UNIVERSITÉ DE YAOUNDÉ I
****
CENTRE DE RECHERCHE ET DE FORMATION DOCTORALE(CRFD) EN SCIENCES HUMAINES, SOCIALES ET ÉDUCATIVES
****
UNITÉ DE RECHERCHE ET FORMATION DOCTORALE EN SCIENCES DE L'ÉDUCATION ET INGÉNIERIE EDUCATIVE
****
FACULTÉ DES SCIENCES DE L'ÉDUCATION
****
DÉPARTEMENT DE CURRICULA ET EVALUATION

THE UNIVERSITY OF YAOUNDE I
****
DOCTORAL RESEARCH AND TRAINING CENTER(DRTC) IN SOCIAL AND EDUCATIONAL SCIENCES
****
DOCTORAL RESEACRH AND TRAINING SCHOOL IN EDUCATION AND EDUCATIONAL ENGINEERING
****
FACULTY OF EDUCATION
****
DEPARTMENT OF CURRICULUM AND EVALUATION

THE USE OF INSTRUCTIONAL MATERIALS ON GEOLOGY STUDENT'S ACADEMIC PERFORMANCE IN FRANKY COMPREHENSIVE SECONDARY SCHOOL IN YAOUNDE VI

A dissertation submitted and defended on the 26th July 2023 in fulfilment of the requirements for the award of a master's of education in curriculum and evaluation.

*Speciality: **Curriculum development and Evaluation***

By:

NGENYI Gisela ANULEH
Bsc. in Geology
Matricule: 20V3137

Jury

Ranks	Names and grade	Universities
President	MAINGARI Daouda, Pr	UYI
Supervisor	MOUPOU Moïse, Pr	UY II
Examiner	SHAÏBOU Abdoulaï HAJI, CC	UY I

DECLARATION

I, NGENYI GISELA ANULEH hereby declare that this work (***The Use of Instructional Materials on Geology Student's academic Performance in Franky Comprehensive Secondary School in Yaounde VI***) with the exception of quotations and reference contained in published works which have all being identified and duly acknowledge is entirely my own original work, and it has not been submitted, either in and part or whole, for another degree elsewhere.

Student's name: NGENYI Gisela ANULEH

Signature:

Date

ACKNOWLEDGEMENTS

I am most grateful to my supervisor Prof MOUPOU Moïse for his technical and professional inputs during the entire period of my research. He worked tirelessly to correct my work and offered pieces of advice whenever i consulted him.

I wish to express sincere appreciation to Dr. Mbeh for his unlimited support and encouragement throughout my research.

I equally acknowledge and appreciate all the entire lectures of CEV for uploading in my mind the necessary theoretical skills that were needed to carry out this study.

My gratitude also goes to the principal of Franky Comprehensive Secondary School who allowed me to conduct the research in their school, head of Geology department and students who responded to my questionnaire. I thank you all for your generous contribution and cooperation during the data collection exercise.

Finally, I express special thanks to my lovely husband Mr Fotaw Brice, my family for their financial, moral and spiritual support towards my education.

God bless each and every one who in diverse ways contributed to the success of this research work and my education.

DEDICATION

This work is dedicated to my lovely husband Fotaw Brice for his encouragement and inspirations as well as my sons Atabong Alva, Nkendem Alvin and family for being there for me when I was undertaking the Master's program.

TABLE OF CONTENT

ABBREVIATIONS

ANOVA: Analysis of variance

ICT: Information communication technology

SPSS: Statistical package for the social sciences

IM: Instructional material

LIST OF TABLES AND FIGURES

Tables

Figures

ABSTRACT

The purpose of this study is to examine the use of Instructional materials in the teaching and learning of geology in Franky Comprehensive Secondary School in Yaounde VI. The research design adopted was the quasi-experimental of pretest-posttest non- randomized control group. The main objective of the study was to establish if there is significant difference in academic performance in geology between students exposed to geology instructional materials and those not exposed. The specific objectives were to assess the available instructional materials used in teaching and learning of geology in the study area. Influence of instructional material questionnaire were administered. SPSS and excel were used to analyze the data in descriptive statistical forms. Pearson correlation coefficient was used to test the statistical significance between the post-test scores of experimental and control groups with a 0.05 level of significance. There was a significant difference between the post-test mean score of students exposed to the use of instructional material and those not exposed. These findings implied that the use of instructional material had a significant influence in the performance of geology at Franky Comprehensive Secondary School. It is highly recommended that instructional materials for teaching of geology should be made adequately available and monitor the use and maintenance of the materials in various schools in higher secondary schools in Cameroon. Teachers should use different instructional materials to meet different learning style and needs of students, educational seminars on the effective use of instructional materials in teaching and learning process should be carried out at the beginning of each academic year, textbooks writers should simplify their textbooks and used bright and colorful pictures and diagrams to capture learner's attention.

KEY WORDS: Print, Audiovisual, Audio, Visual

RESUME

Le but de cette étude est d'examiner l'utilisation du matériel didactique dans l'enseignement et l'apprentissage de la géologie au Franky Compréhensive Secondary School de Yaoundé 6. Le modèle de recherche adopté était le groupe témoin quasi-expérimental de pré-test-post-test non randomisé. L'objectif principal de l'étude était d'établir, s'il existe, une différence significative dans le rendement scolaire en géologie entre les étudiants exposés au matériel didactique de géologie et ceux qui ne le sont pas. Les objectifs spécifiques étaient d'évaluer le matériel didactique disponible utilisé dans l'enseignement et l'apprentissage de la géologie dans la zone d'étude. Le test de rendement en géologie des étudiants a été administré. SPSS et Excel ont été utilisés pour analyser les données sous forme de statistiques descriptives. Pearson corrélation coefficient été utilisés pour évaluer la signification statistique entre les scores post-test des groupes expérimentaux et témoins avec un niveau de signification de 0,05. Il y avait une différence significative entre le score moyen post-test des élèves exposés à l'utilisation de matériel didactique et ceux non exposés. Ces résultats impliquent que l'utilisation du matériel didactique a une influence significative sur les performances en géologie à Franky Comprehensive Secondary School. Il est fortement recommandé que le matériel didactique pour l'enseignement de la géologie soit mis à la disposition des élèves de manière adéquate et de contrôler l'utilisation et l'entretien de ce matériel dans les différents établissements secondaires du Cameroun. Les enseignants doivent utiliser différents matériels pédagogiques pour répondre aux différents styles d'apprentissages et besoins des élèves. Des séminaires pédagogiques sur l'utilisation efficace du matériel pédagogique dans le processus d'enseignement et d'apprentissage doivent être organisés au début de chaque année scolaire. Les rédacteurs de manuels doivent conceptualiser leurs manuels et les utiliser des images et des diagrammes lumineux et colorés pour capter l'attention des apprenants.

MOTS CLES : **Imprimer, Audiovisuel, Audio, Visuel**

CHAPTER ONE
INTRODUCTION

Given the international need to manage natural hazards, industrial pressures, and sustainability, geology has become an essential topic for primary and secondary school students worldwide Geology is the study of how Earth's materials, structures, processes, and organisms have changed over time. The major concepts in geology include Earths systems, plate tectonics, geologic time, Earth's structure, Earth's minerals, fossils, landforms, processes that shape the earth, weathering and erosion, radioactivity, rock composition, and the rock cycle. Geologists conduct studies to locate rocks that contain important metals that are extracted from mines and locate and produce oil, natural gas, and groundwater. It includes the study of organisms that have inhabited our planet. Geologists study Earth processes such as (landslide, earthquakes, floods, volcanic eruptions), Earth materials (oil producer from wells, metals produced from mines and water) Rocks that contain important metals, Earth history (climate change). Geology can be very interesting and rewarding career. Geologists work in a variety of settings. These includes: Natural resource companies, environmental consulting companies, government agencies, nonprofit organizations and Universities. (Hobart.M.King, 2015)

Geologists also use historical geology to understand climate change (Schweingruber, Keller, & Quinn, 2012; Dodick & Orion, 2003).Geology knowledge not only is important because of the science in itself, but a multitude of practical approaches: the exploration of natural resources (ores, oil and gas) the understanding and prediction of natural disasters (earthquake and tsunami, volcano eruptions). Geoscientists are the caretakers of the earth's materials and environment: They investigate the earth and it's components; Forecast weather; Develop best plans for land use Provide important information for solving problem and establishing policies for the management of resources, environmental protection, public safety, health and welfare.

The following career opportunities are available to the geologists. Atmospheric scientist, soil scientist, mineralogist, Geochemist, Volcanologist, economic geologist, seismologist, geomorphologist, economic geologist etc.

This research work investigates the influence of instructional materials on student's performance in Franky Comprehensive secondary school in Yaounde VI Centre Region of Cameroon. The town of Yaounde has a surface area of 68.953km2 covering 10 divisions.

Franky is a private institution and as such? The principal is answerable to the management of the school. The organization of the administrative set up is highly bureaucratic nature with defined roles and functions. At the top of the pyramid shaped structure is the Management, followed by the Principal who is assisted by 1 vice principals who serves as the dean of studies and is responsible fordrawing of the time-tables. Next is a discipline master in charge of discipline and punctuality of students and the aciduity of teachers, the bursar who is responsible for all financial matters. Students close the bottom rank after the school prefects who assist the discipline masters.

Teaching is a transformational process that involves the transfer of knowledge and skills from a more experienced individual (teacher) to the learner. Teaching is a set of events designed to initiate, activate and support learning(Koko, 2015). Teaching geology like every other subject requires the use of instructional materials to help gain the attention of the learner and to further explain concepts. The absence of instructional materials hinders the efficiency in teaching. The use of instructional materials in teaching geology remains the gateway to achieving set objectives as Ubulom and Ogwunte (2017) emphasized that instructional resources and facilities are very necessary for the utmost realization of the goals of education.

When instructional material is use properly, it influences student's performance positively and when it is not used or poorly used it influence student's performance negatively. The researcher in this chapter will treat background of the study, statement to the problem, research objectives, research questions, and research hypotheses, significant of the study, justification of the study, the scope of the study and definition of terms.

Background of the study.

Instructional materials are used to describe the resources teachers use to deliver lesson in teaching and learning process in order to improve student's performance, the importance of quality and adequate instructional materials in teaching and learning can occur through their effective utilization during classroom teaching .Instructional materials here includes all the tools that the teachers can use to make the learning more interesting and memorable like; textbooks, power point,

kits, pictures, real objects, videos and many more. For retentive learning to take place, the teacher has to make use of instructional materials that would enable him to teach effectively. Schools combine classroom science teaching with laboratory experiments to ensure that their students grasp each and every concept well. It is also believed that laboratory teaching and experiments are conducted to encourage deep understanding in students. Students are able to retain the knowledge for longer period when experiments are performed in their presence (Bajaj, 2017). Other instructional materials and equipment determine the method a teacher uses in teaching. The method adopted could be, demonstration, experimental, discussion and many more (Effiong, Ekpo, & Igiri, 2015).

The background of the study will include: historical background, theoretical background, conceptual and Contextual background.

Contextual background.

In some schools in Cameroon, some teachers do not use instructional materials in most of their teaching topics; while they try to do all they could during their practical teaching in their course of study; even though some of these materials are not usually available in the schools for teachers us. The effectiveness of utilizing appropriate instructional materials in teaching and learning of science is not void of quality instructor. In order to give quality education to the younger generation, there is need for employment of more competent, experienced. The teaching of Geology in Cameroon schools needs to be properly handled. Geology contributes to the Nation's economic development, hence, the need to be taught thoroughly if it is to meet the educational and economic development.

The frequent use of instructional materials in teaching and learning process especially Geology, offers students and teachers exciting and motivating means for involvement, active participation and even timely feedback. During the period of teaching practice, I noticed that there was inadequate use of instructional material in the teaching of geology. It is common for teachers in the classroom rushing through explanation of complicated concepts expecting students to grasp the concept within a few minutes of the lesson time. This often make some geology concepts to be difficult for students to understand without the use of print, visual, audio and audiovisual materials.

Historical background of the study.

Here, I shall look at the historical background of my independent variable that is historical background of Instructional materials. The teaching /learning process needs different type of instructional materials such as: Print, Audio, Visual, Audiovisual etc. According to Oni (1992), Instructional resources are teachers' strategic factor in organizing and providing education. This is so because they help to elaborate a concept that the teacher could not without an instructional material. This allows students to learn more comfortably therefore influencing positively their academic performance. Writing on the role of instructional material in teaching and learning. Balogun (1982) commented that science education programs cannot be taught effectively without the existence of equipment for teaching. This is because instructional materials help those who learn to develop solving skills and scientific attitudes. Elaborating further on the same point, Ajayi and Ogunyemi (1990) emphasize that when instructional materials are provided to meet relative needs of teaching process, students will have access to the reference materials mentioned by the teacher, and also each student will be able to learn at his or her own space. The overall result is that students will perform much better. According to Adeogun (2016), schools, whose teachers use more instructional resources perform better than those that do not use instructional materials.

Theoretical background of the study.

According to Kerlinger (1973) a theory is a set of interrelated construct, definition and preposition that present a systematic view of phenomena, by specifying relationship between variables. The various theories i will use in my work will be; Cognitive Theory of Multimedia learning (1947), Jerome Bruner Theory of Cognitive development (1915-2016), Piaget's theory of cognitive development (1952)

Richard Mayer's Cognitive Theory of Multimedia learning (CTML) is centers on the idea that people learn more deeply from words and pictures than words alone (Mayer, 2009). For example, using multimedia tools for learning makes learning more meaningful. One of the principles aims of Multimedia instruction is to enable the learner to build a coherent mental representation from the presented material. The relevant of this theory in this study is because students learn better when visual instructional materials are combined in the teaching and learning process.

Piaget's theory of cognitive development (1952)

According to Piaget theory of development (1952), an organism tries to establish an equilibrium or balance between itself and the entire environment in which it operates. In his opinion, for an individual to associate and accommodate any learning, he must have developed physiologically into certain stages or levels such as; the sensory motor stage (0-2), the operational stage (2-7), concrete operational stage (7-11) and formal (11 years and above).

Skinner's theory (march 20,1904-august 18, 1990)

Skinner was an American psychologist, behaviorist, inventor, and social philosopher. Considered the father of behaviorism, he was the Edgar pierce professor of psychology at Harvard university from 1958 until his retirement in 1974.Considering free will to be an illusion, Skinner saw human actions, a theory he would articulate as the principle of reinforcement; if the consequences to an action are bad, there is a high chance the action will not be repeated becomes stronger. Skinner developed behavior analysis, especially the philosophy of radical behaviorism, and founded the experimental analysis of behavior. He also used operant conditioning to strengthen behavior, considering the rate of response to be the most effective measure of response strength

Jerome Bruner Theory of Cognitive development (19915_2016).

According to Jerome Bruner the most effective way to develop a coding system is to discover it rather than being told by the teacher which implies that students construct their own knowledge for themselves. Teachers should encourage students to discover principles by themselves with the help of instructional materials. This theory is important in this study because teachers can use instructional materials to help students to be active and discover their own learning.

Conceptual background of the study

The conceptual framework shows that the independent variables are teachers' use of different types of instructional materials and the dependent variable is students' performance. The independent variables are visual, print, audio and audio visuals materials which teachers use in the classroom during the teaching and learning process. The dependent variables include meeting the needs of student, improved students' understanding, prompt reasoning, make students to participate well and improved performance.

The concepts that will be use in this study are:

- Geology
- Instructional material
- Academic Performance.

Geology is the study of the earth, the materials of which it is made, the structure of those materials and the processes acting upon them (Mosher, Chris & Mathew, 2017).

Remillard and Heck (2014) defines instructional materials as resources that organize and support instruction, such as Textbooks, tasks, and supplementary resources.

Harmer (2017) refers to instructional materials as a variety of teaching aids to explain language meaning and construction engage students in a topic or as the basis of a while activity.

Students' Performance

This is achievement or attainment of high or low academic score and standard.

Narad and Abdullah (2016) opined that the performance of students determines the success or failure of any academic institution. According to Narad and Abdullah (2016) student performance is the knowledge gained which is assessed by marks by a teacher and or educational goals set by students and teachers to be achieved over a specific period of time; measured through examinations or continuous assessments but there is no general agreement on how it is best evaluated.

Student's performance refers to how well a student is accomplishing his/her tasks and studies. In educational institutions, success is measured by academic performance or how well a student meets standards set out by curriculum planners or policy makers and the institution itself.

Statement of the problem.

There is need to introduce and use teaching or instructional materials that can help students to enhance their understanding of what they are been taught in the classrooms.

There are a lot of instructional materials that are available for secondary school learners. Despite the availability of these materials, both teachers and learners make little or no use of it as far as learning is concerned. They are either ignorant of their usage or inexperienced. So therefore,

this research work is geared at bring to a limelight the appropriate utilization of these instructional materials as far as teachers and learners are concerned in other to influence student's academic performance positively. Instructional materials provide opportunities for students to broaden and deepen their knowledge by providing a variety of first hand appropriate experiences and by helping students acquire symbolic knowledge through their experiences (Gustiani, Widodo, & Suwarma, 2017). Instructional materials are important in teaching and learning and inadequate in many schools (Kerr,2003). Instructional materials are tools used by teachers to facilitate curriculum implementation. To respond to the above problem, this research will be guided by the following.

The following research objectives guided the study.

General objectives

- To find out the influence of the use of instructional materials on the teaching and learning of geology student's academic performance in Franky Comprehensive secondary school in Yaounde VI

Specific objectives.

- To find out the use of print instructional material on student's academic performance in Franky Comprehensive secondary school in Yaounde VI
- To find out the use of audio material on student's academic performance in Franky Comprehensive Secondary School in Yaounde VI
- To find out the use of visual material on student's academic performance in Franky Comprehensive Secondary School in Yaounde VI
- To find out the use of audio-visual material students' academic performance in Franky Comprehensive Secondary School in Yaounde VI

Research questions.

General research question.

- What is the use of instructional materials on student's academic performance in Franky secondary school in Yaounde VI?

Specific research questions.

- What is the influence of print instructional materials on student's academic performance in Franky Comprehensive Secondary School in Yaounde VI?
- What is the influence of audio instructional materials on student's academic performance in Franky Comprehensive Secondary school in Yaounde VI?
- What is the influence of visual instructional materials on student's academic performance in Franky Comprehensive Secondary School in Yaounde?
- What is the influence of audio-visual instructional materials on student's academic performance in Franky Comprehensive Secondary School in Yaounde VI?

Research hypotheses.

The following research hypothesis guided the study.

General hypothesis

HO: Instructional materials do not influence student's academic performance in the secondary schools.

Specific hypothesis.

H0: Print instructional materials do not influence student's academic performance in the secondary schools.

H0: Audio instructional materials do not influence student's academic performance in the secondary schools.

H0: Visual instructional materials do not influence student's academic performance in the secondary schools.

H0: Audiovisual instructional materials do not influence student's academic performance in the secondary schools.

Scope of the study

Nwanna (2014) defined scope as "range of things that an activity deal with". The scope of this research will be limited to thematic scope and geographical scope.

Geographical scope

This research will be carryout in Yaounde VI of the Centre Region of Cameroon.

Thematic scope

This study will examine the context of the topic based on the area of specialization. The scope will look at Instructional materials and student's performance in schools. It falls under the domain of Curriculum Development and Evaluation, in the field of Science of Education. Instructional materials also known as teaching and learning process is one of the major principles of curriculum development.

Significance of the study.

Significance of the study to the Teachers.

This study will assist teachers in secondary schools to adopt the consistent use of instructional materials in the classroom to facilitate learning \ teaching process. It will inculcate in teachers the habits of using instructional materials since the use of instructional materials in teaching make learning interesting and bring fort determination.

Significance of the study to the Government and school's proprietors.

The study will steer government and proprietors of schools to recognize the need to adequately equip their schools with current appropriate instructional materials etc. Since the use of instructional materials have a positive impact on student's result since it enhances effective understanding in the learners, it will therefore enable the government to produce more instructional materials to all schools to increase productivity in education.

Significance of the study to Curriculum planners and Developers.

This study will enlighten the curriculum planners and Developers with many suggestions for materials and different types of materials to be included into the curriculum.

Significance of the study to the parents

This study will enlighten the parents on the importance of availability of the use of instructional materials to their children since they are the provider of instructional materials such as textbooks, handouts etc to the learners.

Significance of the study to writers of textbooks

Textbooks are produced in different forms, students like textbooks and workbooks etc. This study will impark the textbooks writers with knowledge on how to improve their writing of textbooks and others materials used in the teaching and learning process in secondary schools.

Justification of the study.

Instructional materials stimulate student's learning. The use of instructional materials in the classroom has the potential to help the teacher explain new concepts clearly.

Lockheed (2019) says instructional materials are critical ingredients in learning and that the curriculum could not be easily implemented without them. Knochlar (2017) adds that a teacher who has adequate and relevant teaching facilities is more confident, effective and productive. Steel (2014) also share similar sentiments, who asserts that relevant instructional materials enable the learners to have clear understanding. Instructional materials are very important to the teaching and learning process, but often teachers do neglect them during their lessons. Learners are motivated when instructional materials are used effectively, and the lesson taught is meaningful which will enable students to learn clearly and equally afford them with opportunity of making use of instructional materials. Meaningful learning can only take place through the active participation of the learners.

Agugbem (2018) views instructional materials as equipments, objects, and information materials which the teacher uses to facilitate the learning process. The learning process is an expensive article on the part of the students but makes it attractive and acceptable is the nature of instructional materials through which the topic is presented by the teacher. Instructional materials are important to the teaching and learning process, but often teachers do neglect them during their lesson. When instructional materials are used effectively, they help to simplify what is being taught, motivate learners and make the lesson meaningful. The idea of making teaching and learning meaningful, functional and purposeful is to enable the students see what are to learn clearly and also afford them the opportunity of making use of instructional materials. Learning tend to be more effective when individual actively participate in learning experience

In a nutshell, Romiszowski (2018); Walkin (2012) and Hills (2016) conclude on the fact that if instructional materials are properly selected and used, the following will occur;

- Different skills would be acquired by students
- Students would be actively involved during lessons
- Knowledge acquired will be retained for a longer time.
- Learning will be meaningful

From the above views, it is clear that instructional materials are essential for effective teaching and learning in secondary schools.

CHAPTER TWO: LITERATURE REVIEW.

Talking about instructional materials and student's performance, is not really a new area of study in research, so in this part of research work we will be looking at what other authors have written. The researcher in this chapter will focus on the following: review of concepts, review of theories, and empirical literature review.

Critical review of scientific literature.

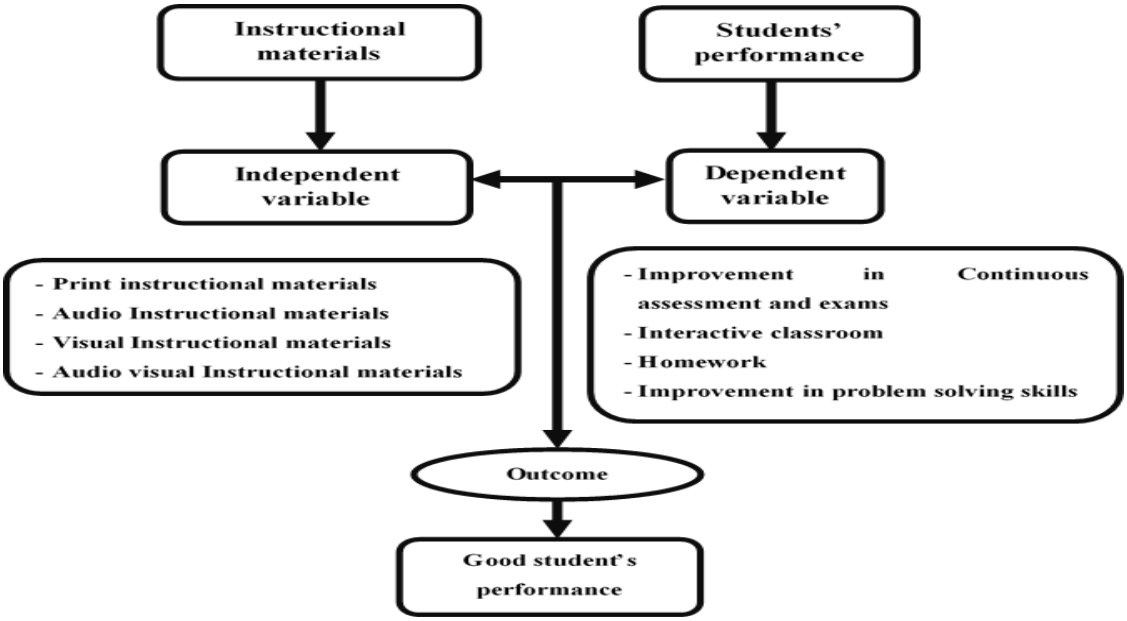
Literature review is "a summary of the writings of recognized authorities and previous research that provide evidence that the researcher is familiar with what is already known and what is still unknown and untested ". Amin (2005) citing best.

Conceptual review

I will review literature base on the concept use in the research topic “INSTRUCTIONAL MATERIALS ON STUDENT’S PERFORMANCE “. The researcher will further be reviewed literature based on the sub variables of the study which are; Prints instructional material, Visual, Audiovisual, Audio instructional materials. To measure student's performance, we measure their grade in continuous assessment and in final exams, which we can also measure their performance through their participation in class activities and their problem-solving skills.

Conceptual Framework.

Figure 1: Relationship between the variables



Outcome

Good performance of geology secondary school's students.

Concept of instructional materials

Amos & al (2022); The two fundamental words instructional and media will be defined in an attempt to define the term instructional material. It is important to note, however, that instructional content is also known as media. Instruction is a planned organization of experiences inside the learning space' such as the classroom, laboratory, or workshop, with the goal of assisting students in advancing desired changes in behavior or performance.

Media is used to refer to television, satellite communication, computers, and other advanced modern technologies. Now, instructional materials, as the name implies, are visual and audio-visual tools that aid in the concretization of abstract concepts and ideas in the teaching and learning process. They're also materials that are used to help students learn more effectively. Instructional material as any device with instructional content or function that is used for teaching purposes, such as books, supplementary reading materials, audio visual and other sensory materials, script for audio and television instruction, and computer manage sets of materials for construction and manipulation. Instructional resources that aid in the facilitation of teaching and learning. The utilization of instructional materials not only encourages tutors and students to collaborate, but it also encourages students to participate in more cooperative learning activities (Amos& al,2022)

Instructional materials are objects or devices that assist the tutor in making learning meaningful to the students. Instructional media as "all available human and material resources that appeal to the students' senses of seeing, hearing, smelling, tasting, touching, or feeling and aid in teaching and learning. When learners are given the opportunity to study through more than one sense, they learn more quickly and easily. Because they stimulate students to study more, the usage of instructional material gives the tutor with engaging and appealing platforms for communicating information. In conjunction with the instructor, instructional material is a channel of communication through which information is passed for use in educational situations. When reading the description of instructional material, it becomes clear that the purpose of the material is to assist students in their learning (Amos & al, 2022)

Abdu-Raheem (2016) views instructional materials as essential and significant tools needed for teaching and learning of school subjects to promote teacher's efficiency and improve student's performance. This means that instructional materials serve as a guide to the teaching and learning processes through the logical and sequential preparation and presentation of lessons. Instructional materials can collectively said to be all things that are used to support, facilitate, influence or encourage acquisition of knowledge, competency and skills. Instructional materials assist in putting across information and enable both teaching and learning to be effectively done.

Classification/types ofinstructional material.

Instructional materials are of visual, audio and Audio-visual that helps to make concepts, abstracts and ideals concrete in the teaching and learning process (Kasim & Usman, 2016). According to Ochoma (2016) instructional materials can be classified as follows:

1) Printed and reference materials: Textbooks, newspapers, magazines, governments, teachers ''guide, journals, hand book, pictures, pamphlets and work books.
2) Graphic materials: Graphic, charts, diagrams, maps, globes
3) Display materials: chalkboard, flat pictures, magnet boards and flannel board.
4) Projected materials: Television, video tape, overhead projector, slides and slide projector etc
5) Audio and other visual materials: radio, model, computer, tape recording and so on.

According to Akpan and Okoli (2017), instructional materials can be divided into three major categories based on their sensory appeal, namely: Audio, visual and Audio-visual.

The importance of instructional materials in enhancing effective teaching of Geology cannot be undermined due to the positive impact it has on the level of assimilation of students. Instructional materials have been observed as a powerful strategy to bring about effective teaching and learning (John;2016). The importance of quality and adequate instructional materials in teaching and learning can occur through their effective during classroom.

Akpan and Okoli (2017) outlined the specific benefits of instructional materials to teachers include the fact that:

1) Instructional materials help the teacher in providing the means of widening students learning experience.
2) Providing his students with meaningful information

3) Provide the teacher the means of exposing students to a wide range of learning activities.
4) Increase the efficiency of the teacher by providing tutorials and response guidance for individual students and small groups.

According to Akpan and Okoli (2017), the benefits of instructional materials to the students include;

1) Instructional materials can facilitate learning by arousing the learners' interest
2) Instructional materials sustain attention
3) Offer opportunity for independent and individualize learning
4) Create concrete basis for conceptual thinking.

Amos, Eghan, Oppong equally mentioned that, instructional materials are typically categorized depending on the characteristics they present. There are a range of instructional media that could be employed efficiently in a geology classroom setting, Visual aids are items and devices that use the senses of sight, touch, and scent to enhance learning. They are made up of non-projected aids such as chalkboards and adhesives. Charts and graphics are examples of pictorials aids. Instructional materials greatly influence education quality and they affect the teaching and learning process. Instructional materials and learning resources are associated with objects, person or other aspects of the environment which can be used to impact, or help in any learning activity. A careful explanation of a subject may not absolutely lead to a better understanding of that particular subject, whereas, the use of instructional materials provide clarity on issues that are of learning interest (Knowles, 1996).

According to Megbo and Saka (2015), effective teaching cannot be fully accomplished without the use of instructional materials because they promote closer and effective communication between teacher and learners .Instructional materials according to Onyeachu (2010) defined instructional materials as ways and means of making the teaching and learning process easy, more meaningful and understandable because it captures the attention of the learners, facilitates the understanding of abstract concept, save time by limiting use of wordy explanation, it provides learners with opportunity to manipulate object in the environment. Babalola (2004) explained that instructional materials are designed to promote and encourage effective teaching and learning experiences.

Instructional materials are facilities given to students, so that they can use every opportunity to develop full potential. Instructional materials include fixtures, equipment, and buildings of public education (Uslegal.com, 2015). Instructional materials are tools used by a teacher to facilitate the teaching and learning process.

Role of instructional materials.

The use of instructional materials can appeal to the individual by creating interest goal that would help the learner achieve direct effort. A teacher's problem of motivation is essentially one of arranging situation with instructional materials in which the learner would see goals he wants to attain. Effiong, Ekpo, and Igiri (2015) summarized the role of teaching as follows;

1) It promotes meaningful communication and effective learning.
2) It ensures better retention, thus making learning more permanent.
3) It helps to overcome the limited classroom by making the inaccessible accessible.
4) It provides a common experience upon which late learning can be developed. It stimulates and motivates students to learn.
5) It encourages participation especially if students are allowed to manipulate material used.

Effiong, Ekpo, and Igiriv (2015) suggested that instructional materials carry the goal of a teacher and makes it lesson presentation vitally fresh, stimulating and testing for students. This would help the teacher to individualize the learning method as well as the content and also work according to the students' need. The need to emphasis on the use of instructional materials in any learning and teaching environment cannot be underestimated. For any learning to take place, the teacher has to make use of these materials that would enable him to teach effectively. During usage, the learner interacts with material. Such interaction may require that a learner manipulates the instructional material and expresses views about the problem and idea encapsulated in the material.

Availability and proper utilization of instructional materials have a close tie in fostering students' learning (Adele, 2015). The nature, condition, adequacy of learning material, and relevance of learning materials definitely have impact on learning engagement and learning habits (Marcus,2016).

Umoren (2018) maintained that adequate and quality of learning materials are basic ingredients for quality education and to achieve the intended goal of the school program. Hence, enhances students' academic performance in Geology. According to Ibok (2016), availability of instructional material strengthened the idea by actively involve and motivate students' and teachers learning process. Wales (2015), opined that the access and used of instructional materials would make discovered facts glued firmly to the memory of students.

Instructional materials help teacher to meet individual differences of the learners in the class by using aids that appeal to different senses (Morohunfola, 2015). Instructional materials are used to supplement vital explanation of concept or any description so that the lesson could be real to students. Instructional materials are very important because what students hear can easily be forgotten but what they see cannot be easily forgotten and last longer in their memory. In contribution of Abimbola (2016) to the important of instructional materials to teaching and learning process, he stressed that the primary purpose of instructional materials is to make learning more effective and also facilitate it. He further stated that teachers would not be able to do much where these materials are not available, therefore improvisation become necessary. Furthermore, Agun (2016) in his study of '' importance of Audio- visual instructional materials stated that a teacher can use instructional materials in various ways to make his lesson effort less, more effective and thus more productive in terms of student learning and growth. It provides a clear audiovisual learning aid that benefited learners in paying attention especially when the learners had to learn through a video which they could easily relate to.

Macharie and Wario (2019) express the view that in learning, the guiding principle is;

- I hear, I forget
- I see, I remember
- I do, I understand
- Reasonably show how putting into practice what is learnt becomes permanent.

Print instructional material.

Fussel (2020) stated that print media was first discovered in 1455 in European countries the inventor was named Johannes Gutenberg. At the beginning of the development of print media, leaves and clay were used as a printing medium. Through the printing technology invented by

Gutenberg, He started printing Bibles. Thanks to this printing machine technology, the number of books produced is not small. Print media at that time was made using typewriters.

According to Prytherch (2016) printed materials are all forms of publications, documents, or a note in the form of newspapers, magazines, pamphlets, books etc. According to Chen Loyola print materials can serve as a reference when students review previously learned information. Students can control the pace of their involvement in the learning process. Students can pause if there's a need to consult reference materials and make clarifications about the lesson discussed. Print materials serve dual purposes- primary source of the lesson, and supplementary material. Teachers needs to use print materials so as to give students the opportunity to manage their own learning (print materials are learner- controlled).

The use of textbooks

Textbooks are an integral part of curriculum in schools. They "provide detailed development of topics, comprehensive coverage of content, high quality graphics and photos, selected data, many exercises and problems to solve (Moore,2003, p.359).Good (2019), defines a textbook as any manual of instruction; a book dealing with definite subject of study, systematically arranged, use at a specified level of instruction, and used as a principal source of study material for a given course. Lokar (2015) stated that textbooks should make teachers 'work easier and quicker. Ultimately all educators have a similar goal: "to see our students become independent learners, able to inquire, understand and analyze idea and use their knowledge to solve problem" Dobler (2015), p.482.Dubin (2014) and Bedly (2020), research has showed that a great proportion of instructional materials seen in most schools are printed materials; because they are the most easy to use and accessible. Textbook is only one of the several useful materials that will enhance the learning and teaching process.

The use of newspapers

Newspapers are serial publications containing news about special and general events. Topics can be in the form of political events, crimes, sports, editorials, weather and certain news. Newspapers also usually contain caricatures which are usually used as satire through pictures relating to certain issues, comics, crosswords etc. (Wikipedia, 2015). These are printed materials which provide useful and current information on several topics of interest, carries advertisement,

job opportunities, and sensitization champagne to the public on a daily, weekly or monthly basis. According to the Cameroon media, the main national newspaper of the country is 'Cameroon Tribune' but there exist a variety of private owned newspapers.

According to Sargent, Stephan, & al (2009) carried out a research to find out whether using the newspaper as an instructional material resource on a regular basis impacts student reading attitude, two hundred seventeen subjects were selected from twelve classrooms in a mid-Western school district. This study examined the differences in full scale scores between the post surveys of the classes using newspaper in education program. Data were analyzed using a Two-way analysis of variance. The result indicated that there were statistically significant difference between students who received newspaper versus those who did not IF (1.260= 9.675, P= 0.002).

Visual instructional materials.

According to Shabiralyani, Shahzad and Iqbal, (2015) "Visual aids are the devices that help the teacher to clarify, establish, and correlate and co-ordinate precise conceptions, understandings and appreciation and support him/her to make learning more actual, active, motivating, encouraging and significant. In their research findings it was concluded that the use of visual aids as teaching method can help to stimulate learners' thinking and also help to improve the learning environment when used effectively in the classroom with related and relevant content (Shabiralyani et al. 2015).

Mock-up and models. Mock-ups and models are three dimensional representations of real-world objects. Because it has breadth, length, and depth, a model or mock- up can be viewed from all sides. Models are representations of genuine things that are infinitely big, such as the earth or the solar system, or real objects that are little, whether animate or inanimate, such as the human body or human brain. They could be exact replicas or simplified versions of the original. Some models can be disassembled for detailed examination by students.

Mock-ups, on the other hand, are distinguished from models by their bigger size and the presence of moving and operational parts. Models and mock-ups are widely used in areas such as physics, geology, geography, biology, and chemistry. Trainee tutors can purchase commercially available models or make their own out of paper matches.

Realia

These are real things or objects that have not been altered (as opposed to representations of models). They include, among other things, artifacts, plants, and animals. Realia are classified in a variety of ways, including specimen exhibitions and cutaway artifacts, which have considerable significance in almost every subjects. They may be relevant in science- related disciplines (geology, biology, chemistry, and physic). When students view the organism in it natural surroundings, they become considerably more engaged in their classroom study. Realia corrects for omissions in students' knowledge of the subject being taught. Realia allows students to engage in" hands-on" interaction and experience. (Amos, Eghan, and Oppong. 2022)

The use of rocks and minerals.

Petrology and Mineralogy are considered essential fields for understanding materials evidence. This is because rocks and minerals are used to elucidate the history and evolution of the planet. Till now,5256 mineral species of the earth have been discovered (International Mineralogical Association, 2017). According to (Elers and Blatt, 1997). He defines rocks as stuff which the earth is made off. A more acceptable scientific definition of rocks is that; a rock is a natural occurring solid cohesive aggregate of one or more mineral or mineral materials. While a mineral is a naturally occurring inorganic elements or compound having an orderly internal structure and characteristic chemical composition, Crystal form, and physical properties? Common examples include quartz, feldspar, mica, amphibious, Oliven and calcite.

A number of studies have been made on rocks and minerals and the results showed that it is an effective way of impacting knowledge, where students learned how to be independent, to solve problems and adapt to new situations as well as to be able to work individually and as part of a team. High quality instructional materials accessible to teachers should be aligned to the state's challenging academic standards, must be culturally relevant and linguistically sustaining which can have a greater impact in raising students' achievement. (Wiener & Susan, 2017). According to Opfer, Kaufman and Thompson (2017) (Opfer, Kaufman, & Thompson, (2017), instructional materials need to present rigorous, developmentally appropriate, and culturally relevant content that is aligned to the states' challenging academic standards and assessments and to other initiatives related to social, emotional, and academic development.

The Use of Chalkboard

The chalkboard is commonly referred to as the black board on account of the fact most chalkboards are colored black in other to produce a good background effect when white chalk is used on it. It is the most commonly used typed of display board and one would find it different to think of a classroom without chalk board of one kind or color (Tambo, 2012). The chalk board has many advantages; it is one of the cheapest materials to produce, it is adapted to both small and large group work, during lessons, students can use the chalk board to practice exercise and illustrations necessary for observation, discussion and applications.

However, Wilkins (2016) holds that one of the attractions of the chalkboard for the students is that seeing things happening before his or her own eyes and in that way, his interest is maintained as he matches items appearing. Farrant (2018) maintains that the chalkboard, because it comes in a variety of colors, is still the most common instructional material and one of the most useful tools in the classrooms.

The use of diagrams or images.

John et al (2015) results showed that diagrams are effective instructional materials which increases student's performance. When the concrete elements are put into images, the learner can then observe them and construct an abstraction of what is observed. It is during the process of observation that learning starts. The intellectual activity during the period of observation consists in the association of already acquired knowledge with new knowledge.

The use of graphic material

They are two dimensional non- photographic materials used to convey a lesson to students. They may include visual and verbal clues that are symbolic. Drawings, charts, graphs, and posters are examples of graphic materials. Drawings are more commonly found in the completed and representational arrangement of lives to portray organisms in their most idea forms.

Charts, such as tabular charts, timelines, and classification charts, are abstract representations of numerical data. Posters; which combine lines, color, and text, are equally useful graphic materials.

Graphs, such as polar graphs, scatter graphs, and line graphs, are visual representations of numerical data. Trainee tutors in disciplines like economics, geology, geography and mathematics can benefit from graphs.

Graph is an important instructional material in the teaching and learning process. Studies have showed that a graph is a useful tool for teachers to convey specific geology concepts and terminologies to students in geology lessons. Graphs have the ability to deliver information in a way that it is easy to interpret (Kali, 2006, furthermore, a large number of test questions in the fields of science and geology include graphs which contain necessary information that enable students to answer certain questions (Coleman & el., 2011). In addition to the above, graphs may provide further information not available in the written text (Norman,2012).

The results obtained by Gioka (2007) argue that teachers at schools do not have enough time to focus on the graphs skills, as they required to cover a large amount of content at a specific time teacher focused more on teaching concepts, theories and facts compared to graphs.

In the findings of Bode in Akani (2015) who asserted that the use of pictures and graphic materials in the teaching of students sustain their interest in learning and relate abstract contents with real life situations.

The use of maps

Research conducted by Fitzwater (2019) maps are significant materials in teaching and learning process. They give an almost accurate visual representation of the earth's surface, which makes study of large and remote areas in a more accurate and meaningful way. They form connections between new information and material that has been previously studied, and they think about the underlying structure of what is learned. Maps have been particularly helpful in representing qualitative aspects of students' learning. They are also used by teachers to evaluate learning or facilitate curriculum planning (Elservier,2005).

Geological maps can be used to identify geologic hazards, locate natural resources, facilitate land-use planning; Bernknoff et al. (1993). To read geologic map is to understand not only where materials and structures are related but also how and when these features formed.

Maps can be used to guide the development of communities and determine where flood protection or flood insurance is needed.

The use of projected instructional materials (slides, overhead projectors)

A projector is a computer outputs device that projects image into a surface, commonly, a white background (White,2017).

Nowadays, many teachers and students desire to use multimedia projectors in their classrooms. Through the use of multimedia projector students will not have to crowd over a laptop to see a multimedia presentation during learning. More time is save when using projectors during teaching and it increase performance in the learning and teaching process, John et al (2017). In support, Bhakta and Dutta, (2016) mentioned that "most of the schools nowadays deliver knowledge and information with teaching aids like slide projector and overhead projector.

Slide

The use of picture slide in the process of teaching and learning plays an important role in improving student's performance. It is a signal picture on transparent film mounted for use in a slide projector. The most common prepared slides for use in classroom are 5cm×5cm in size in black and white in color.

Overhead projector

The overhead projector is used in several unconventional ways to increase teaching effectiveness and student interest in geology and related courses. These techniques are possible because the overhead projector is mobile, provide intense illumination and may be adjusted to control exactly the size of the images projected onto illuminated surface. The teacher can also face the class and talk to the students as he/she refers to the materials on the screen to illustrate his/her points.

The advantages of overhead projector are: "Visuals" can be prepared beforehand and can be reused; colors can be used for clarity and the flick can be put on, replaced and "erased" and the flick can direct the student attention to either the visual or the instructor.

The overhead projector offers some special advantages for teaching geology, in the easy use of maps and graphs copied from texts. This equipment also is effective in giving tests, especially tests that involve Maude.

Film projector and video player projector

When motion is a significant factor in a subject, a film projector or a videotape projector are utilized to project motion pictures. Black and white and color educational films are available. There are also motion pictures that are both sound and silence. The availability of videotape has expanded the options for the use of motion pictures, as they can now be seen on a monitor or projected onto a screen using a video projector or a digital projector for group viewing. Science, art, social sciences, and physical education all benefit from the use of motion pictures which is accompanied by music; motion pictures can be very efficient technique of accentuating distinguishing traits for jobs that require visual parts of simulation to be distinguished. Students' attitudes toward the subject of instruction can also be improved through the use of motion pictures. They can also be used to change students' attitudes toward environmental issues, excellent work habits, hygiene in health education, and other topics. (Amos, Eghan and Oppong, 2022)

According to Ndamet, 2015 learners are classified into categories; the kinetic, the visual and the auditory learners and he pointed out that visual learners will learn best when real things or visual materials are used.

Audio visual instructional materials.

Audio visual instructional materials refers to those resources, materials and aids that appeal to the senses of hearing and sight. Therefore, the following are the relevant use of audio materials

- Promote a mood of natural understanding and sympathy in the classroom.
- Bring about significant changes in students' behavior.
- Show the relationship of subject matter to the needs and interest of pupils with a consequent heightening of motivation for learning.
- Bring freshness and variety to the learning experience
- It makes learning meaningful over a wide range of students' abilities.
- Provide needed feedback that will help the pupil to discover how well he has learned.
- Assure the order of clarity of thought that the students will need if he/she is to form conceptual structures and establish meaningful systems of idea.

This study elaborates on some audio-visual devices the television, films amongst others

The use of Television

According to Cameroon today news, Television first came to Cameroon in 1985.It arrived as a part of the development and modernization project of President Paul Biya, who saw it as a mean of education for the youths, as he stated in his political manifesto pour le liberalism Communautaire (1985). The first broadcast was in 1985, in Bamenda, in occasion of the congress of the single party, in which Cameroonian National Union became the Cameroon Peoples Democratic party, broadcast was only for a few hours but today, Cameroon television broadcast a variety of programs. Until the end of the 1990s there was only one official television channel, which was the state owned CRTV but today there are a plethora of other TV stations today in Cameroon. According to Lelrcher et al (2015), television viewing in the school and home is particularly significant because these are the two main agents of socialization and education of the individuals. Filep & Schramm (2000), claimed that television has been the most studied because it requires the largest investment than any of the other media, and also it came into a wider use as a time when media was being supported by generous grants for educational purposes or otherwise. Furthermore, Conton &Pain(2016), claimed that the advantage of television viewing have long been the subject of educational research. Results from such research showed that television has as the film. In addition, it has the power to bring into the classroom many important events at exactly the moment that are taking place. It should be noted that there were some indications that television had advantage over social studies classroom instructions.

Wittish & Shullar (2020) in the magazine for managers of change in education, January to February, (1997) pointed out that "it was recognized that there is no magic in television. It is now widely recognized that the effectiveness of educational television depends on excellence of planning, producing, use of audio-visual media and systematic classroom utilization. Writing about the attitude of teachers toward television programmers, Wittish & Schullar (1990) continued "The classroom to welcome this kind of television production as a means of bringing understandable new experience into classroom. Following their use, the classroom teachers continue as the one responsible for guiding and inspiring the inventive creativity of those students who can respond in such way". However, the effect of instructional television in teaching and learning will depend on the type quality of television instruction.

Hawkridge (2016) and Packman (2015), had conducted many researches on instructional television programmed instruction and films. The finding emphasized the value of these materials and equipment towards students' performance. According to Adole (2018) researches conducted on the mechanism of learning have revealed that any instructional process which evolves the involvement of as many of human sensory organs tends to quicken and facilitates processes of learning.

Teacher's competence and the instructional material.

One of the reasons contributing to low student performance has been identified as a teacher's inability to improvise educational materials. Competence of a teacher (tutor) is an underlying personality trait that is frequently linked to successful or excellent performance. These characteristics can be measured and differentiated and include enduring, reasons, traits, self-concepts, values, knowledge, and abilities. To be more specific, a tutor's competency is defined as the appropriate prior knowledge, skills, attitudes, and abilities in a given environment that adjust and evolve with time and demands in order to effectively and efficiently complete a work and are measured against a minimum level. But, exactly, what does "competence" imply? The juxtaposition of information and the application of that knowledge in a teaching practice is what it means to be competent. In other words, a competent person is someone who can complete a task effectively and efficiently. A good tutor chooses, modifies, and employs a variety of teaching materials (written, visual, and audio-visual) that are appropriate for content area and each student's reading needs and level. Effective tutors have a repertoire of best teaching practices, such as techniques, procedures, and approaches for presenting, implementing and evaluating classroom education in accordance with the goals. They have principles, attitudes, and dispositions that build a classroom environment of mutual trust for individual qualities, particularly students' needs, interests, and abilities. However, before a professional tutor chooses his instructional materials, he thinks about the following factors, which will serve as his selection criterion. Availability, before the due date, the tutor should make sure that the teaching materials are readily available. It means that the materials must be on hand, and the tutor must inspect and test them before to the class. If the instructor must prepare it on his own, he should do so at least a day ahead of time. Accessibility, it is the tutor's responsibility to ensure that the instructional resources he will utilize are not only available but also accessible to him. If the materials have already been created, they should be available to the tutor on the scheduled date and time of usage. The fact that materials are easily

available but locked up in the store because the storekeeper is missing or the keys to the store have been misplaced should not be an excuse. Affordability, the cost of educational materials used should not be prohibitively high for either the tutor or the institution. It's pointless to suggest that something is available but prohibitively expensive; it should be within the college's budget. Suitability, the tutor who is using the educational materials should make sure that the resources are appropriate for the learners who will be using them. Materials should be appropriate for their age, experience, and intellectual level. The legal, safety, and ethical implications of the materials to be utilized must all be taken into account. Anti- social attitudes should not be depicted in the products. They should also be free of any prejudice, distortion, or bias. If the materials require electric power, a substitute should be explored to avoid disappointment due to electricity.

Once again, Simplicity, the educational materials that will be used should be simple to use and manipulate. Before the actual date of usage, the tutor should test the materials and confirm that they are functional. There should be no technical issues, and where electricity is to be utilized, a backup power source should be available. Electric failure should not be an excuse for non-performance by any tutor. When an instrument necessitates the use of a technician's hand should be present, and the tutor should be familiar with the operation of the instructional materials. Qualitative, the tutor's choice of instructional resources for instructing should be of high quality. Tutors should avoid" managing" with low quality materials because they may fail to accomplish the desired result. Regency, the educational materials should be of the highest quality or close to it, and they should not be outdated. Current and innovative thought should be reflected in the instructional materials. In conclusions, it should be highlighted that the tutor's ability to use diverse instructional resources in the actualization of teaching learning objectives is critical to the enhancement of classroom instruction. (Amos, Ephan & Appong, 2022).

Theoretical review

A theory is a set of systematically tested and logically interpreted prepositions that have been developed through research which explains social phenomena (Sarantakos, 2017). Theories help to provide a framework by serving as a point of departure for pursuit of a research problem. In this study, three theories have been used: Cognitive Theory of Multimedia learning by Richard Meyer, Piaget's theory of cognitive development and Jerome Bruner Theory of Cognitive development.

Instructional material theories

Instructional material theories assume that there is a direct link between the materials that the teachers use and the students' learning outcomes. These outcomes include ability to learn, quality strategies to learn and perform classroom activities and a positive attitude towards learning. Further, these theories assume that instructional materials have the capacity to develop into students' the highest order of intellectual skills as they illustrate clearly, step by step how to follow the rules/principles and equally elaborate on the concepts, all of which has positive effect on solving problems by analyzing the situation and formulating a plan (Gagne et al. 2005). According to Gagne et al, instructional materials can be used to develop higher learning abilities to the learners through self-teaching or guided learning. This implies that the instructional materials mainly comprise'' eliciting performance' and providing '' feedbacks on performance correctness,'' in addition to 'providing learning guidance' for guided discoveries learning. Many of Gagne's nine (9) ideas have brought implications for secondary teachers. Many of these ideas have capacity building undertones with themes of students' acquisition of critical thinking and problem-solving skills. However, the theory does not relate to whether or not students can think critically in what aspect or how they can solve a particular problem by themselves. However, I have the opinion that the purpose of instructional materials or technology in education is to stretch students' imagination and to encourage them to solve problems in their lives.

Similar ideals are held by Vygotsky a Russian psychologist who held a view that tools and signs, which are in a form of instructional materials, have the capacity to develop in students' higher level of thinking, which is important in problem- solving activities. However, since they are considered to be domain- specific, the ways instructional materials can start cognitive development is yet to be study with respect to classroom teaching. Thus, this study stretches these views.

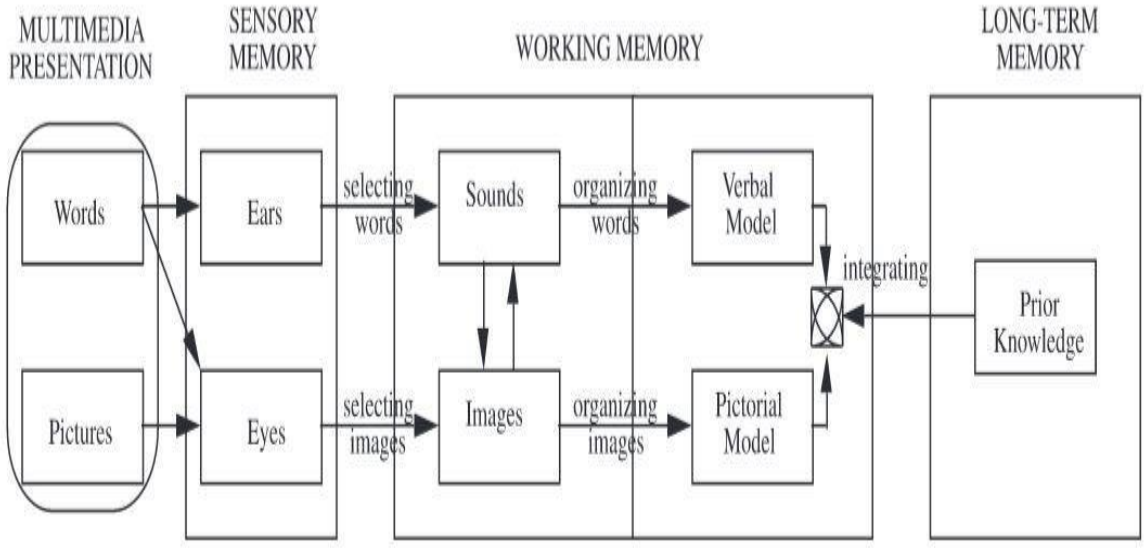
Piaget's theory of cognitive development.

The implication of this theory in teaching of geology in secondary schools is that, teachers should use instructional materials for better acquisition, retention and recall. They should also consider among other things, the mental age of the learners before choosing instructional materials for the improvement of teaching/ learning process or effective curriculum implementation; there must be systematic planning in addition to be wise and skillful selection and more time for correction and brightens the classroom and bring variety in the class lesson.

The cognitive theory of multimedia models.

Cognitive Theory of Multimedia learning seeks to explain the processes that take place in the minds of learners during meaningful learning from multimedia instruction. Multimedia instruction can be explained as the used of words and pictures (verbal and visual). According to Meyer (2010), "The CTML theory has clear implications for instructional design to facilitate multimedia learning. Cognitive development helps teachers in selecting what to consider when planning a lesson instruction. (Mohamad, Yes & 'Tee, 2017). It equally enables teachers to identify learners' learning styles because it helps students actively construct their knowledge and build on prior knowledge.

Figure 2: Multimedia learning theory OF Richard Mayer (1947)



Source : http;//homepage.gac.educ/-dmoos/edtech/introtomultitheory.pdf

Figure 1 above shows the process of CTML. There are five processes of CTML which are; Selection of the word: Selection of pictures: Organizing of pictures and integrating verbal and pictorial models. In teaching and learning a teacher can explain a topic using a video or film that has pictures and words using multimedia projector. The learner will use the ear or eyes sensory to select the words or sound. The learner uses the long-term memory to makes use of the material that is presented using the prior knowledge in the long-term memory. Meyer (2010) defined generative processing as the "Cognitive process is required for making sense of the presented material (selecting, organizing and integrating words and images)".

Meyer earned his Ph.D. in psychology at Indiana University from 1973 to 1975 and then moved to the University of California at Santa Barbara where he continues to serve as a professor of psychology. His most significant works deal with problem solving and multimedia learning, Mayer developed the Cognitive Theory of Multimedia Learning to explain how we can best use it. Understanding multimedia learning can be so powerful on how the brain processing information. Meyer explains that the brain takes in information and processes it into multiple channels based on how that information is presented. The first channel is for visually represented material and the second is auditory presented material. When a learner is presented visual information, including pictures, videos etc. all of that information goes into the visual channel and is process by the brain, separated from the visual. With two separate channels; the learner is able to work with more information because the very presentation of material is process differently. In working memory, the learners choose relevant images to remember and work with it, and can equally choose relevant words to remember and work with. Each of this set of information are processes and organize into model that help the reader understand and remember information.

Finally, the learner integrates the visual model and auditory model together with their prior knowledge and experiences. Mayer advice for multimedia learning, is a caution that he causes the "Limited capacity assumption. “The assumption is that all human has limited capacity for information. We do not have infinite and memory processor, so we choose the pieces of information to pay attention to. The caution advices us not to overwhelm our students with information. So, we can always limit the amount of text on a PowerPoint slide.

Meyer secondly advice on "active processes assumption. Meyer described the processes as a model information. To make learning effective our presentation of material should have an understandable structure. Richard Mayer theory is instructional materials and teachers should know this theory to avoid cognitive overloaded. Cognitive overload occurs when the learning task are greater than the processing capacity of the human information processing system.

According to CTML, one of the principles aims of Multimedia instruction is to encourage the learner to build a coherent mental representation: learners are more successful in grasping the concepts in instructional multimedia piece when irrelevant elements are not included. The multimedia piece should not contain different concepts on the same frame or slide as this can visually overload the learner. CTML is based on three assumptions; the frame for multimedia

learning and how the mind works is rooted in these three assumptions: dual channels, limited capacity and active processing.

Dual Channels: According to Austin (2009) ‘’ the dual channel processing assumption is based on the seminal work by Paivio (19986). Learners have different channels in their brain for processing visual and verbal material separately (Mayer and Moreno, 2003). The learner will select relevant words for processing in verbal working memory and relevant images for processing in visual working memory (Toh, Munassar, &Hahaha. 2010).

Limited capacity: There is a limit to the amount of information (verbal and visual) each channel can process. That is humans can only process a finite amount of information in a channel at a time and they make sense of incoming information by actively creating mental representation. The sensory memory receives stimuli and stores for a very short time. The working memory actively processes information to create mental construct meanwhile the long-term memory holds the entire store of the leader's knowledge for indefinite amount of time.

Active processing: In order for meaningful and deeper learning to occur it is dependent on the learner' s cognitive processing to be able to select, organize, and integrated the information (verbal and visual) being presented with prior knowledge.

This theory is relevant to this study in that: multimedia principles show that learners learn better from words and pictures. Teachers should always associate words to objects or pictures during the teaching and learning process as learners are better when corresponding words and pictures. To achieve meaningful learning, teachers should select relevant instructional materials, organize and integrate them into existing cognitive load.

Dwyer and Dwyer (2016) caution that proper encoding transfer of knowledge to long term memory requires rehearsal, repetition of concepts, immediate feedback.

Skinner’s theory of operant conditioning

Skinner’s theory (march 20,1904-august 18, 1990)

Skinner was an American psychologist, behaviorist, inventor, and social philosopher. Considered the father of behaviorism, he was the Edgar pierce professor of psychology at Harvard university from 1958 until his retirement in 1974.Considering free will to be an illusion, Skinner

saw human actions, a theory he would articulate as the principle of reinforcement; if the consequences to an action are bad, there is a high chance the action will not be repeated becomes stronger. Skinner developed behavior analysis, especially the philosophy of radical behaviorism, and founded the experimental analysis of behavior. He also used operant conditioning to strengthen behavior, considering the rate of response to be the most effective measure of response strength. To study operant conditioning, he invented the operant conditioning chamberand to measure rate he invented the cumulative recorder.

Skinner believed that effective teaching must be based on positive reinforcement which is, he argued, more effective at changing and establishing behavior than punishment. He suggested that the main thing people learn from being punished is how to avoid punishment. Operant conditioning, referred to as instrumental conditioning, is a method of learning that employs reward and punishments for behavior. Operant conditioning relies on a fairly simple premise: Actions that are followed by reinforcement will be strengthened and more likely to occur again in the future.

There are several key concepts in operant conditioning. The type of reinforcement or punishment that is used can have an effect on how the individual responds and the effect of conditioning. There are four types of operant conditioning that can utilized to change behavior: positive reinforcement, negative reinforcement, positive punishment, and negative punishment.

Positive reinforcers are favorable events or outcomes that are presented after the behavior. In positive reinforcement situations, a response or behavior is strengthened by the addition of praise or a direct reward. Negative reinforcers involve the removal of an unfavorable events or outcomes after the display of a behavior. In these situations, a response is strengthened by the removal of something considered unpleasant. Positive punishment, sometimes referred to as punishment by application, presents and unfavorable event or outcome in order to weaken the response it follows. Negative punishment, also known as punishment by removal, occurs when a favorable event or outcome is removed after a behavior occurs.

In this study, instructional material acts as reinforcers and played a role in the speed and strength of acquisition. In other words, the timing and frequency of reinforcement influenced how new behaviors were learned and how old behaviors were modified.

Applying Skinner's operant conditioning theory.

1) Skinner's theory of operant conditioning is widely used in teaching (for example; instructional development and classroom management); and clinical settings9 for example; behavior therapy or human behavior modification).
2) Skinner concentrated on classical conditioning (that is, operant conditioning) to observe overt behavior of children.

   Skinner suggested the following 5 steps to implement behavior change;

   Step 1; Behavioral goal setting; It is necessary to first define the behavior a teacher wants to see in students

   Step 2; Determine reasonable ways for a behavior reinforcement

   Step 3; Select the techniques to change behaviors; after deciding which positive and negative reinforcers a teacher would apply; it is essential to decide how to apply them.

   Step 4; Select a technique to change a behavior; apply the selected techniques and record the results. According to behavior science experts, not every reinforcement brings results on each student. After introducing a different reinforcement technique, a teacher needs to assess how quickly the class improves performances and how many learners demonstrate the desired behavior without additional reinforcements or reminders from the teacher.

   Step 5; Evaluate and improve if needed; if a reinforcement technique does not bring results, it is better to change it. A teacher may try something new the following week and repeat the technique until finding the most effective one that works for the type.

EMPIRICAL FRAMEWORK.

This is the review of previous studies of instructional materials and student's performance carried in the field. This empirical review will be based on the research objectives as stated in chapter one.

Main Objective: Effect of instructional materials and student's performance.

The main objective of the study is to investigate the effects of Instructional materials and how it influences students' performance in some selected secondary schools in Yaounde VI sub division. This cannot be effectively achieved except something vital that can captivate the expected interest is presented to the learners.

Research have shown that the performance of students is dependent on several factors but instructional materials is one. Oliagba (2015) stated that, the research he carried out in schools in Kaduna local government Area of Kaduna showed the results of student's performance in teaching and learning situations was poor. The factor that contributed to this poor performance according to him was that, teachers were not professionally trained, and they did not use instructional materials in teaching and learning process. He equally mentioned that; the teachers were not also enough for the schools. 87% of the students sampled in Fadankaje indicated that the school did not provide teaching aids for them or for the teachers. 71 out of hundred students sampled in Zonkwa indicated that teachers used only the textbooks to teach them. Few students out of 96 in Kaduna also indicated that the school did not provide teaching aids for them. The research also showed that lack of use or inefficient use of instructional materials was first among these factors which determine the educational progress of those students in our schools. (Oke, 2010)

Ji (2018) contented in a research he carried out that in Gboko Venue 89%of the students confirmed their teacher's performance blamed teachers for poor performance. Since it was claimed that they never use instructional materials in their lessons but always carry just a copy of textbook to the class. All the principals in the schools studied blamed the students for lack of seriousness in studying the subject. One of the principals blamed the students for not following the instruction of West African Examination Council. which made them unable to answer the required number of questions in the examinations

Ogunbi (2019) asserted that in Educational technology the word '' teachers" may refer to men, women or machine. He said that it was necessary for teachers to examine some characteristics of the subject in order to appreciate the instructional process which would best enhance in teaching. Ogunbi (2015) continued by arguing that social studies is a subject which discusses dimensions of knowledge in a human being which is invisible and the consequences of encounter with him cannot be empirically tested, or subjected to laboratory scientific analyses. It is an abstract subject matter. He, however, contented that though it is an abstract subject, themes on, power and authority can be effectively taught from things which we see and touch; therefore, teachers should use instructional materials in presenting their lessons. Social studies as a subject, shares the same characteristics as many other subjects and as such requires various teaching materials for proper explanation to

ensure proper learning. Highlighting this, Bamidele (2017) reported that 'proper use of audiovisual materials during the lesson helped to sustained students' interest and therefore stimulated learning'.

According to Akkinson, the result of the use of resources is more effective than words or verbalization. This can only be done through the influence of instructional materials which represents real life situations. This is because they are capable of conveying the intended message to the recipient as they received it, understand and apply the experience gained to real life situation. Also, Akolo (2016) argued that only 10% of those who go to secondary school to learn are successful in the West African Examinations. He asserted that most teachers do not use teaching aids in their lessons generally

Alemnge and Andongaba (2021) conducted a research on the impact of teaching method and materials on the teaching of citizenship education in Cameroon. The purpose of this study was to investigate the impact of methods and materials on teaching of citizenship education in secondary schools in Buea Municipality. Two research questions were formulated to guide the study. To find out how the use of instructional materials influence the teaching of citizenship in secondary schools in Buea Municipality. The study adopted a qualitative approach, using the multiple case study design to carry out the investigation with the help of an interview and observation schedule. It involved 6 citizenship education teachers from 3 sampled case schools, Summerset Bilingual High School Molyko, Government Bilingual grammar school Molyko and Baptist high school Great Soppo. The purposive sampling procedure was used to select the participating schools and teachers of the study. Two teachers were interviewed, and one teacher observed in each school. The data from interview and observation were transcribed and coded thematically. The findings showed that citizenship education teachers use mostly teacher –centered methods in teaching in contradiction to the learner-centered methods prescribed in the syllabus. Teachers do not have the subject syllabuses and so rely on textbooks for their teaching of the subject.

Mutuge (2018) conducted a research on the importance of instructional materials in nurse education in the North West and South West Regions of Cameroon. The general objective of the study was to assess the use of five instructional materials in nurse education. The descriptive survey research design was used for this study. Out of a target population of 105 nurse teachers in North West and South West regions, 91 were purposefully selected as the sample. A questionnaire was

administered and 76 respondents responded giving a response rate of 84%. Data were analyzed using the statistical package for social Science, version 17 (2010, Atlanta Georgia). The results showed that the teachers who have been teaching longer (57.9) actually used instructional materials. The results also showed that the chalkboard, manikins, handouts, flipcharts and power point are actually being used, scoring 74%, 57%, 51%,and 55% respectively with barriers such as; expensive to own, expertise skills required, lack of time and difficult to produce, that impede their use and affect attitudes towards their use.

Achimugu (2017) conducted a research focused on the availability and utilization of instructional materials for teaching chemistry in senior secondary schools in Ankpa local Government Area of Kogi state. Four research questions were passed to guide the study. It adopted discipline design. The sample comprised of 36chemisty teacher in 30 secondary schools selected by simple random technique from the total population of 75 secondary schools in Ankpa Local Government Area in Kogi state. Two instruments namely checklist of availability of instructional materials (r=0.71) and teacher's questionnaire titled utilization and inhibiting factors chemistry questionnaire (r =0.76) were used for data collection. The data obtained were analyzed using simple percentage, mean and standard deviation. The results revealed that good number of laboratory equipment and audio instructional materials were available but were not adequately utilized for chemistry instruction. It was also found that lack of fund, poor implementation policy, lack of motivation among others were the factors inhibiting effective provision and utilization of instructional materials for chemistry instruction.

In another study, Yusta, Karrugu, Muthee & Tekle (2016) examined the impact of instructional resources on mathematics performance of learners with Dyscalculia in integrated primary schools in Arusha, Tanzania. The research followed a descriptive survey design with its corresponding key instrument questionnaire for data collection. The target population of the study was 92 including head teachers and subject teachers from four schools and a sample of size 52. The results showed that the majority of instructional materials available were textbooks, accompanied by chalkboard, as well as number cards, math kit, and stones, which were of great help to the learners.

The results show that instructional tools are important for teaching mathematics because they help Dyscalculia learners remember rules, instructions and formulas. The strength was that

pupils taught with instructional resources understood the subjects better that those without instructional materials.

The gap in Yusta, Karugu, Muthee and Tekle study was that the instructional materials were not sufficient for teachers to use during the teaching and learning process.

Otor, Ogbeba, and Ityo (2015) studied the influence of improvised teaching Instructional Materials on Chemistry students' performance in Senior Secondary Schools in Vandeikya Local Government Area of Benue state, Nigeria". The purpose of the study was to the use of improvised instructional materials on the performance of chemistry students. Two research questions guided the study and two hypotheses were raised and tested at 0.05 significant level. The study adopted the descriptive survey research design with a sample size of 150 senior secondary school chemistry students. Data used for the study was collected through researcher- made questionnaire. Mean and standard deviation statistics were used in answering the research questions while Analysis of Variance (ANOVA) was used in testing the hypotheses. The study found that students taught using improvised instructional materials outperformed their counterparts taught with conventional lecture methods. The study recommended among others that teaching of chemistry using improvised instructional materials should be encouraged since it facilitates the learning of this subject. This study by Otor, Ogbeba, and Ityo (2015) is similar to the present study. That is both studies focus on the effect of instructional materials on academic performance.

Another research work investigated the influence of instructional materials (teaching aids) on students' academic performance in senior secondary school Chemistry in Cross River State. A two-group pre-test post quasi- experimental design was adopted for the study. One research question and one hypothesis were formulated to guide the study. A total of 100 senior secondary one (SS1) chemistry students were selected from five (5) schools in Yakurur Local Government Area of across River State through sample random sampling and stratified random sampling techniques. Fifty SS1 students (experimental group) were taught with instructional materials and another forty (control group) were taught without instructional materials. A validated Chemistry Achievement Test (CAT) was used to gather data for the study and a split-half was carried out using the Pearson product moment correlation to obtain a reliability coefficient of 0.67 independent test was used to test the hypothesis at 0.05 significant level while the Pearson product moment correlation coefficient at that level was used to analyze the research questions. The study revealed

that students taught with instructional materials performed significantly better than those taught without instructional materials and also that the use of instructional materials generally improved students' understanding of concepts and led to high academic achievement.

Recommendations were made on how to improve academic performance of chemistry students by encouraging the use of instructional materials in teaching- learning chemistry. (Okendu, 2012)

Amos, Eghan and Oppong (2022) conducted a research and the purpose was to examine the impact of instructional materials in teaching and learning biology in the colleges of education in the Central Region of Ghana. Qualitatively, a case study research design was selected for the study. The population of the study consists of three biology tutors in the three colleges of education in the Central Region. The purpose sampling technique was chosen to select all the three colleges and three biology tutors for the study. The interview guide was the main instrument for the data collection. Data were analyzed using the interpretive technique based on the themes arrived at during the data collection from the respondent. The study concluded that instructional materials boast students' cognitive abilities and arouse their interest in the lesson by helping them to reason critically during teaching and learning. The study also revealed that the competencies level of tutors helps them in assessment of the subject, selecting relevant materials for each concept. The study also concluded that a good presentation of a lesson has a substantial impact on teaching and learning situations, as well as the vast amount of information available to students, to supplement their instruction and the principles for appropriate use of instructional materials. It is recommended that professional development should be organized for the biology tutors in their respective colleges to have competencies in using relevant instructional materials in assessing students in biology lessons. It is also recommended that Ghana Tertiary education commission (G-TEC), National Teaching Council (NTC), and universities should collaborate with the colleges to organize workshops and seminars for tutors teaching biology to update their knowledge in the use of digital instructional materials in lesson presentation.

Another study was carried out to determine the effects of the instructional material (IM) in research methods on the academic performance, self- efficacy beliefs, and attitudes of college students. Two intact classes of pre- service teachers were the participants of the study utilizing the Quasi-Experimental Research Design. Pretests and posttests were administered to the participants

of the study before and after the use of IM to ascertain the changes in students' performance, self-efficacy beliefs. And attitude towards Research. There is a significant difference in the performance, self-efficacy beliefs, and attitude of students toward research in the pre-test and posttests. The IM in research methods is effective in enhancing students' learning. This IM is now being used by both pre-service and post graduate students. Moreover, students are encouraging to use the book for easy understanding of the conduct of research in any field of specialization. (Prado, Nenita 2018).

Another was conducted to investigate the effects of instructional materials on performance in schools. The study was guided by specific objectives that included; to determine different kinds of instructional materials; to identify the effects of instructional materials on performance and to assess the relationship between instructional materials and performance in schools. The study was descriptive and analytical in nature where purposive sampling was used to select population. It employed 60 respondents. Data was obtained from primary source using stratified sampling, analyzed and presented using frequencies and percentages and were tabulated. Data was entered in EPINFO and analyzed using SPSS computer package.

The major findings of the study were, the study revealed that majority of the respondents were females who were below 25 years. Among the different kinds of instructional materials included animations, exercises study guides and tours, website achieves. Among effects were academic performance, improved communication and interaction.

Among the recommendations include, the government should give loans to school to enable them buy instructional materials, Sensitization workshops among others (Tumwesigire Jane. 2017)

Ajani Awolaju (2016) investigated instructional materials as correlates of students' academic performance in Senior Secondary Schools in Osun State. The sample used for the study consisted of 40 students who were randomly selected from two different secondary schools in IIesa East Local Government area in Osun state. 20 students were used for experimental group while the other 20 students were under the control group. Quantitative method was used to collect data by using the research questions and hypotheses formulated for the study. Research instrument used for the study consisted of Biology Achievement Test(BAT). This BAT contained a 50 multiple choice item. A reliability coefficient of 0.82 was obtained for BAT, using Test –retest method. Data collected were analyzed by using mean score, standard deviation and T-test distribution.

Findings revealed that students taught with instructional materials performed better than those taught without instructional materials. That is experimental group performed better than the control group (t-calculated value, 3.94> t-critical value 2.02). It was further revealed that there is no significant difference between pre-test scores and post- test scores of experimental group (t-critical value, 2.02> t-cal value- 2.79). The post test scores of male and female students taught with instructional materials showed no significant difference between their scores (t- critical value, 2.10> t- calculated value, 1.33). Based on the findings appropriate recommendations were made.

Arop, Imeh, and Ekpo (2015) examined the effect of instructional materials on the teaching and learning of basic science in Junior secondary school in Cross River State. The study examined the role of instructional materials in the science classroom and how instructional materials have affected the teaching and learning of basic science. The study employed quasi experimental design. Two research questions and two hypotheses guided the study. 240 students were randomly selected by simple ballot method from four secondary schools in Biase local government area of Cross River State. A 20- item test called Diffusion Achievement Test (DAT) constructed by the researcher was used to collect data for the study. The test had a reliability of 0.86. Scores generated from retest and posttest were analyzed using mean, standard deviation and independent t- test. The result showed that the use of instructional materials has a favorable effect on student students' achievement scores of students with female have a higher mean score than males. Recommendations were made among others that teachers should source for instructional materials for effective lesson delivery.

Olaniyan (2020) investigated the effectiveness of instructional materials in teaching Arabic language in selected secondary schools in Ibadan local government, Oyo State. The research adopted the descriptive survey research design, all the senior secondary schools in Ibadan north local government area constituted the population. The study was limited to four randomly selected secondary schools in Ibadan north local government area. A total of eighty (80) students and twenty (20) teachers were selected from four (4) secondary school in Ibadan north local government area. Data were collected using two research questionnaires for both the students' respondents and teacher's respondents tagged "effectiveness of instructional materials in teaching Arabic language in selected secondary schools". The questionnaire was designed to carry out the research and it consisted of two sections. Section A deals with the personal data of respondents, while section B

deals contain items on effectiveness of instructional materials in teaching Arabic language in senior secondary schools. Data were analyzed using relevant statistical tools of percentages, frequently count and percentage was used to describe the demographic characteristics of respondents while simple analysis method such as hypothesis postulated in the course of this study. Four research questions formulated were answered using percentage indices and chi-square.

The findings of the study revealed that; a. there is none –availability of instructional materials in teaching Arabic studies in schools; b, instructional materials significantly determine students' academic performance in the teaching and learning of Arabic studies. C. non –availability of instructional materials significantly affects teaching of Arabic studies. Based on the findings of the study, it was therefore concluded that lack of understanding of importance of Arabic language has a significant effect on students' academic performance in teaching and learning of Arabic studies, instructional materials significantly determine students' academic performance in teaching and learning of Arabic studies. It was recommended that schools should provide necessary facilities and teaching aids that would promote the teaching and learning of Arabic studies and parents' Teacher Association (PTA) should promote the teaching of Arabic studies by providing adequate teaching aids to enhance the delivery of Arabic lectures.

Specific Objective: Print Instructional and its effects on student's performance.

Print material consists of all written materials like textbooks, newspapers, journals and magazines. Francis (2016) conducted a study on the comparative instructional effectiveness of print -based and video-based instructional materials for teaching practical skills at a distance. The study examines the instructional effectiveness of video -based instructional materials Vis a -vis traditional print-based instructional materials for teaching distance learners of a block-laying and converting practical skills programmed. An experimental design was used and participants were randomly assigned to two treatment groups: Users of video -based instructional materials. A researcher -designed performance test and an achievement test of 20multiple -choice items were used to collect data from 34participants who used print- based instructional materials and 35participants who used video -based instructional materials to learn practical skills. The instruments were based on the instructional objectives of lesson on not at and wall finish. Pilot test data for the achievement test yielded crobach's alpha 0.84. Descriptive statistics and t- test at 0.05 level of significance were used to analyze the data. The result indicated that the two instructional

materials were equivalent in terms of theoretical knowledge acquired. Practical skills were significantly higher among users of video -based instructional materials. Students enjoy sitting in a classroom with their fellow student learning through educational magazine & colors. This creates an enjoyment of learning environment in their minds which is closely associated to remembering what they learn. In short, they can easily recall what they have learned when it is learned in such a learning environment.

To add to this, Yvonne (2015) after carrying out a research on teachers' views on and use of printed materials in a distance learning teacher education course. This study aims to explore the extent to which students on a distance teacher education course considered that print materials had achieved the course objectives, and how they made use of the in- text access structures. The results indicate that, although teachers on the course agreed that the materials were able to achieve the course objectives, the extent to which they made use of the access devices varied considerably. Thus, despite the emphasis on online learning in recent years, print is still an important medium for course delivery in distance education. Also printed book or other materials are always at hand whenever you want to refer to them. Moreover, you can view the full page at a time, unlike an e-book which you have to scroll up or down to see a particular part of a text.

The utilization of print media affect students' academic performance in Public Junior Secondary Schools in Ikwerre and Emohua Local Government Areas of River state which was supported by Mckeachie (2014) when he asserted that printed materials such as books are highly portable form of information and can be accessed when, where and at whatever rate and level of detail the reader desires. This makes textbooks a very effective resource.

Finally, the use of print materials, graphic materials, computer, still picture is necessary in Junior secondary schools as inevitably, as it is perceived that students in Junior secondary schools sometimes find it difficult to comprehend immediately what is being taught by to the learners. This may have affected students' academic performance in Junior secondary schools (Emmana, 2004). Most of them have not been able to achieve academic success in both internal and external examinations because of perceived inadequate supply or utilization of instructional materials in Junior secondary schools. It is imperative that to assert that academic performance in Junior secondary schools cannot be effective without proper utilization of instructional materials. This means that utilization of instructional materials for students' academic performance is necessary.

Moreover, David (2008) conducted a study on learning efficacy and cost effectiveness of print versus e-book instructional material in an introductory financial accounting course. This study describes the concurrent development of paper-based and e-book versions of a textbook and related instructional material used in an introductory-level financial accounting course. Break-even analysis is used to compare costs of the two media. A study conducted with 109 students is also used to evaluate the two media with respect to relative learning effectiveness and selected qualitative attributes. Print-based material was generally preferred by learners. No significant difference was found regarding learning effectiveness. Implications of lower relative production and distributions costs for e-books are discussed in this context. Also, Adole (2017) further stated that, print instructional materials offer experience that is giving the learner basis for thinking and understanding, supply concrete basis for conceptual thinking and hence reduce meaningless responses of students.

However, in stressing the relationship between print instructional materials and students' performance, Abimbolu et al (2016) in their study reported that "evidence was shown by both teachers and students that proper application of print instructional materials could enhance performance in particular subject".

Specific Objective: Audio instructional materials and its effects on student's performance.

Experience and research show that learning take place faster and more easily in real life situation through primarily the sense of sight, hearing and touch. However, the utilization of instructional materials in the teaching and learning situation involves not only the sense of sight and touch. Mohammed (2016) conducted a research to find out male and female teacher's "perception of the effectiveness of audio instructional materials used in teaching Agricultural Sciences in Senior Secondary Schools in Gombe State. The population of the study was 143 Agricultural Science teachers, made up of 111 males and 32 females. Structured questionnaire which was validated by experts and tested for internal consistency and reliability using Cronbach's alpha formula which indicated 0.99 was adopted. Two research questions and a hypothesis, formulated and tested at 0.05 level of significance guided standard the study. The data were analyzed using mean (X) statistics and standard deviation, while the Z- test was used to test the null hypotheses. Findings revealed that; male and female teachers perceived the use of audio instructional materials as effective at grand mean of 2.18 and 2.05 respectively, there was no

significant difference between the mean responses of male and female teachers' perception on the effectiveness of audio instructional material used in teaching Agricultural science in the study area. The study recommended that teachers should endeavor to use audio instructional materials in teaching Agricultural Science in Senior Secondary Schools.

In the light, Nwike and Onyejegbu (2018) conducted a study on the "effects of the use of audio media as instructional materials on Students Cognitive Achievement in Agricultural Science". The purpose of the study was to find out the effects of the use of audio media as instructional material on student's cognitive achievement in agricultural science in secondary schools of Orumba South Local Government Area. Two research questions guided the study and one hypothesis was raised and tested at 0.05 significant level. The study adopted Quasi-experimental design. The target population of the study was Junior Secondary School II students. A sample of 256 students drawn through simple random sample technique was used in the study. Data collected in the study was analyzed using mean, standard deviation and z-test statistics. The findings of the study revealed that students taught with the use of audio instructional material performed better than those taught without audio instructional materials. The study recommended that audio media devices be used in the teaching situations because it has positive impact on student's performance.

Another study was carried out by Ojakovo, Emmanuel, Edafe (2021) on the effects of audio-materials on students' performance in listening comprehension in senior secondary schools in Gwagwalada, Abuja, design in the collection of sample opinions. The population comprised of all the 4,380 students of the 8 conventional public senior secondary schools in the area. The simple random sampling technique was used to sample 100 SSS2 students from the population. The study used questionnaire and test to elicit information from respondents. The instruments were tested to ensure that they are valid and reliable for the study. The simple percentage, mean and t- test were used to analyze the data. After the analysis, the study found that the topic of the listening comprehension text used, audibility of teachers' voice, clarity of the audio-materials used, type of audio materials used, length of the listening comprehension text, oral form of assessment , written form of assessment, questioning as a teaching strategy, language of the listening text and the use pictures, realia, audio- material and teaching methods are some of the specific problems affecting the effective teaching of listening comprehension in senior secondary schools. The study also found

that there is a significant difference in listening comprehension performance between students taught using audio-materials and those taught using classroom text at the literal, inferential and critical levels. Based on these findings, the study recommends that government at all levels and school management should ensure that adequate and quality audio- materials such as tape recorder, language, laboratory, microphone, radio, etc, are provided for teachers and students, in order to ensure that audio-materials are used in teaching of listening comprehension in senior secondary schools and as adopt basic strategies for approaching literal, inferential and critical level of listening comprehension. As a matter of fact, listening comprehension plays an important role in communication as it is said that, of the total time spent on communication, listening takes up 40-50%; speaking, 2530%;reading, 11-16%; and writing about 9%(Gilakjani & Ahmadi, 2016).Yusuf(2015) is of the view that comprehension of listening text is affected by the class size. In a study conducted by him, he found that students in small class performed better than those taught in large class. He further notes that instructional materials are adequately used in small class compared to large class that materials are always inadequate coupled with the noise level of learners. Aidi (2017) is of the view that the use of computer assisted instruction can improve the way students engage in reading and approaching comprehension text. This according to him motivates learners to learn and make text simple for comprehension.

Specific Objective: Visual instructional materials and its effects on student's performance.

The influence of visual materials in promoting students' academic performance in teaching and learning process is indispensable because visuals materials are used by teachers to makes a successful and explicit transfer of knowledge from the teacher to the learner (Jeleehah, Oluwayemisi, and Theresa,2016).

Bushra (2017) conducted a research on the effect of visual instructional materials in enhancing the learning performance of students. His study was designed to enhance the effect visual instructional material on students learning performance at elementary level in district Peshawar. To achieve the purpose of the study, questionnaire was design as research tool to collect data. The targeted population of this research were the students of all the schools of District Peshawar. In this study, random sampling techniques was used for gathering information. Ten schools were randomly selected from district Peshawar and 10 students had selected from each school so 100 students constituted the sample size of the study. The collected data as analyzed

through the SPSS software and also data was represented in the percentage method. The analysis of the data indicated that majority of the students had positive perceptions of the use of visual aids. It was found out that the used of visual aids can made difficult ideals easy to understand, the use of visual aids made learning effective in classroom, visual aids save student's time. The study recommended that teachers may prepare and used visual learning aids; teachers may use such type of visual aids which can provide more information, can deliver message and create sense understanding.

In a similar vein, a study investigated teachers' use of visual aids in enhancing the learning and teaching process in the public primary schools Barkin-Ladi, plateau state in Nigeria. The researchers, employed a combination of both quantitative and qualitative approaches; survey and phenomenology. The study targeted public primary school teachers, pupils, head teachers, beads of sections and supervisors. The researcher used stratified random sampling technique and non-probability purposive random sampling method. The sample size of the study was; 254 teachers, 3 heads of sections and 13 supervisors. Descriptive statistics; frequencies, percentages, and inferential statistics were used. The findings revealed that the use of different types of visual aids like real objects, diagrams, charts, flashcards, maps and drawing was appropriate to all subjects and relevant to the teaching and learning process. The study recommended that; there is need for refresher courses, workshops, and conferences for the teachers to improve their skill of using different types of visual aids to the needs of the public primary schools teachers by providing enough visual aids to use during the teaching and learning process, the education office should ensure that close supervision and monitoring of teachers is done promptly to ensure that the teachers use right materials to facilitate the teaching and learning process, and the head of department quality assurance, personnel manager, head of primary education section, supervisors, can also liaise with the head teachers to ensure that teachers are using different types of visual aids and redirect more resources for them, to improve teachers' utilization and improvisation of different types of visual aids head teachers should monitor and ensure that teachers are using different types of visual aids. (Gyang Pam Chundung, Jacinta M. Adhiambo, Shem Mwalwa).

A study done by Saidu (2016) stated that visual aids are types of designated teaching and learning materials that may be locally produce, they appeal mostly to the sense of seeing. They come in form of, for example, wall charts, photographs, pictures, real objects, diagrams, images

etc In the same development, Olatoye (2017) revealed that there is statistically significant difference in educational performance of students when they are taught with instructional materials than when they are not taught with them.

Similarly, Achimuquii and Onojahii (2017) established that learners retain more concept when a variety of visual aids are used in teaching, and visual aids make it very possible for pupils to become more involved and active participants in the learning process instead of just being passive learners of the educational content. Visual aids help learners explain thoughts and facts, improve comprehension through communication and learners are able to incorporate knowledge with prior learning. This is in turn help teachers recognize misconceptions of learners. The learner can see, touch, smell or taste thereby making learning more meaningful.

Abel (2017) states that the use of various types of visual aids is essential during the teaching and learning process because it makes the learning process more effective; it builds greater understanding, reinforcement and retention of the subject matter. Idris, Shamsuddin, Arome &Aminu (2018) advance that visual aids are effective in conveying ideas and content more easily than verbal descriptions to learners. Learning is enhanced in the classroom when the course content is enriched with visual aids during the teaching and learning process has significant importance for the learning experience of the pupils in public primary schools.

Bukoye (2019) in his, pointed out that visual aids are interested and essential tools in learning every subject in the school curriculum, they allow the learners to interact with words, symbols and ideas in ways that develop their abilities in reading, listening, solving, viewing, thinking and writing. In the same vein, Adebayo and Adigun (2018) asserted that the use of visual instructional materials not only make discovery of facts easier but also glues them firmly in the memory of learners and makes motivated learners enjoy participating in lessons for examples; real objects like rocks and minerals etc.

Ghulam Shabiralyani, Shahzad Hasan, Naqvi Hamad (2015) explore the teacher's opinions on the use of visual aids (e.g., pictures, animation videos, projectors and films) as a motivational tool in enhancing students' attention in reading literary texts. To accomplish the aim of the research, the closed ended questionnaire was used to collect the required data. The targeted population for this research was the staffs and student of the public and private educational institutions of District Dera Ghazi Khan. In this research the primary data was used for gathering information. The

collected data is analyzed through the SPSS software and also data was represented in the percentage distribution of pie, line, and bar graphs. The analysis of the data indicated that the majority of the teachers had positive perceptions of the use of visual aids.

King (2018) explored the use of visual materials a tools to understanding subject specific terminology in life sciences in Eben Donges high school, Western Cape, South Arica. The study adopted qualitative research method where data collection was through informal interviews, observation and focused group interviews. The population of the study were Grade 10 sciences learners who were being educated in English. Ten learners were purposively selected, 7 females and 3 males, with an average age of 16 years. Most of the participants were born in South Africa and isiXhosa as local language.

The findings showed that by using visual teaching materials, constructivist teaching was promoted, which enhanced scientific skills and understanding. Also, the use of visual materials helps learners who were being taught in a language that was not their mother tongue struggled with life sciences. King' study was done on grade 10 learners only and did not capture the population, research questions, validity, reliability and methods in the abstract. The researchers found King's study vital in understanding teachers' effective use of visual materials in enhancing the teaching and learning process in Barkin-Ladi.

The study addressed the gap by finding out if teachers use different types of visual aids during the teaching and learning process in all subjects. Atwa and Ibrahim (2014) enumerate the different types of visual aids which included; models, actual objects, charts, maps, pictures, flannel boards, flashcards, white board, chalkboards, and slides are important to the teaching and learning process due to the fact that visual aids are capable of attracting attention, motivating pupils, encouraging and making lesson interesting to the pupils

Another study was carried out of the study to establish the effect of Instructional Materials on the academic performance of science students in West district Zanzibar, Tanzania. The study objectives included to establish the instructional materials being used for teaching in school and the second objective was to assess the academic performance of students in science subjects and finally to establish the relationship between the use of instructional materials and academic performance of science subjects. The data was collected using interview guide and questionnaire from 324 respondents asked on closed ended and the main research instrument of the study. The

researcher will survey research design in this study. Primary data on certain characters among the randomly selected sampling from the target population who are located at various points in the study area will be selected. The study findings reveal that instruction materials used was generally rated as low and this was indicated by the overall mean of 2.441 and this critically implies that the instruction materials usage in the schools of West district in Zanzibar are low. On the second objective the academic performance of students in science subjects in the secondary schools is generally low (over mean= 2.398). On the third objective results in indicated a positive relationship between instruction materials and academic performance of students in science subjects. The study concludes that there is inadequate usage of instruction materials laboratory equipment while audio visual aids of textbooks, reference books, maps and globes in schools under investigation. On the second objective the findings conclude that the performance of the students in sciences is poor especially in the national examinations. On the third objectives, never the less there was a relationship between instruction materials and academic performance of students in the schools. The study objective one recommends that government of Tanzania to ensure that, the increase of students in the school s should commensurate with the number of Instructional Materials allocated in each school. On the second objective, the teaching of science in secondary school should be conducted in a manner that students will effectively understand and learn the concept taught. On the third objective, School principal should provide science teachers with enabling environment for the use of available instructional materials to gives room for participatory studentship and make learning more meaningful.

According to Gardener (2015), students learn in a variety of different ways including through listening or auditory input. Some students are better auditory learners than others and may see more academic improvement when audio aids are used in the classroom. Teachers serve students best by instructing in all academic levels in the classroom. With students learning at different paces and through different methods, using aids in teaching is one way of achieving engagement and better retention of ideas. Also, Bruner (2015) states that knowledge is stored primarily in the form of visual images, this explains why, when one is learning a new subject, it is often helpful to have pictures, diagram, shapes, graphs or illustrations to accompany verbal information. Dele (2017) argued that audio media made it easier for students to understand things, because they listen to it over and over. Also, Fowlkers (2001) maintained that audio materials do

not only give students new different ideals but also provide better understanding of a particular concept

Specific Objective: Audio-visual instructional materials and its effects on student's performance.

Today education calls for innovation in teaching that attracts and the younger ones to leaning. They are virtual generation who want to see, feel and touch what they have been taught, the power of audio visuals in the fact that it stimulates and appeals to senses of the learners. Audiovisual instructional materials in teaching are those image and sound in addition to textual information. Audio visual materials are one of the teaching and learning tools which has been used by teachers to create technology-based classroom. It helps both teacher and students in their everyday teaching and process. Many definitions have been provided by scholars and writers about audio visual materials as cited in Guterres & Quintas (2018).

Audiovisual instructional materials add life to leaning experiences, as images and animations make words easier to comprehend and remember. The basic aim of education must be to lead students towards self-learning and life-long learning and this aim can be achieved through the use of audio visual instructional material as it improves the learning capacities of individual students (Singh, Sharma, Upadhya, 2012)An interested study was conducted to get to know the Pakistani University students insightful on the use of audio visual materials. They indicated that by recalling the situation from when they had heard or seen it, they would quickly remember new words. Similarly, another research was conducted specifically on improving speaking skills. Secundariu Cristal in the school year 2017 using audio visual materials by Charles Fatima Guterres (2018). The result of the research revealed that audio visual materials was successful way, and it improve student's speaking skills. The researcher added that this method helped in encouraging the students to develop their speaking ability as well. Kausar (2013) in Thaseem & Kareema (2017) presented that it is very important to use audio visual materials for learning English. It increases the amount of emotional input, the level and productivity of verbal skills. Audio visual materials support the sound and sight in teaching by enabling more than one sensory to promote students learning. A research study was conducted in “effect of audio-visual instructional materials on teaching science concepts in secondary schools in Bwari Area Council Abuja, Nigeria. The aim of this work was to bring out the contribution of Audio-visual instructional materials to the students’

achievement in sciences. The study adopted a pre-test, post- test quasi -experimental design. Two research questions and two hypotheses were formulated to guide the study. The sample of the study comprised on hundred students. A Science Achievement Test (SAT) that is, test instrument was used to gather data while mean, standard deviation and t-test statistics were used to analyzed the data. A reliability coefficient of 0.08 was found using the Kr-21 formula. Major finding revealed among others that audio-visual instructional materials has a significant effect on student's achievement in sciences. This finding was also supported by Dale in Carton, (2015) that each instructional material provides different learning experiences.

In addition, Doosuur & Sandra (2019) conducted a study on the use of audio-visual resources in college of Education in Benue state with specific reference to the College of Education, Katsina-Ala. The study was based on following purposes: To evaluate how library meets the needs of the teachers in supply of audiovisual materials: the types and quality of audiovisual materials available in college, their frequencies of use and inhibitions and finally what steps the librarian has taken in promoting or creating an awareness of the available audio visual resources I the library. Questionnaires were administered to lecturers to obtain the information. Data were collected, organized and analyzed using non parametric statistical. It was finally discovered that: The college collection of audiovisual materials is fairly adequate. The lecturers in the College rarely use audio visual resources in teaching. Non availability, lack of supporting infrastructure and human factors are hindrances to the use of audio-visual aids in the College. The awareness of audio-visual aids wasn't created by the librarian. Olayinka (2016) conducted a study on ‘Effects of Audio Visual Media as an instructional material on Secondary Schools Students ‘Academic Achievement in Social Studies in Ekiti State, Nigeria’ The aim of the study is to highlight the contribution of audio visual media as an instructional material to the academic achievement of secondary school students in Social Studies class II Students from among which 180 were sample. A multiple choice self-designed Social Studies Achievement Test (SSAT) was used to collect data for the study. The study generated four hypotheses that were tested at the significance level of 0.05. ANOVA and ANCOVA statistical tools were used to analyze the data collected. The study found that there was a significant difference in the pretest and posttest of students in experimental group. The study also found that gender effect was not statistically significant in social studies. The studies concluded that students who were taught with audio visual instructional materials performed better than those taught without. The study therefore recommended that teachers should employ the use of essential

audio-visual instructional materials for their teaching and also improvise where and when the materials are not available.

Another study aims to find out the use of audiovisual materials at the Junior High School level. The study seeks to provide information on the existing situation about the availability and use of audiovisual materials in teaching students in Junior High Schools in Effia, in Effia Kwesimintsim Municipal Assembly. This study used qualitative approach, and used all the nine public junior high schools in Effia with ten students and one teacher randomly selected from each public JHS in Effia to form a sample size of 99 respondents for the study. The findings revealed that although the students in the nine public JHS in Effia are not taught using those materials and this was affirmed with a significant majority of the students saying they desired to be taught with audiovisual materials in their various classrooms experience. The research recommended that audiovisual materials should be made available by stakeholders in the educational sector such as; the parent Teacher Association (P.T.A), the municipal assembly, the ministry of education and non-governmental organizations.

Saula, Shamsideen (2016) carried out a study to investigate the development of students with the use of audio-visual aids with complete virtual learning and their impact of audio-visual materials in the dissemination of knowledge in teaching methodology. It also compares the use of traditional methods with the modern teaching methodology. For this, the impact of audio-visual materials in the dissemination of knowledge in some selected literacy centers was studied. The research adopts descriptive research survey with focus on students attending various literacy centers in Oshodi/Isolo Local Government Area and instrument used for the study was a questionnaire developed to cover the research questions and hypotheses. Fifty respondents were randomly selected from various literacy centers in Oshodi/Isolo Local Government Area of Lagos State for data collection. Data were analyzed using frequency tables and percentages. It can be concluded that as was suggested in the paper that there is a great impact of audio-visual aids in the state. It motivates students to attend lectures as they are very curious to see or hear what the facilitator is going to show them in the upcoming class, saves time of copying notes and increasing more communication skills. Gopal (2010) stressed that audiovisual materials help teachers to overcome physical difficulties of presenting subject matter. That to say, with audio visual materials, the barrier of communication and distance is broken. The culture and climatic conditions of other

countries can be brought into the classroom with the aid of slides, films, filmstrips and projectors. According to Dike (1993) ‘once the phenomenon is visualized, the picture and knowledge becomes very clear and permanent’. Agreeing to this assertion, a 20th century Chinese philosopher stated that ‘one picture is worth a thousand words.

Ulioa and Diaz (2018) conducted in a semi –public school in Chile, this action research study aims at determining the change in 18 English as a foreign language young learners’ performance regarding their understanding of instructions after being exposed to an audiovisual material- based teaching strategy. With the use of a lesson observation report for assessing the way they follow instructions and a likert scale to analyze their attitudes towards the strategy, findings show there was a positive change in their performances and that these learners regard this strategy as beneficial, which supports the belief that the inclusion of audiovisual aids benefits young learners when learning English.

Elif Akay (2021) demonstrated the contribution of visual and audiovisual materials to the efficiency of the social studies course for 4th-grade students with hearing loss. Findings of the study have been collected through video recordings of the lessons, validity meetings, the research log, realia, photographs/images, graphic organizers, and educational videos/documentaries. Data analysis demonstrates that the use of visual and audiovisual materials contributes substantially to students’ (a) comprehension of the questions and explanations, (b) participation in and drawing conclusions from classroom discussions, and (c) understanding of new vocabulary and concepts. Based on the results, it can be argued that the use of visual and auditory materials presented so as to cater to the individual needs of the students, together with various educational strategies, provides significant advantages in the acquisition of academic knowledge by students with hearing loss. A study done by Ashaver (2013) highlighted that, there are numerous benefits that students derive from the use of Audio-visual materials. Furthermore, Agun (2016) in his study of ‘’ importance of Audio- visual instructional materials stated that a teacher can use instructional materials in various ways to make his lesson effort less, more effective and thus more productive in terms of student learning and growth. It provides a clear audiovisual learning aid that benefited learners in paying attention especially when the learners had to learn through a video which they could easily relate to. Also, Adamuetal (2018) says the use of audio- visual instructional materials in teaching classification of living things shows that it plays a great role in enhancing students’

academic performance. Tambo (2012) posited that, Television is one of the most impressive technological wonders developed in the twentieth century, thus some studies have been done on television as an effective instructional material

Adole (2011) further stated that; audio visual materials are very important in the teaching and learning process because of the following;

- They offer experience giving the learner basis for thinking and understanding
- They supply concrete basis for conceptual thinking and hence reduce meaningless response of students.
- They overcome limitation of time, space, size, helping us to understand things that are too small for ancient to show too fast.
- They can provide the members of the groups a joint common experience
- They bridge language barriers and difficulties.
- They simplify and emphasis and help clarify difficulties

  Osuala (2015) supported these further by stating that "it aids retention and have opportunity to gain through mastery''. Thus, stressing the relationship between instructional materials and student's educational advancement.

Research Gaps.

In this chapter the central role functions of the instructional materials on students' performance in schools. A number of writers have written on one or more of the resources and in all cases have pointed output how increasing usage of instructional materials enhance students' performance in science subjects particular and indeed in all disciplines. It has shown in their different writings the need to have adequate instructional materials have an effect on students' performance; these reviewed literatures fall short of the very consideration of geology as a subject and also the studies were not presented in the environment of Cameroon.

Summary of Literature review

The importance of instructional materials in teaching and learning cannot be over emphasized, successful implementation of any curriculum is fully dependent on the quality and quantity of instructional materials available to teachers and students for use in schools. It also depends on the quality of being easy to obtain or use. Instructional materials simulate learner's

interest; help both the teacher and the learner to overcome physical limitation during presentation of subject matter. Similarly, instructional materials enrich learning and make it more pleasant, are used as checks to the teachers' knowledge and means for transmission. Instructional materials also give teachers the air guidance, coordination, supervision and more time for correction and brighten the classroom and bring variety in the class lesson.

However, some research evidence on the variables under review was with foreign backgrounds. Very few indigenous works exist. Although researchers whose works were reviewed, were based on the other study area. It is therefore the desire of the researcher to carry out this study in Yaounde VI to ensure the work have been done locally to bridge the gap in knowledge in that area.

CHAPTER THREE: RESEACH METHODOLOGY.

This chapter provides a description of the methodology which was used in this study. The sections include description of research design, area of study, the population of the study, sample size, sampling techniques, instrument for data collection, validation and reliability of research instrument, procedure of data collection, method of data analysis, challenges and ethnical consideration

Research Design.

According to Jahoda, Deutch and Cook in Akhtar (2016) research design is the arrangement of conditions for the collection and analysis of data in a manner that's aims to combine relevance to the research purpose with economy and procedure.

The research design adopted for this study was Quasi-Experimental in nature. Using pretest and posttest approach carried out in selected secondary school in Yaounde VI. They were randomly selected using simple random techniques and were assigned into control and experimental groups respectively. The selected school is equal in term of using the same government approved curriculum. It also has qualified science teachers. Both control and experimental groups did the pretest before the experimental groups were taught with geology instructional materials (IM) as treatment. Instructional materials used included: Print (textbook), visual (rock samples, minerals) audiovisual (computer), to teach the topic "Rock Classification and Mineralogy". After the treatment, the control and experimental groups did the post test. To verify whether students who were taught using instructional materials showed significantly greater performance in geology than students taught without geology instructional materials. The change was measured by comparing the different in the pre-test(before) and post-test (after)

Area of study

Presentation of Franky Comprehensive Secondary School Yaounde

Background

Franky Comprehensive Secondary School Yaounde is found in the VI subdivision of the centre region of Yaoundé. It was created in 2011.

MOTO: discipline- hardwork-success

Location: situated at Biyem-Assi (Biscuterie) behind Boulangerie Française

Number enrolled this academic year 2020-2021: 746 students, table 1

Table 1: Total number of students enrolled 2021-2022

General education	
First cycle	Second cycle
370	376

Franky is actually an academic complex having the Nursery and Primary school section as well as the secondary and high school section.

They both take part in the General Certificate of Education (GCE) Ordinary level and GCE Advance Level examination at the end of a five-year course and a two-year course respectively. The main activities carried out in this institution are

- Pedagogic activities during normal classroom lessons
- Extracurricular activities often during the Youth week, Bilingualism week and the Philosophy day.

Being a modern secondary school, its gives lessons and programs as provided by the general inspectorate of education that are in line with the syllabuses of all subjects. Table 2.2 below gives an analysis of the success rate for the last 4 academic years.

Table 2: GCE performance for the last four years

Year	**%Passed GCE Ordinary Level**	**%Passed GCE Advanced Level**
	General education	**General education**
2021	98.50%	92.31%
2020	99.2%	90.30%
2019	96.69%	97%
2018	94.74%	93.02%

The General Section

This section is also made up of two departments namely:

1. Science

2. Arts

The school has a series of subjects that are mainly divided into two broad series of science and and arts for the high school section meanwhile concerning the secondary section, forms one to three offer all the 13 subjects while form five starts specialising into Arts or science subjects depending on the speciality the understand best and will pursue their education with.

The high school or second cycle is divided into sets of series as represented in table 2.3. below

Table 3: Series of the second cycle

Sciences study		**Artsstudy**	
Series	**Sub jects**	**Series**	**Subjects**
S1	Chem/Maths/Physics	A1	Lit/French/History
S2	Bio/Chem/Physics	A2	Econs/Geo/History
S3	Bio/Chem/Maths	A3	Econs/His/Lit
S4	Bio/ Chem/ Geology	A4	Econs/Geo/Maths
S5	Absent	A5	Lit/French/History/Philosophy
S6	Chem/Maths/Physics/F Maths	A6	His/Lit/Philosophy
S7	Bio/Chem/Maths/Phy		
S8	Bio/Chem/Maths/Phy/Fmaths		
S9	Phy/Chem/Ict/Food Science		
S10	It could be a combination of any subject		

Organisational Structure

Administrative Set Up

Franky is a private institution and as such? The principal is answerable to the management of the school. The organization of the administrative set up is highly bureaucratic nature with defined roles and functions. At the top of the pyramid shaped structure is the Management, followed by the Principal who is assisted by 1 vice principals who serves as the dean of studies and

is responsible fordrawing of the time-tables. Next is a discipline master in charge of discipline and punctuality of students and the aciduity of teachers, the bursar who is responsible for all financial matters. Students close the bottom rank after the school prefects who assist the discipline masters

Infrastructure

The school is made up ofseveral buildings divided into the primary and secondary sections. It has the necessary offices for the Principal, vice principal, discipline master, a staff room, a store, toilets and the playground.

Administrative Organigramme

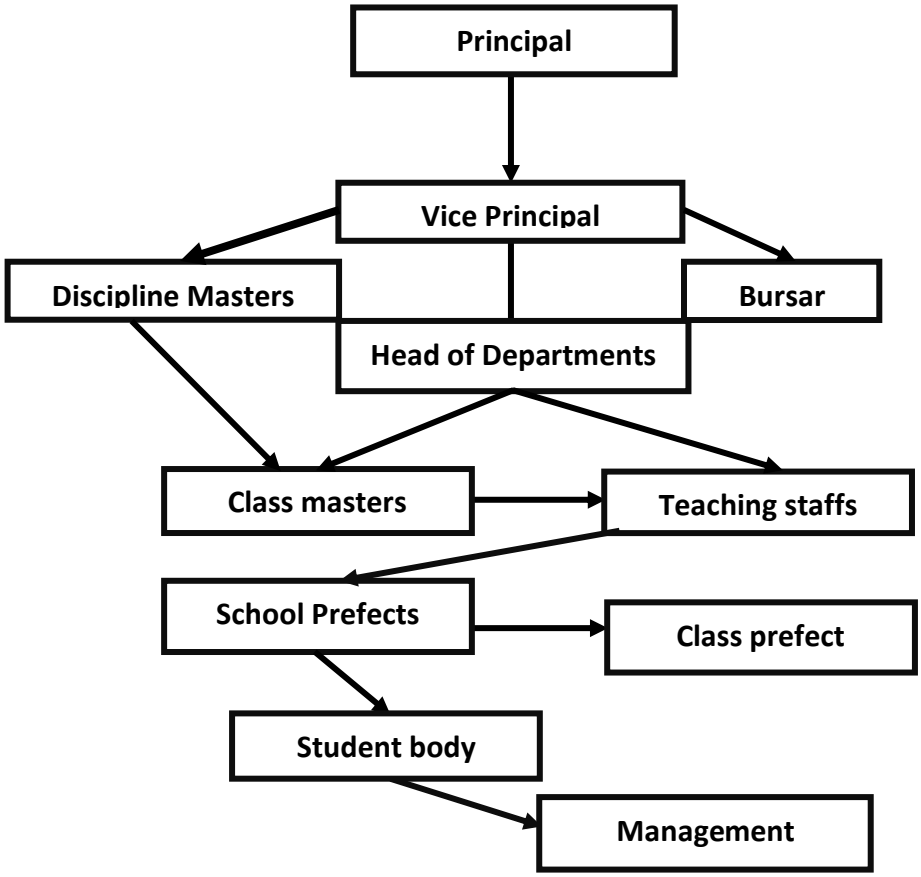


Figure 3: Administrative organogram of Franky Comprehensive Secondary School Yaounde.

Research Population

This study involved four classes in the selected secondary school in Yaounde VI. These classes were chosen because at this point the students had been introduced to geology as a subject and already introduced into practical

Sample of the Study

The desirable population was obtained through simple random technique. To obtain the samples, the names of the schools were written on piece of papers and put in a container and then drawn randomly. This method was used to eliminate bias and to provide accurate answers. The sample for the study consisted of eighty-three (83) students. These students were assigned into 5 groups.

Research Instrument

One instrument was used to collect data for this study, which is the influence of instructional material questionnaire. The questionnaire consisted of two sections (A and B). Section A was designed to elicit information on the respondents' demography while section B consisted of statements to which respondents were meant to indicate their level of agreement or disagreement based on the 4-point likert type scale. The likert scale adopted was as follows:

- SA – Strongly agree
- D – Disagree
- SD –Strongly disagree
- A - Agree

Secondary data

Secondary data were collected through consulting different publications relevant to the study from internet and others document.

Validity of Research Instrument

In this study, content and face validity was carried out. The developed questionnaire was given to 2 experts in the area of Measurement and Evaluation. These experts determined the suitability, appropriateness and relevance of the items in the instrument. Their observations, criticisms and corrections led to the modification, addition or removal of some items that will not illicit the desired information.

Reliability of the instrument

In order to establish the reliability of the instruments, Cronbach Alpha reliability estimate method was adopted. This was done through administration of questionnaire on the use of

instructional materials on students' performance in Geology to 35 respondents who would not be part of the actual sample used for the study. After the administration and retrival of the instrument from the respondents, their scores were analyze using the Statistical Package of Social Science (SPSS).

Table 4: Reliability Statistics

S/N	Variable	N	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
1	Print instructional materials and student's performance	5	0.86	0.97
2	Audiovisual instructional materials and student's performance	5	0.88	0.97
3	Audio instructional materials and student's performance	5	0.86	0.97
4	Visual instructional materials and student's performance	5	0.75	0.81
	Total	20	0.84	0.93

A reliability value of 0.834 means the instrument was reliable for the study.

The Methods or Procedure for Data collection

The following procedures were used for data analysis

Hypothesis One:

There is no significant relationship between print instructional materials and performance of students in Geology.

- Independent variable –Print instructional materials
- Dependent variable - Students' academic performance
- Statistical analysis –Pearson Product Moment Correlation Coefficient

Hypothesis Two:

There is no significant relationship between visual instructional materials and the performance of students in geology

- Independent variable - Visual instructional materials
- Dependent variable- Students' performance.
- Statistical analysis - Pearson Product Moment Correlation Coefficient

Hypothesis three:

There is no significant relationship between Audio instructional materials and the performance of students in geology:

- Independent variable –audio instructional materials
- Dependent variable - Students' performance
- Statistical analysis – Pearson Product Moment Correlation Coefficient.
- Hypothesis Four;
- There is no significant relationship between the use of audiovisual instructional materials and students' performance in geology.
- Independent variable –Audiovisual materials
- Dependent variable – students' performance
- Statistical analysis – Pearson Product Moment Correlation Coefficient.

The sampled school was visited by the researcher and permission sought from the institutional heads. When permission was granted, the researcher briefed the subject teachers on the nature of the research. A month two weeks were used to teach the topics" Rock Classification and Mineralogy ". The pretest was administered to test the students understanding on the topics after going through the lesson without instructional materials used. After the test was done, the scripts were collected and marked by the researcher and the scores were recorded out of 30marks.The researcher continued to teach after the administration of the pretest. The teaching took place for a month two week while the field supervisor monitored(observed) how the researcher used instructional materials to teach the topics.

After a month and two weeks of teaching, a post test was administered to both the control and experimental groups. The immediate testing after teaching was to ensure that no new learning experiences interfered with the experimental conditions. The scripts were collected and marked by a researcher and scored over 30marks. The marks that individual students obtained were recorded by the researcher.

Methods of Data Analysis

To prepare the data collected for statistical analysis, items in the questionnaire were labeled and coded in section A. Section B had items which were classified according to the variables they were designed to test. Positively items were score from 4 to 1 while negatively worded items were scored in reverse.

Pearson product moment was the statistical test used for the data analysis. It was used to address the research objectives and to test the null hypotheses of the students. The Pearson product moment aimed at establishing the relationship between the independent and dependent variables.

Ethical considerations

Ethical issues are very necessary else it can lead to a non-validation of the research findings, to ensure this, the following rules were respected.

Firstly, the researcher ensured that she obtained a research permit from the dean of study of the Department of Science of Education before the researcher went to the field (see appendix). The researcher equally requested for permission from the administration of the schools under study.

Secondly, respondents were assured over the issues of confidentiality, that on no occasion will their names be mentioned. They were made to understand that the research was purely for academic purposes and poses no threat to their personality.

Thirdly, the issue of informed consent was guaranteed by asking for permission from the school authorities and teachers. Any materials collected through questionnaire were to be kept confidential.

Fourthly, the research items were phrased such that it avoided any psychological harm to the respondents. None was on any occasion forced to provide the information needed during the process of data collection. It was voluntary.

Table 5: Synoptic table

Main objective	RH	SRH	IV	Indicators	DV	Indicators	Measuring	Data analysis tool
To find out the influence of instructional materials on geology students' academic performance.	Instructional materials influence students' academic performance	SH1: print instructional materials influence geology students' performance. SH2: Visual instructional materials influence students' performance SH3: Audio–visual instructional materials influence students' performance SH4: Audio instructional materials influence students' performance	Instructional materials	Learners participation with textbooks. Availability and use of podcast. Availability and use of pictures Availability and use of real objects (rocks and minerals samples) Availability and use of projection, films and computers	Students' academic performance	- Improvement in performance - Active learning - Positive attitudes towards learning - Improvement in mental skills - Improvement in pronunciation - Improvement in reading skills	- Strongly agree - Agree - Strongly disagree - Disagree	The likert scale

CHAPTER FOUR
DATA ANALYSIS AND PRESENTATION OF RESULTS

The purpose of this study was to assess To what extent do instructional materials influence student's academic performance in Franky secondary schools in Yaounde VI, and this was further divided into four specific objectives as stated as follows: To find out the effect of print instructional materials on student's performance, the effect of audio material on student's performance; the of visual material on student's performance in Franky Comprehensive Secondary School in Yaounde VI and the effect of audio visual material students' performance in Franky Comprehensive Secondary School in Yaounde VI. This chapter includes the results of the procedures used to answer the four research questions and test the four hypotheses. The results include statistical significance when appropriate and whether the null hypotheses were accepted or rejected.

Result based on research questions

This section will present the results of the analysis based on the research questions. Four research questions were formulated for this study as presented below:

Section II: Print instructional materials and student's performance

Table 6: Presenting responses on print instructional materials and student's performance

Items		Strongly Agree	Agree	Disagree	Strongly disagree
Q1	When you give students assignment in their work books, it helps improve their	18(21.7%)	49(59.0%)	10(12.0%)	6(7.3%)
Q2	When you teach using a text book in class, it helps improve	13(15.7%)	57(68.7%)	11(13.3%)	2(2.3%)
Q3	Students perform better in examination when they write examination on type and well	19(22.9%)	32(38.6%)	31(37.3%)	1(1.3%)
Q4	When you give students home work to reason their text books before the lesson, it helps	6(7.8%)	48(57.8%)	25(30.1%)	4(4.8%)
Q5	When students see picture in their textbooks during lesson in class, they learn better and	22(26.5%)	34(41.0%)	21(25.3%)	6(7.3%)

Table6aboverepresentsthedescriptiveanalysisofthe influence of various types of instructional material on students' performance in geology. Five items were developed in order to respond to the question on the influence of print instructional materials on students' academic performance. The results of the analysis revealed that for items one (Q1), the majority of the participant affirmed 49(59.0%) that when they give students assignment in their work books, it helps them improve their performance in geology. The results also revealed that for item two (Q2) most participants agree 57(68.7%) that when they teach using textbooks in class, it helps improve student's performance. For item three (Q3) the majority agree 32(38.6%) that Students perform better in examination when they write examination on type and well printed papers. The result of the analysis revealed that for Q4 most participants 48(57.8%) agree that when they give students home work to reason on their text books before the lesson, it helps improve their performance. Finally, item five (Q5) revealed that most participants agreed 34(41.0%) that when students see picture in their textbooks during lesson in class, they learn better and hence improve on their performance. Based on the responses a good number of them asserted that print instructional materials a significant influence on their academic performance in geology.

Section III: Audiovisual instructional materials and student's performance

Table 7: Presenting responses on audiovisual instructional materials and student's performance

Items		Strongly Agree	Agree	Disagree	Strongly disagree
Q1	When students are taught through films, they perform better academically	13(15.7%)	54(64.1%)	13(15.7%)	3(3.6%)
Q2	When students are taught through film strips, they understand the concept easily and perform better academically	15(18.1%)	45(54.1%)	10(12.0%)	13(15.7%)
Q3	Students could easily understand and perform better academically when they are taught with computer	19(22.9%)	31(37.3%)	28(33.1%)	5(6.0%)
Q4	When students are taught with video tapes, they understand and perform better academically	12(14.5%)	48(57.8%)	18(21.7%)	5(6.0%)
Q5	Lessons which are taught with television are more interactive and the students intend understand better	22(26.5%)	34(41.0%)	13(15.7%)	14(16.9%)

Table 7 above represents the descriptive analysis of the influence of audiovisual instructional material on students' academic performance. Five items were developed in order to respond to the question to that effect. The results of the analysis revealed that for items one (Q1), the majority of the participant asserted 54 (64.1%) that when students are taught through films, they perform better academically. The results also revealed that for item two (Q2) most participants agree 45(54.1%) that when students are taught through film strips, they understand the concept easily and perform better academically. For item three (Q3) themajorityagree31(37.3%) that students could easily understand and perform better academically when they are taught with computer. The result of the analysis revealed that forQ4 most participants48(57.8%) agree that when students are taught with video tapes, they understand and perform better academically. Finally, item five (Q5) revealed that most participants disagreed 34 (41.0%) that lessons which are taught with television are more interactive and the students intend understand better. Based on the responses the great majority of participants asserted that audiovisual instructional materials had a significant influence on students' academic performance in geology.

Section IV: Audio instructional materials and student's performance

Table 8: Presenting responses on audio instructional materials and student's performance

Items		Strongly Agree	Agree	Disagree	Strongly disagree
Q1	When students listen to teacher's voicemail, they understand and perform better academically	10(12.0%)	46(55.4%)	6(7.2%)	21(25.3%)
Q2	When facts are recounted to students with the use of tape recorder, they will widely understand better and perform better academically	10(12.0%)	45(54.2%)	21(15.5%)	7(8.4%)
Q3	When students listen from radio, they easily keep and store information in their memory and perform better academically	13(15.7%)	35(42.2%)	24(28.9%)	11(13.3%)
Q4	From your experience when you teach with a microphone and speaker in a large classroom it enhances the understanding of the subject easily	28(33.7%)	40(48.2%)	13(15.7%)	2(2.4%)
Q5	When you teach using phones in class, it helps improve on the students' performance	23(27.7%)	35(42.2%)	4(4.8%)	21(25.3%)

Table 8 above represents the descriptive analysis audio Instructional materials influence on students' academic engagement Five items were developed in order to respond to the question to that effect. The results of the analysis revealed that for items one (Q1), the majority of the participant affirmed 46(55.4%) that when students listen to teacher's voicemail, they understand and perform better academically. The results also revealed that for item two (Q2) most participants agree 45(54.2%) that when facts are recounted to students with the use of tape recorder, they will widely understand better and perform better academically. For item three (Q3) the majority agree 35 (42.2%) that when students listen from radio, they easily keep and store information in their memory and perform better academically. The result of the analysis revealed that for Q4 most participants 40 (48.2%) agree that from their experience when they teach with a microphone and speaker in a large classroom it enhances the understanding of the subject easily. Finally, item five (Q5) revealed that most participants agreed 35 (42.2%) that when they teach using phones in class, it helps improve on the students' performance. Based on the responses a good number of the asserted that the audio instructional materials had an effect on their performance in geology.

Section V: Visual instructional materials and student's performance

Table 9: Presenting participants' responses on Visual instructional materials and student's performance

Items		Strongly Agree	Agree	Disagree	Strongly disagree
Q1	When you teach using maps in class, it helps improve on student's performance	53(63.9%)	30(36.1%)	0(0.0%)	0(0.0%)
Q2	When you teach with the use of elaborated diagrams students understand and perform better	19(22.9%)	55(66.3%)	8(9.6%)	1(1.2%)
Q3	When you teach using pictures in class, it helps improve on students' performance	34(41.0%)	36(43.4%)	13(15.7%)	0(0.0%)
Q4	Students perform better When you use the chalk board elaborated well	20(24.1%)	40(48.2%)	23(27.7%)	0(0.0%)
Q5	When you teach using flash cards in class, it helps improve on student's performance	23(27.7%)	35(42.2%)	4(4.8%)	21(25.3%)

Above represents the descriptive analysis of visual instructional materials. Five items were developed in order to respond to the question on the influence visual instructional materials on their academic performance. The results of the analysis revealed that for items one (Q1), the majority of the participant strongly agree53(63.9%) that when they teach using maps in class, it helps improve on student's performance. The results also revealed that for item two (Q2) most participants agreed 55(66.3%) that when they teach with the use of elaborated diagrams students understand and perform better. For item three (Q3) the majority agree 36(43.4%) that when they teach using pictures in class, it helps improve on students' performance. The result of the analysis revealed that for Q4 most participants 40(48.2%) agree that students perform better when they use the chalk board elaborated well. Finally, item five (Q5) revealed that most participantsagreed35(42.2%) that when they teach using flash cards in class, it helps improve on student's performance. Based on the responses a good number of them asserted that visual instructional materials have increased their retention of geology lessons which effect their academic performance.

Testing of hypothesis

A hypothesis is a predicted answer to a research question or problem. In social science research, there are two types of hypotheses; the Alternative hypothesis (sometimes called

secondary hypothesis) denoted Ha which represents the hypothesis that the researcher wants to verify and the statistical or null hypothesis denoted Ho. These hypotheses are generally formulated in terms of independent and dependent variables. During this research project, four research hypotheses were formulated as follows:

- H01: Audiovisual instructional materials do not influence student's performance in the secondary schools.
- H02: Audio instructional materials do not influence student's performance in the secondary schools.
- H03: Visual instructional materials do not influence student's performance in the secondary schools.
- H04: Print instructional materials do not influence student's performance in the secondary schools.

Verification of research hypothesis 1 (RHo1)

- H01: Audiovisual instructional materials do not influence student's performance in the secondary schools.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.244[a]	.060	.048	1.411

a. Predictors: (Constant), Audiovisual instructional material

The independent variable studied, explain that students' performance is influence by 6.0% by the independent variable, as represented by the R2 in the table above. This indicates Audio-visual materials has a very weak influence on their academic performance and 94.0% of the students' performance is influence by other factors. It is also observed that, there is a very weak positive relationship (r=0.244, SE=1.411) between the criterion and the predictor variables.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.229	1	10.229	5.136	.026[b]
	Residual	161.337	81	1.992		
	Total	171.566	82			

a. Dependent Variable: Students' Performance

b. Predictors: (Constant), Audiovisual instructional material

In the same light the analysis of variance (ANOVA) was used to check the significant level of influence of the predictor variable on the dependent variable. A significant regression equation was obtained as ($F(1, 81) = 5.136$, $P < 0.05$. The P-value obtained indicated that there was statistically significant influence of Audio-visual materials over the academic performance of the students. The result above reveals that Audio-visual materials is a strong predictor of students' performance in geology because they are linearly related.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	13.425	1.178		11.395	0.000
	Audiovisual instructional material	0.180	0.079	0.244	2.266	0.026

a. Dependent Variable: Students' Performance

The simple linear regression model indicates that the independent variable (Audio-visual materials) had a positive β coefficient. According to the regression equation established, Audio-visual materials at a constant of zero, students' performance in geology will be 13.425. The findings also reveal that every unit increase in Audio-visual materials will lead to a 0.180 increase in students' performance in geology. At 5% level of significance and 95% level of confidence Audio-visual materials had a 0.026 level of significance, which means it does have a significance influence in students' performance in geology.

Verification of research hypothesis 2 (Rho2)

- H02: Audio instructional materials do not influence student's performance in the secondary schools.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.257[a]	.066	.054	1.407

a. Predictors: (Constant), Audio instructional materials

The independent variable studied, explain that students' performance is influence by 6.0% by the independent variable, as represented by the R2 in the table above. This indicates that Audio materials has a good degree of influence on the academic performance of students and 93.4% of the students' performance is influence by other factors. It is also observed that, there is a mild positive relationship (r=0.257, SE=1.407) between the criterion and the predictor variables.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	11.321	1	11.321	5.722	0.019[b]
	Residual	160.245	81	1.978		
	Total	171.566	82			

a. Dependent Variable: Students' Performance

b. Predictors: (Constant), Audio instructional materials

In the same light the analysis of variance (ANOVA) was used to check the significant level of influence of the predictor variable on the dependent variable. A significant regression equation was obtained as (F(1, 81)=5.722, P <0.05. The P-value obtained indicated that were was a statistically significant influence of Audio materials over the academic performance of the students. The result above reveals that Audio materials is a strong predictor of students' performance in geology because they are linearly related.

Model		Coefficients[a] Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	13.180	1.219		10.811	0.000
	Audio instructional materials	0.198	0.083	0.257	2.392	0.019

a. Dependent Variable: Students' Performance

The simple linear regression model indicates that the independent variable (Audio materials) had a positive β coefficient. According to the regression equation established, Audio materials at a constant of zero, students' performance in geology will be13.180. The findings also reveal that every unit increase in Audio materials will lead to a 0.198 increase in students' performance in geology. At 5% level of significance and 95% level of confidence Audio materials had a 0.019level of significance, which means it does have a significance influence on students' performance in geology.

Verification of research hypothesis 3 (RHo3)

- H03: Visual instructional materials do not influence student's performance in the secondary schools.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.049[a]	0.002	-.010	1.454

a. Predictors: (Constant), Visual instructional materials

The independent variable studied, explain that students' performance is influence by 0.2% by the independent variable, as represented by the R2 in the table above. This indicates that visual instructional materials have a very weak influence on the students' academic performance and 99.8% of the students' performance is influence by other factors. It is also observed that, there is a weak positive relationship (r=0.049, SE=1.454) between the criterion and the predictor variables.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	0.407	1	0.407	0.193	0.662[b]
	Residual	171.159	81	2.113		
	Total	171.566	82			

a. Dependent Variable: Students' Performance

b. Predictors: (Constant), Visual instructional materials

In the same light the analysis of variance (ANOVA) was used to check the significant level of influence of the predictor variable on the dependent variable. A significant regression equation was obtained as (F(1, 81)=0.193, P >0.05. The P-value obtained indicated that there was no statistically significant influence of visual instructional materials over the academic performance of the students. The result above reveals that visual instructional materials is not a strong predictor of students' performance in geology because they are not linearly related.

Model		Coefficients[a] Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	15.426	1.481		10.416	0.000
	Visual instructional materials	0.041	0.094	0.049	0.439	0.662

a. Dependent Variable: Students' Performance

The simple linear regression model indicates that the independent variable (visual instructional materials) had a positive β coefficient. According to the regression equation established, visual instructional materials at a constant of zero, students' performance in geology will be 15.426. The findings also reveal that every unit increase in visual instructional materials will lead to a 0.041 increase in students' performance in geology. At 5% level of significance and 95% level of confidence Audio-visual materials had a 0.662 level of significance, which means it does not have a significance influence in students' performance in geology.

Verification of research hypothesis 4 (RHo4)

H04: Print instructional materials do not influence student's performance in the secondary schools.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.229[a]	0.053	0.041	1.417

a. Predictors: (Constant), Print instructional materials

The independent variable studied, explain that students' performance is influence by 5.3% by the independent variable, as represented by the R2 in the table above. This indicates that Print

materials have a very weak influence on the students' academic performance and 94.7% of the students' performance is influence by other factors. It is also observed that, there is a weak positive relationship (r=0.229, SE=1.417) between the dependent and the predictor variables.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.034	1	9.034	4.502	0.037[b]
	Residual	162.533	81	2.007		
	Total	171.566	82			

a. Dependent Variable: Students' Performance

b. Predictors: (Constant), Print instructional materials

In the same light the analysis of variance (ANOVA) was used to check the significant level of influence of the predictor variable on the dependent variable. A significant regression equation was obtained as ($F(1, 81) = 4.502$, $P<0.05$. The P-value obtained indicated that there was a statistically significant influence of Print materials over the academic performance of the students. The result above reveals that Print materials is a strong predictor of students' performance in geology because they are not linearly related.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.615	1.168		11.653	0.000
	Print instructional materials	0.167	0.079	0.229	2.122	0.037

a. Dependent Variable: Students' Performance

The simple linear regression model indicates that the independent variable (Print materials) had a positive β coefficient. According to the regression equation established, Audio-visual materials at a constant of zero, students' performance in geology will be 13.615. The findings also reveal that every unit increase in Print materials will lead to a 0.167 increase in students' performance in geology. At 5% level of significance and 95% level of confidence Print materials had a 0.037 level of significance, which means it does have a significance influence in students' performance in geology.

summary of the findings

The following implications were made based on the findings

Table 22.0: Implementation of findings of all the objectives

Variable	Pearson correlation	R square	Unstandardized Beta values	Significance	Decision
Audiovisual instructional materials	.244	.060	0.18	.026	Audiovisual instructional materials had a significant effect on the students' academic performance in Geology. Therefore, we reject the null hypothesis
Audio instructional materials	.257	.066	0.198	0.019	Audio instructional materials had a significant effect on the students' academic performance in Geology. Therefore, we reject the null hypothesis
Visual instructional materials	.049	.002	1.041	0.662	Visual instructional materials did not have a significant effect on the students' academic performance in Geology. Therefore, we accept the null hypothesis
Print instructional materials	.229	.053	0.167	0.037	Print instructional materials had a significant effect on the students' academic performance in Geology. Therefore, we reject the null hypothesis

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This section presents the Discussion, conclusion and recommendations arrived at according to the researcher's findings and based on the data collected. This work focused on assessing the use of Instructional Materials on Geology Student's Performance in Franky Comprehensive Secondary School in Yaounde VI. The discussions are related to the literature reviewed and the results obtained from the findings. The study aimed at achieving the following objectives:

- To find out the use of audio-visual material students' academic performance in Franky Comprehensive Secondary School in Yaounde VI
- To find out the use of audio material on student's academic performance in Franky Comprehensive Secondary School in Yaounde VI
- To find out the use of visual material on student's academic performance in Franky Comprehensive Secondary School in Yaounde VI
- To find out the use of print instructional materials on student's academic performance in Franky Comprehensive secondary school in Yaounde VI

Discussion

Audio-visual material influence on students' performance

This work focused on assessing the influence of Audio-visual material influence on students' performance in geology.

The objective was stated as follows: To find out the use of audio-visual materialon students' performance and this objective was guided by a research question and a null hypothesis. The results obtained from the analysis revealed that the P-value obtained was greater than 0.05 as expressed in the following regression equation ($F(1, 81) = 5.136$, $P0. < 05$. The P-value obtained indicated that there was a statistically significant influence of Audio-visual materials over the academic performance of the students. The result above reveals that Audio-visual materials is a strong predictor of students' performance in geology because they are linearly related. The null hypothesis was therefore rejected.

This result was similar to a research study that was conducted on the "effect of audio-visual instructional materials on teaching science concepts in secondary schools in Bwari Area Council Abuja, Nigeria. The aim of this work was to bring out the contribution of Audio-visual instructional materials to the students' achievement in sciences. The study adopted a pre-test, post- test quasi - experimental design. Two research questions and two hypotheses were formulated to guide the study. The sample of the study comprised on hundred students. A Science Achievement Test (SAT) that is, test instrument was used to gather data while mean, standard deviation and t-test statistics were used to analyzed the data. A reliability coefficient of 0.08 was found using the Kr-21 formula. Major finding revealed among others that audio-visual instructional materials has a significant effect on student's achievement in sciences. This finding was also supported by Dale in Carton, (2015) that each instructional material provides different learning experiences.

In the same light, Saula (2016) carried out a study to investigate the development of students with the use of audio-visual aids with complete virtual learning and their impact of audio-visual materials in the dissemination of knowledge in teaching methodology. It also compares the use of traditional methods with the modern teaching methodology. For this, the impact of audio-visual materials in the dissemination of knowledge in some selected literacy centers was studied. The research adopts descriptive research survey with focus on students attending various literacy centers in Oshodi/Isolo Local Government Area and instrument used for the study was a questionnaire developed to cover the research questions and hypotheses. Fifty respondents were randomly selected from various literacy centers in Oshodi/Isolo Local Government Area of Lagos State for data collection. Data were analyzed using frequency tables and percentages. It can be concluded that as was suggested in the paper that there is a great impact of audio-visual aids in the state. It motivates students to attend lectures as they are very curious to see or hear what the facilitator is going to show them in the upcoming class, saves time of copying notes and increasing more communication skills.

Therefore, the difference in our case may be due to the fact that students have not being expose to the audio-visual materials before and also could be that the researchers did have enough time to effectively expose the students with audio-visual material.

Most authors in their work indicated that audio-visual materials contribute significantly to students' performance, as indicated by Secundariu Cristal who conducted a study in the school year

2017 using audio visual materials by Charles Fatima Guterres (2018). The result of the research revealed that audio visual materials was successful way, and it improve student's speaking skills. The researcher added that this method helped in encouraging the students to develop their speaking ability as well.

In the same light the researcher went further to find out the use of audio material on student's performance in Franky Comprehensive Secondary School in Yaounde VI. The results obtained from the analysis revealed that the P-value obtained was less than 0.05 as expressed in the following regression equation ($F(1, 81) = 5.722$, $P < 0.05$. The P-value obtained indicated that were was a statistically significant influence of Audio materials over the academic performance of the students. The result above reveals that Audio materials is a strong predictor of students' performance in geology because they are linearly related. The null hypothesis was therefore rejected.

The results of this study is similar to the results obtained by Nwike and Onyejegbu (2018) who conducted a study on the "effects of the use of audio media as instructional materials on Students Cognitive Achievement in Agricultural Science". The purpose of the study was to find out the effects of the use of audio media as instructional material on student's cognitive achievement in agricultural science in secondary schools of Orumba South Local Government Area. Two research questions guided the study and one hypothesis was raised and tested at 0.05 significant level. The study adopted Quasi- experimental design. The target population of the study was Junior Secondary School II students. A sample of 256 students drawn through simple random sample technique was used in the study. Data collected in the study was analyzed using mean, standard deviation and z-test statistics. The findings of the study revealed that students taught with the use of audio instructional material performed better than those taught without audio instructional materials. The study recommended that audio media devices be used in the teaching situations because it has positive impact on student's performance.

Similarly, Mohammed (2016) conducted research to find out male and female teacher's "perception of the effectiveness of audio instructional materials used in teaching Agricultural Sciences in Senior Secondary Schools in Gombe State. The population of the study was 143 Agricultural Science teachers, made up of 111 males and 32 females. Structured questionnaire which was validated by experts and tested for internal consistency and reliability using Cronbach's

alpha formula which indicated 0.99 was adopted. Two research questions and a hypothesis, formulated and tested at 0.05 level of significance guided standard the study. The data were analyzed using mean (X) statistics and standard deviation, while the Z- test was used to test the null hypotheses. Findings revealed that; male and female teachers perceived the use of audio instructional materials as effective at grand mean of 2.18 and 2.05 respectively, there was no significant difference between the mean responses of male and female teachers' perception on the effectiveness of audio instructional material used in teaching Agricultural science in the study area. The study recommended that teachers should endeavor to use audio instructional materials in teaching Agricultural Science in Senior Secondary Schools.

Based on the results obtained by different authors, they recommend that audio material should be encourage to teach students very often.

The researchers with the desire to respond to the effect of instructional materials on students' performance went further to find out the effect of visual material on student's academic performance in Franky Comprehensive Secondary School in Yaounde VI. The results obtained from the analysis revealed that the P-value obtained was greater than 0.05 as expressed in the following regression equation $F(1, 81)=0.193$, $P >0.05$. The P-value obtained indicated that were was no statistically significant influence of visual instructional materials over the academic performance of the students. The result above reveals that visual instructional materials is not a strong predictor of students' performance in geology because they are not linearly related.

The results obtained was not similar to the results obtained by Bushra (2017) who conducted a research study on the effect of visual instructional materials in enhancing the learning performance of students. His study was designed to enhance the effect visual instructional material on students learning performance at elementary level in district Peshawar. To achieve the purpose of the study, questionnaire was design as research tool to collect data. The targeted population of this research were the students of all the schools of District Peshawar. In this study, random sampling techniques was used for gathering information. Ten schools were randomly selected from district Peshawar and 10 students had selected from each school so 100 students constituted the sample size of the study. The collected data as analyzed through the SPSS software and also data was represented in the percentage method. The analysis of the data indicated that majority of the students had positive perceptions of the use of visual aids. It was found out that the used of visual

aids can made difficult ideals easy to understand, the use of visual aids made learning effective in classroom, visual aids save student's time. The study recommended that teachers may prepare and used visual learning aids; teachers may use such type of visual aids which can provide more information, can deliver message and create sense understanding.

In a similar vein, a study investigated teachers' use of visual aids in enhancing the learning and teaching process in the public primary schools Barkin-Ladi, plateau state in Nigeria. The researchers, employed a combination of both quantitative and qualitative approaches; survey and phenomenology. The study targeted public primary school teachers, pupils, head teachers, beads of sections and supervisors. The researcher used stratified random sampling technique and non-probability purposive random sampling method. The sample size of the study was; 254 teachers, 3 heads of sections and 13 supervisors. Descriptive statistics; frequencies, percentages, and inferential statistics were used. The findings revealed that the use of different types of visual aids like real objects, diagrams, charts, flashcards, maps and drawing was appropriate to all subjects and relevant to the teaching and learning process.

The differences may be due to the fact that students were not prepared for such exercise and also the duration of the study may have played a significant role in the failure of the students.

Finally, the researcher also decided to find out the effect of print instructional materials on student's performance in Franky Comprehensive secondary school in Yaounde VI.The results obtained from the analysis revealed that the P-value obtained was greater than 0.05 as expressed in the following regression equation ($F(1, 81) = 4.502$, $P < 0.05$. The P-value obtained indicated that were was a statistically significant influence of Print materials over the academic performance of the students. The result above reveals that Print materials is a strong predictor of students' performance in geology because they are linearly related.

The results obtained was similar to the results obtained by David (2008) who conducted a study on learning efficacy and cost effectiveness of print versus e-book instructional material in an introductory financial accounting course. The study described the concurrent development of paper-based and e-book versions of a textbook and related instructional material used in an introductory-level financial accounting course. Break-even analysis is used to compare costs of the two media. the study conducted with 109 students is also used to evaluate the two media with respect to relative learning effectiveness and selected qualitative attributes. Print-based material

was generally preferred by learners. No significant difference was found regarding learning effectiveness. But Emmana, (2004) had the same view this study as he indicated that the use of print materials, graphic materials, computer, still picture is necessary in Junior secondary schools as inevitably, as it is perceived that students in Junior secondary schools sometimes find it difficult to comprehend immediately what is being taught by to the learners. This may have affected students' academic performance in Junior secondary schools.

Conclusions

This finding confirm that the use of instructional materials is an effective method in improving students' performance in geology in secondary schools. It was also confirmed that quality and frequency of geology practical in teaching and learning of geology student's knowledge and understanding in a better way compared to non-use of the geology practical. While it is important to encourage use of instructional materials in the teaching and learning of geology, it is equally important to consider the quality and how often instructional materials are being used. Geology practical activities increase student's interest and abilities in science subjects as well as their achievement in science.

This is because geology practical help students in understanding theories and principles which are difficult to understand. Geology practical offers several opportunities to students such as enthusiasm to geology, problem solving skills, hand on experience and developing scientific thinking skills.

Successful implementation of any curriculum is fully dependent on the quality and quantity of instructional materials available to teachers and students for use in schools. It also depends on the quality of being easy to use. Instructional materials simulate learner's interest; help both the teacher and the learner to overcome physical limitation during presentation of subject matter. Similarly, instructional materials enrich learning and make it more pleasant, are used as checks to the teachers' knowledge and means for transmission. Instructional materials also give teachers the air guidance, coordination, supervision and more time for correction and brighten the classroom and bring variety in the class lesson.

The finding of the study revealed that the use of, print, audio, visual and audio-visual materials significantly relate students' performance in Geology amongst secondary school students.

Recommendations

- Schools management should ensure effective and efficient utilization of Instructional Materials available to them.
- The teachers should encourage students' participation in class work by adopting of instructional materials.
- Regular training and retraining of teachers on utilization of instructional materials is hereby recommended.
- That Should-Education board should commit itself to providing relevant instructional materials to secondary schools
- It should be recommended that there should be further scrutiny of the curriculum and learning standards for geology practical in secondary school. Geology and an in-depth study of teacher competence in the teaching of practical geology is suggested. It is also recommended
- Another recommendation is on the integration of information communication and technology (ICT) in the teaching and learning of geology. The computer and its internet access a lot of potential to improve science education. The integration would help to improve the quality of geology practical work.
- Parents being the first teachers at home should do everything possible such that students should have their school needs such as textbooks, learning materials and school necessities in other to enhance teaching learning process.
- Further research on this topic should consider teacher's professional qualification which might have influenced the usage of geology, IM and outcome of the student's performance in examination

The researcher recommends a need for similar work in another sub- division or different region as the researcher could not fully exploit this work in all the sub- divisions and regions. Also, this study was limited only in secondary schools; further research can be carryout in nursery schools and primary schools.

Limitations

A piece of work of this nature is quite demanding materially, intellectually, financially and morally. It is normal that the researcher encountered major difficulties upon completion of this research work.

The researcher was faced with the problem of creating different groups to collect data. It was actually a challenges task for the researcher to ensure that the questionnaires were responded on time.

The financial aspect of the research is also worth mentioning. Much finance was required for typing and printing of questionnaires for the selected school as well the manuscripts and the actual research material was very costly for the researcher.

Finally, text books and other instructional materials related to the study were very difficult to find. Available library resources were also a problem. The few books found did not provide recent theories and literature on instructional materials and students' performance. In this regard, the researcher was obliged to consult other sources especially the internet.

REFEERENCES

Achimugu, L. (2017). Availability and Utilization of Instructional Materials for Teaching Chemistry in Senior Secondary Schools. *International Journal of Novel Research in Education and Learning, 33-43.*

Achimugu, I. & Onojahii, P.K, (2017). Factors hindering effective production and utilization of teachers –made Instructional Materials in teaching Senior Secondary Chemistry in Federal Capital territory, Abuja, Nigeria Kogi state University, Nigeria, *International Journal of Scientific Research in Education,10(3), 352-361. Retrieved from http://www.ijsre.com*

Adebayo, O.O. & Adigun., S.O. (2018). *Impact of Instructional Material aids on students' academic performance in physics in secondary schools in Federal Capital territory*. (FCT) Abuja.

Adele, O.O. (2015). Towards effective science education . Issues in Universal basic education programme. *Journal of sports management and Educational Research, 1(20),33-67.*

Akpan and Okoli. (2017). Effect of the use of instructional materials on academic performance of pupils in Ikwuano Abia State. *International Journal of Trend in Research and Development, 4(1), 247-250.*

Ashaver, D. (2013) The use of Audio-visual Materials in the Teaching and Learning processes. *IOSR Journal of Research & Method in Education (IOSRJRME), 1(6),44-55, doi :10.9790/7388-0164455.*

Brusha, K. (2017). Effect of visual aids in enhancing the learning performance of students of elementary level in district Peshawar. Retrieved from https;//www.scribd.com/document

Adole, I. A. (1997*). A handbook: Basic instructional technology*. Teaching education series. Retrieved from *Journal of Research and methods in education*.

Aidi,O. F. (2017).*Effects of computer assisted instruction on Senior secondary students' reading comprehension achievement in secondary schools, Gwagwalada area council*. Abuja masters dissertation in English language Education, Department of Arts and social science Education, faculty of Education, University of Abuja.

Carton, D.T. (2015). *Committee on Conceptual framework for the New K-12 Science Education Standards, National Research council (2012).” Summary “A framework for K-12 Science education: practices, cross cutting concepts, and core ideals*. *The National Academics press.*

Daniel, I. (2003). Audio-Visual aids in teaching of English. International Journal of innovative Research in Science, Engineering and Technology, 2(8), 3811-3814.

Dhakal, K, R. (2018). Availability & utilization of Instructional Materials in Teaching Geography in Secondary Schools. The third pole: *Journal of geography Education, 17, 51-58.*

Effiong, Ekpo, O., &Igri, C.E, (2015). Impact of Instructional Materials in teaching and learning of Biology in Senior Secondary Schools in Yakurig a. *International letters of Social and Humanistic Sciences, 62, 27-33*

Kasim, M.S. & Usman, I. (2015). Principals’ Supervision of teachers’ use of Instructional materials in teaching economic in Secondary Schools in Gombe. *Journal of Science, Technology & Education (JOSTE); 4(4), 174- 182*

Mohammed, E.I. (2016). *Teacher’s perception of the Effectiveness of Instructional Materials*.

Mudin, D, K, Eng , H.S, Rahman ,M. Ibrahim, P., & Jopony, M .(2018). Industrial Revolution 4.0: Universiti Malaysia Sabah perspective Sabah perspective. E3S web of Conferences, 48, Article No 03005.https:// doi.org/ 1051/e3sconf/20184803005I paper reference}

Okendu, J.N., 2012. The influence of instructional process of secondary school students of River State, Nigeria. *Journal of Academic Research International,2(3)*

Otor, E. E, Ogbeba,. J., & Ityo, C.N, (2015). Influence of Improvised Teaching Instruction Materials on chemistry students’ performance in Senior Secondary Schools in Vandeika. International Research in Education, 111-118.

Ibok, E. (2016). The challenge of improvisation in Science teaching in the day Nigeria. *Journal of committee of provosts of colleges of Education, Nigeria 1910, 92- 123.*

Olatoye, R.A. (2017). Effect of teaching using charts, real specimens and videos on secondary school students’ achievement in mammalian skeletal system concepts. ENSAYOS, *Revita de*

la faculted de Education de Albacete, *32*(2). Enlace web: htt://www.revista.uclm.es/index.php/ensayos

Singh, S., Sharma, G., Upadhya, Y. (2012). Assessing teacher education and professional development needs for the implementation of integrated approaches to STEM education. *International Journal of STEM Education, 4(13).*

Jonah, I. (2013). *Computationally, math, Science, and technology (CMST): A Strategy to improve STEM workforce and pedagogy to improve Math and Science education*. Springerer -Verla.

In addition, Doosur& Sandra (2019). *Conducted a study on the use of Audio-visual resources in colleges of Education in Venue state with specific reference to the college of Education, Katsina-Ala*. The study was based on the following. To evaluate how the library meets the needs of the teachers in supply of audio-visual materials

Akkinson, N.J (1999) *Modern Teaching Aids: A practical Guide to Instructional Techniques in Education*

Toh, S.C., Munassar, E.A.S., &Yahaya, E.A.J.W. (2010). *Reluctance effect in multimedia learning:* A closer look. Curriculum, Technology &Transformation for an unknown future.

Mayer, R.E., & Johnson, C.I. (2008). Revising the redundancy principles for the design of multimedia instruction. *American psychologist,63*(8),760. *Retrieved from http:// www.education.ucf.edu|Rtp3/docs/RTP3 Mayer Article applying the science of learning. Pdf*.

Mayer, R. E., &Moreno,R. (2003). Nine ways to reduce cognitive load in Multimedia learning. *Educational psychologist, 38*(1),43-52. *Retrieved from http://hilt. harvard.edu/files/hilt/files/background reading. Pdf*

Marcus, O.A. (2016). *Availability of basic technical learning materials in Biology in selected secondary schools in Lagos State. Proceedings of the Annual Conference of Science Teachers Association of Nigeria, 41, 263-266.*

Morohunfola, O.M, (2015). Instructional materials and study Science subject; Some policy implementations. Europeans Journal of Humanities and social sciences, 2(1) 34-90

Wales, S.W. (2015). *Skills and Techniques in Mathematics laboratory practicals*. Hercon publisher Ltd.

Ochoma, M.U. (2016). Handbook on teaching skills: Methods and practice. Crystl publisher

John, L.T. (2016). *Role of instructional material in academic performance in community secondary schools in Rombo strict*. Unpublished MED Dissertation Department of Education Administration, Faculty of Education, Open University, Tanzania.

Abdu-Raheem, B.O. (2016). Effects of Instructional Materials on secondary school's students' academic achievement in social studies in Ekiti State, Nigeria. *World Journal Education, 6*(1); 32-39.

Amos,S., Eghan, M.P.K., & Oppong E. (2022) . *The impact of Instructional Materials in Teaching and Learning of Biology in the colleges of Education in the Central Region of Ghana*. Open Journal Retrived from https://www.scipublications.com/journal/index.php/ojer/article/view/400.

Natoli, C. (2011). *The importance of Audio visual in teaching methodology*. Mahourastra, India

Knowles, M. (1996). *Andragogy: An emerging technology for adult learning*. Kongan page Ltd.

Tambo, I.L (2003). *Principles and Methods of teaching. Application in Cameroon schools*.ANUCAMpublishers.

Moore,J.W. (2003) . Are textbooks dependable*? Journal of Chemical Education, 4*, 359.

Gustiani, I, Widdo, A., & Suwarma, I. R. (2017). *Development and Validation of Science, Technology Engineering and Mathematics (STEM) based Instructional Material. AIP Conference Proceedings (1848)*. American Institute of Physics.

Dobler, E. (2015). Textbooks. *Journal of Adolescent &Adult Literacy, 58*(6), 482-491. Doi: 10.1002/Baal. 391.

Bernknoff, R. L, et al ;(1993). *Societal value of Geologic Maps USGS circular 1111*.

Shabiralyani,G.etal.(2015*). Journal of Education and practicewww.iisite.orgISSN.Online*. *Available at www.iiste.org(Accessed:13.October 2011)*

Dike. V. W. (1993). *Library Resources in Education*. ABIC publisher.

Guterres & Quintas, L. (2018). Using Audio Visual Tool to Develop Speaking Skill to the second-Grade students of Ensino Secundariu Cristal in school year 2017, *ISCE*: *Journal of Innovative studies on Character and Education,2,31- 43.*

Kausar, G. (2013). Students' perspective of the Use of Audio-visual Aids in Pakistan. *International Proceedings of Economics Development and Research, 68(11).*

Ifeoma, M.M. (2013). Use of Instructional materials and educational performance of students in Integrated Science. *Journal of Research and Method in Education,3(2), 7-11*.

Ojelade, I.A., Aregbesola, B.G., Ekele, A; & Aiyedun, T.G. (September 2020). Effects of Audio-visual Instructional Materials on Teaching Science concepts in Secondary Schools in Bwari Area Council Abuja, Nigeria. *The Environmental Studies Journal (TES), 3(2) 52-61. Https;//research journal.*

Olayinka, A. B. (2016). Effects of instructional materials on secondary schools students' academic achievement in social studies in ekiti state. *world journal of education*.

Saidu, I.D. (2016). Availability and use of visual teaching and learning materials in teaching Geography at Minjibri Education Zone Kano Nigeria. *International Journal of Science and Engineering Research,7(12)*

Shamsideen,S.A. (2016) impact of Audio-visual materials in the dissemination of knowledge for facilitators in some selected literacy centres in Oshodi/ Isolo Local Government Area. *African educational Research Journal, 4(1); 19-24*

Sampath, K. (1990). *Introductionto educational technology. Steerling Publishers private limited.*

White, D. (2017) *Definition of Multimedia Projector / Techwalla*. Com. Available at: https:// www.techwalla.com /articles /definition -of multimedia -projectors (Acessed: 13 August 2019).

Kali, H.D (2016). *First-year University biology students' difficulties with graphing grades in Jordan and means of its development in view of current trends in Science education*. (Doctoral dissertation).

Gioka, O. (2007) Assessment for learning in Teaching and Assessing Graphs in Science Investigation lessons. *Science Education International, 18(3.)*

Bajaj. S. (2017). A study of impact of laboratory on Academic performance of 9th class students in Science subject. *The international Journal of Indian Pschology, 4(3). 104-111.*

Megbo, B.C., & Saka, A. (2015). Evaluation of modern Development in teaching and learning process through instructional materials utilization. International Journal of multidisciplinary Research and Development, 123- 127.

Ogbaji, I.D. (2017) Teachers' Perception of the utilization of Instructional Material in teaching Social Studies in Junior Secondary Schools in Calabar Municipality, Cross River State, Nigeria. *Global Journal of Educational Research, 16, 95-100.*

Oliagba, D. A, (2015).

Pytherch, R. (2016). *Harrod's Librarians' glossary and reference book: a directory of over 10,200 terms, organizations, projects and acronyms in the areas of information management, library science publishing and archive management*. Routledge.

Fussel, S. (2020). *Gutenberg and the Impact of printing*. Routledge.

Idris, A.T. Shamsuddin, I, M., Arome, A.T &Aminu, I. (2018). Use of audio-visual materials in teaching and learning of classification of living things among secondary school students in Sabon Gari LGA of Kaduna State.*Plant6*(2), 33-37.doi:10. 11648/j.plant.201860212.

Yusta, N., Karugu, G. Muthee, J., & Tekle, T. (2016). *Impact of instructional resources on mathematics performance of learner with Dyscalculia in integrated primary schools*. Arusha city, Tanzania. *7*(3).

King, C. (2018). *Exploring the use of Visual aids as tool to understanding subject specific terminology in life sciences South Africa*. Master of education Thesis. *Stellenbosch University https;//scholar.sun.ac.za.*

Jeleelah, B.M., Oluwayemisi, A.A. and Theresa, U. U. (2016). Instructional Material. level use of in teaching and learning of economics in secondary schools. Mainland education district IV Lagos state Nigeria. IOSR Journal of research and method in education. 6(4). (Jul.- Aug, 2016). 107-112.

APPENDIXES

Université de Yaoundé I

Faculté des Sciences de l'éducation

Département de Curriculum et Evaluation

University of Yaoundé I

Faculty of Education

Department of Curriculum and Evaluation

Questionnaire

I am Ngenyi Gisela Anuleh, a master 2 student in the University of Yaounde 1. I am carrying out a research on the topic: The use of Instructional Materials on Geology Student's Performance, case of Franky Comprehensive Secondary School in Yaounde VI sub division ". These questions are intended for the purpose of educational research. Your honest responses to these questions will be of great help to the accomplishment of the purpose of the study. Be assured that confidentiality of your responses will be guaranteed.

Instruction; Tick ( ) in one of the boxes labeled (SD, D, A, SA)

SECTION A: Sociodemographic data

Instruction: Tick (√) the right box

1. Gender: Male ☐ Female ☐
2. Age group: 12-16yrs ☐ 17-21yrs ☐ 22 and above ☐

That best suits your opinion.

KEY; SD= Strongly Disagree (4) D= Disagree (3) A= Agree (2) SA=Strongly Agree (1)

Questionnaire Items

Independent Variable 1: Print instructional materials and student's performance.

No	Items	4	3	2	1
1	When you give students assignment in their work books, it helps improve their performance				
2	When you teach using a text book in class, it helps improve student's performance.				
3	Students perform better in examination when they write examination on type and well printed papers				
4	When you give students home work to reason their text books before the lesson, it helps improve their performance				
5	When students see picture in their textbooks during lesson in class, they learn better and hence improve on their performance				

Independent Variable 2: Audiovisual instructional materials and student's performance

No	Items	4	3	2	1
1	When students are taught through films, they perform better academically				
2	When students are taught through film strips, they understand the concept easily and perform better academically				
3	Students could easily understand and perform better academically when they are taught with computer				
4	When students are taught with video tapes, they understand and perform better academically				
5	Lessons which are taught with television are more interactive and the students intend understand better				

Independent Variable 3

No	Items: Audio instructional materials and student's performance	4	3	2	1
1	When students listen to teacher's voicemail, they understand and perform better academically				
2	When facts are recounted to students with the use of tape recorder, they will widely understand better and perform better academically				
3	When students listen from radio, they easily keep and store information in their memory and perform better academically				
4	From your experience when you teach with a microphone and speaker in a large classroom it enhances the understanding of the subject easily				
5	When you teach using phones in class, it helps improve on the student's performance				

Independent Variable 4: Visual instructional materials and student's performance

No	Items	4	3	2	1
1	When you teach using maps, realia in class, it helps improve on student's performance				
2	When you teach with the use of elaborated diagrams students understand and perform better				
3	When you teach using pictures, samples in class, it helps improve on student's performance				
4	Student's perform better When you use the chalk board elaborated well				
5	When you teach using flash cards in class, it helps improve on student's performance				

Dependent Variable: Student's academic performance

No	Items	4	3	2	1
1	Late enrollment of the student in a school affect students' performance				
2	The adequacy of the provision of necessary school materials to the students affects students perform performance				
3	The income level of the family determines the type of school the students attends				
4	Non chalant attitude of student towards education				
5	Poor parents / students' relationship in the home				

Thank you for responding to this questionnaire.

Observation processing summary

	Valid		Missing		Total	
	N	Percentage	N	Percentage	N	Percentage
Group	84	100,0%	0	0,0%	84	100,0%
Note(Y)	84	100,0%	0	0,0%	84	100,0%