depend on the effective use of audio visual materials by the teacher. However, irregular power supply, limited time and teachers incompetence are factors that limit the use of instructional materials in secondary schools in Enugu East Local Government Area of Enugu State.

REFERENCES

- Abugu, W. (2020). Using Video in Theme-based curricula, in Stempleski, S. and Arcano, P. (Eds.) *Video in Second Language teaching: using, selecting and producing video for the classroom*. Teachers of English to speakers of other languages, INC.
- Adesoye, O. (2022). *Young Learners Second Language Visual Literacy Practices*. Oxford: Inter-Disciplinary Press.
- Adeyemo (2020). *Teachers, schools and academic achievement* (working paper 6691, revised). Cambridge, MA: National Bureau of Economic Research.
- Akolo, H. (2023). Image Schema: The cognitive psychological reality of image schemas and their transformations in Geeraert (ed.) *Cognitive Linguistics: Basic Readings*, 239-268 Berlin: Mouton de Gruyter.
- Amin, (2020). *Educational Research: Basic Issues and Methodology*. Ibadan: Wisdom Publishers.
- Anzaku, L. (2021). What animated illustrations conditions can improve technical document comprehension in young students? Format, signaling and control of the presentation *European Journal of Psychology of Education*, 20 (4), 369-388.
- Aremu, D. (2021). Audiovisual material can facilitate teaching qualities, *Journal of education and research*, ISSN 120-5509
- Asikhai, G. (2020). *Strategies and Tactics in Secondary School Teaching*: The Macmillan Company, New York.
- Bakare, L. (2022). *Production and Utilization of Educational Media*. Lagos: Raytel Communications Ltd.
- Baldeh, A. (2020). *Graphics for Learning: Proven Guidelines for Planning, Designing, and Evaluation visuals in Training Materials*, San Francisco, CA: Pfeiffer.
- Balogun, T. A. (2022). *Improvisation of School Science Teaching Equipments*. Journal of The Science Teachers Association of Nigeria, 20 (2), 32- 44.
- Barlo, H. (2023). *Fundamentals of Educational Technology*. Uyo: Dorand Publishers.
- Cary, W. and Dave, R. (2020). Trend of teaching and learning of science in Nigeria Secondary School. *Journal of Research in Teaching*, 3 (1), 20-21. Mwaniki, (2022).
- Chiwelo, N. (2021). *Teaching in the Middle and Secondary Schools, Planning for Competence*; United States of America; Macmillan Education Ltd Publishers; pp 36.

- Dawes, C. (2023). *Socio cultural theory and 2nd Language Learning*. Oxford University Press.
- Dike, G. (2022). Faster than the speed of thought: Vision, perceptual learning, and the pace of cognitive reflection, *Journal of Visual Literacy*, 21(2) Autumn, 107-122.
- Durujiet, P. (2023). *Teacher-Made Instructional Materials for Quality Delivery of Teaching and Learning*. Owerri: Kezz Publishers.
- Eze, C. (2020). *Secondary school head teachers, quality assurance strategies and challenges in Gucha district, Kenya*.
- Ezemoka, P. U. (2023). The eyes know it? Training the Eyes: a theory of Visual Literacy *Journal of Visual Literacy*, 28(2), 163-185.
- Ezemoka, P. U. (2021). Visual Representations and Learning: The role of Static and Animated Graphics in D.H. Jonassen (ed.) *Handbook of Research for Educational Communications and Technology* (865-913). New York: SENugun and Schuster.
- Ernest-Ehibudu, D. & Oporum, M. (2022). *The poor learning and its special status*. London: Methuen press.
- Ewumi, K. (2020). *School size and the interpersonal side of education*. An Examination of Race/Ethnicity and Organizational Context. *Social Science Quarterly*, 85(5), 1259-1274.
- Fakomogbon, Y. (2020). *ducational Psychology*. University of Nigeria Enugu Campus. Unpublished Manuscript
- Gopal, E. (2023). *The Use of Instructional materials in Teaching of Sciences in Secondary Schools in Onitsha North Local Government Area, Anambra State*.
- Hills, S. (2022). *Effects of Instructional Instructional materials on the Academic Performance of Students of Secondary School Students in Ogbomoso North and Central Local Government Areas of Oyo State*. Unpublished Work. Ondo State University.
- Katherine, O. (2022). *The Place of Instructional Instructional materials in Curriculum Development and Education*. Ibadan: Evans Brothers Publishers Limited.
- Kombaet, M. (2022). Enhancing the potentials of students through the use of instructional materials. *African journal of Education*.4(1), 33-45.
- Lestage, H. (2022). *Discovering Music in Early Childhood*. Newton: Library of Congress Cataloging.
- Moronlola, H. (2023). Using Visual Organizers to enhance EFL instruction *ELT Journal*.

- Miller, G. and Levine, M. O. (2023). Criteria for selecting video materials in Stempleski, S. and Arcano, P. (eds.) *Video in Second Language teaching: using, selection and producing video for the classroom*. Teachers of English to speakers of other languages.
- Miller, G. (2020). *Instructional Involvement in Teachers' Turnover: The Way Forward, in Perspective on Critical Issues in Nigerian and African Education*. Onitsha: Cape Publishers International.
- Natoli, N. (2023). *Teachers' and Students' Instructional materials in Teaching and Learning*. Ibadan: International Publishers.
- Ngozi, A. and Isaac, C. (2021). The use of Media in Language Teaching, in Celce-Murcia, M. (ed.) *Teaching English as a second or foreign language* (459-475) Boston:
- Ocho D. (2020). Engaging students in Active Learning: The case for personalized multimedia messages *Journal of Educational Psychology*, 92(4)
- Ofoegbu, G. (2021). From Silent Film to YouTube: Tracing the Historical Roosts of Motion Picture Technologies in Education *Journal of Visual Literacy*, 28 (1),27.
- Ogoegbulem, F. (2022). Curriculum Instruction: An Introduction to Methods of Teaching. London, Macmillan: Education. pp10.
- Ogbonna, K. (2020). Practical Aspects of using Video in the Foreign Language Classroom *The internet TESL Journal*, retrieved from <http://itestlj.org/articles/canningvideo.html>.
- Oketunji, A. (2022). *A Visual Context-Aware MultEnugudal System for Spoken Language Processing*.
- Okorie, (2020). Teaching of Government in secondary schools. *Journal of science teachers Association of Nigeria*. 25 (1), 120-130.
- Okwor, U. (2022). A rough guide to Cognitive Linguistics in Geeraert (ed.) *Cognitive Linguistics: Basic Readings*, 1-28 Berlin: Mouton de Gruyter.
- Oshadumi, J. (2022). *Technology, e- Learning and Distance Education*. London: Roulledge Press.
- Peterson, R. (2023). Nigerian Scientists and Science Teachers Perception of the processes and product of Science. *Journal of Science Teachers Association of Nigeria*, 24(1), 134-147.
- Popoola, D. (2023). *Instructional Technology and Media*. New York: Hill and Book Co.
- Rowtree, K. (2022). The use of Media in Language Teaching, in Celce-Murcia, M. (ed.) *Teaching English as a second or foreign language*.

- Samuel, O. (2021). Effects of presentation interference in learning with visuals, *Journal of Visual Literacy*, Spring, 23 (1), 41-68.
- Stocker, P. and Murray, K. (2022). *Utilization of teaching aids of teaching economics in Secondary Schools in Osun State* .Unpublished Bsc project University of Nigeria Nsuka.
- Vikoo, P. (2022). Pictorial Illustrations still Improve students Learning from Text *Educational Psychology Review*, 14 (1), March.

APPENDIX A

Department of Sciences and Computer
Education
Godfrey Okoye University
Enugu.
March, 2026

Dear Respondent,

REQUEST FOR FILLING OF RESEARCH INSTRUMENT

The researcher is an undergraduate student of the above named University, who is conducting a research on the influence of instructional materials on academic performance of Biology students in senior secondary schools in Enugu East Local Government Area of Enugu State.

I want to appeal to you to kindly fill the items in the questionnaire. The research is purely an academic exercise, and any information given will be treated confidentially and will only be for the purpose of this study. Please try to respond correctly to the items, as your co-operation would be highly appreciated.

Thanks for your anticipated cooperation.

Yours sincerely

.....
Onah Chiamaka Anna

CHECKLIST AND QUESTIONNAIRE

SECTION A: Demographic information

Instruction: please tick (✓) in the spaces provided.

Gender: Male ☐ Female ☐

Categories of Class (students): SS1 ☐ SS2 ☐ SS3 ☐

Name of School (Optional).....

SECTION B:

Instruction: please tick (✓) in the space provided in accordance to the Available-(A), Not Available-(NA)

Cluster 1: Checklist on available of instructional materials used by teachers in teaching Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?

S/N	Which of the following instruction materials is available in your school	A	NA
1	Chats		
2.	Maps		
3.	Chalkboard		
4.	CDS		
5.	Virtual classroom		
6.	Projector		
7.	Picture		
8	Computer		

SECTION C

Instruction: please tick (✓) in the space provided in accordance to the Very Great Extent (VGE), Great Extent (GE), Low Extent (LE), and Very Low Extent (LVE)

Cluster 2: Utilization of visual instructional materials

S/N	To what extent are the visual materials utilized for teaching Biology in your school	VGE	GE	LE	VLE
1.	Charts are utilized to teach Biology in secondary school				
2.	Biology teachers use map to teach in the class				
3.	Chalkboard are used to teach Biology in secondary schools				
4.	Biology teachers use pictures to teach Biology in the class				
5.	Virtual classroom are used to teach Biology in secondary schools				

SECTION D

Instruction: please tick (✓) in the space provided in accordance to the Very Great Extent (VGE), Great Extent (GE), Low Extent (LE), and Very Low Extent (LVE)

Cluster 3: Utilization of audio-visual instructional materials influence academic performance of students in Biology in senior secondary schools in Enugu East Local Government Area of Enugu State?

S/N	To what extent are audio-visual materials utilized in teaching Biology in your school	VGE	GE	LE	VLE
1.	Virtual Classroom are utilized during teaching of Biology in secondary schools				
2.	Television are utilized in teaching and learning of Biology in secondary schools				
3.	CD player are utilized in teaching and learning of Biology in secondary schools				
4.	My teacher utilize Computer with sound System while teaching of Biology in the class				
5.	Students uses Projector for presentation in the class while teaching of Biology in secondary schools.				

SECTION E

Instruction: please tick (✓) in the space provided in accordance to the Strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD)

Cluster 4: Challenges of utilization of instructional materials

S/N	What are the challenges of utilizing instructional materials in teaching Biology in your school?	SA	A	D	SD
1.	Inexperience teachers to use the instructional materials in teaching and learning of Biology influence secondary school students.				
2.	Large class size influences the use of instructional materials in teaching and learning of Biology.				
3.	Inadequate power supply to operate the instructional materials in teaching and learning of Biology influence secondary schools.				
4.	Lack of fund to purchase instructional materials for teaching and learning of Biology in secondary schools influence academic performance of Biology students				
5.	Teachers' lack of improvisation experience in teaching and learning of Biology influence academic performance of Biology students in secondary school				

APPENDIX C

Sample Size of the Study

Education Zone	School	Teacher	Student
Enugu East	National Grammar School, Nike	4	36
	Girls secondary School Abakpa Nike	4	36
	Community Secondary School Ugwuogo Nike	4	36
	Community High School Emene	4	36
	Girls Secondary School Emene	4	36

Total = 200

Source: Field Survey, (2026)