IMPACT OF FLIPCHART INSTRUCTION ON THE ACADEMIC ACHIEVEMENT AND RETENTION OF STUDENTS IN TEACHING GEOGRAPHY IN MINNA METROPOLIS

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ABSTRACT

The study investigated the impact of flipchart instruction on the academic achievement and retention of students in teaching geography in Minna metropolis. This study became necessary because of the low academic achievement and retentioninGeographystudents in secondary schools. The study employed a quasi-experimental design, specifically the pretest-posttest nonequivalent group design. One hundred and thirty-four (134) students from which comprised of male and femaleselected from senior secondary school students. The experts validated the instrument Geography Achievement Test (GAT). Four research questions were answered and four hypotheses were tested. The data were analyzed using mean, standard deviation. The results revealed that students taught usingFlipchart performed better than students taught using conventional material; male students did not perform better than their female counterparts in Geography,students taught using Flipchart retained better than students taught using conventional material; male students retained better than their female counterparts in Geography.The mean scores were higher for student's taught with Flipchart compared to those taught without it with lower mean scores; there was significant difference in the achievement mean score of students taught using students Flipchart and those taught without it; there was no significant difference in the mean achievement scores of male and female students in Geography; there was significant difference in the mean retention score of students taught using students Flipchart and those taught without it; there was a significant difference in the mean retention scores of male and female students in Geography. Based on the findings and implications, it was recommended amongst others teachers should enroll in educational technology where they can learn the process of producing Flipcharts. It was suggested that further research could be carried out on this topic but covering a wider geographical area.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Education is the socially organized and regulated process of continuous transference of socially significant experience from previous to following generations (Naziev, 2017). Education is the simple process of learning and knowing (Hassan, 2016). Education is capable of transforming an individual to become productive in the society. To further enhance the educational and instructional delivery process there is need to channel relevant resources such as technology.

The term ‘technology’ implies the application of science to art. Technology is the sum of techniques, skills, methods, and processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation (Wikipedia, 2021). The concept of technology has developed during the last few years especially in the field of education. The use of technology in teaching and learning can easily enhance the academic achievement and retention of students.

Wikipedia (2021) defined academic achievement as the extent to which a student, teacher or institution has attained their short or long-term educational goals. Completion of educational benchmarks such as secondary school diplomas and bachelor's degrees represent academic achievement.Fakayode (2012) defined retention as individual ability to hold information or store learned material for future use. The prevalent problem in secondary schools is poor retention among secondary school students offering science subjects including Geography. Concepts learned tend to fade with time when not put to use,

or not properly retained, hence, lead to forgetting and loss of knowledge. This was supported in a study conducted by Barata*et al*. (2016) in their study on evaluation of the impact of national educational policy to reduce retention and increase achievement in compulsory education and found that ProgramaMaisSucesso Escolar (PMSE) had mixed effects on educational achievement but significantly reduced retention. Similarly, Jukic and Ljerka (2014) reported that students had a very low retention of concepts when taught differential and integral calculus. However, Dhakal(2020) concluded that the instructional materials are important tools for achieving educational objectives.

Instructional materials are crucial to teaching and learning since they enhance the instructional delivery process by acting as a communication vehicle (Ajoke, 2017). The flipchart is an example of instructional material used during teaching and learning. A flipchart is a series of sheets of paper bound together which can be flipped over, one at a time, to show a series of thoughts, pictures, outline points, questions, cartoons, symbols, or almost anything that helps teach the lesson (BetterEvaluation, 2020). In teaching, the flipcharts allow for information to be displayed per page and can be turned (flipped) over, geography requires a lot of concept to be taught and most of these are visual in nature (Swords*et al.,* 2013).

Geography is a broad scientific discipline which involves the study of the diverseenvironments, places, and spaces of Earth's surface and their interactions (Johnston, 2020). Geography helps pupils to have information about the world. In geography lesson, pupils learn about the location, distribution, distance, movement, region, scale, spatial association, and spatial interaction and change over time (Reinfried, Schleicher &Rempfler, 2007). Unfortunately, Geography students perform poorly in WASSCE every year from

2008 to 2018 (Eze, 2021). Adalikwu and Iorkpilgh (2013) 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 achievements. Activities of teaching and learning are fascinating when instructional materials are effectively and efficiently used in the classroom situation. It is imperative for teachers in teaching geography in Nigeria to use visual aids like flip chart as instructional tools to make instruction more interesting, that is to arouse the learning interest, sustain their attention for effective learning.

Olayinka (2014) encouraged teachers to improvise instructional materials because they are in great measure enhance learner's full participation in the lesson, gives room for inquiry, problem solving, discussion and clarification of issues and ideas among students and teachers. Teachers often use instructional materials for lesson planning these materials are also needed by teachers to assess the knowledge of their students (Sotayo*et al*., 2010).

1.2 Statement of the Research Problem

Many African countries envision being industrialized by the year 2030 and Nigeria is no exception. However, looking at the way Geography is being taught in secondary schools in Nigeria, the vision is in doubt because of the theoretical way of teaching bearing in mind that Geography is a practical and bridging subject (Sorofowa & Egbedokun, 2010).

The 2030 vision states that teachers are expected to possess high technical skills so that they can impact on learners if the nation is to be industrialized. Hence, there is a need to improve academic achievement and retention in Geography from its dilapidated state. Eze

(2021) noted that Geography students perform poorly in WASSCE every year from 2008 to 2018.Geography being a visual type of subject, this study puts emphasis on the integration of flipchart instruction for good teaching. In order to alleviate the poor performance of students studying geography, this study is aimed at examining the impact of flipchart instruction on the academic achievement on the academic achievement and retention of students in teaching Geography in Minna Metropolis.

1.3 Aim and Objectives of the Study

The aim of this study is to investigate the impact of flipchart instruction on the academic achievement and retention of students in teaching Geography in Minna Metropolis. Specifically, the study will achieve the following objectives:

i. To Identify the impact of flipchart instruction on the academic achievement in the teaching and learning of geography

ii. To identify the influence of gender on students' achievement when taught using flipchart instruction

iii. Examine the impact of flipchart instruction on retention in the teaching and learning of geography

iv. To identify the influence of gender on students' retention when taught using flipchart instruction

1.4 Research Questions

The following research question were formulated to guide this study:

1. What is the impact of flipchart instruction on the academic achievement in the teaching and learning of geography?

2. What is the influence of gender on students' achievement when taught using flipchart instruction?
3. What are the impact of flipchart instruction on retention in the teaching and learning of geography?
4. What is the influence of gender on students' retention when taught using flipchart instruction?

1.5 Research Hypotheses

The following research hypotheses were tested in the study

HO_1: There is no significant difference between the mean achievements score of students taught using flipchart instruction and students taught using conventional instruction.

HO_2: There is no significant difference between the achievements mean score based on gender of students taught using flipchart

HO_3: There is no significant difference between the retention mean score of students taught using flipchart and students taught using conventional instruction

HO_4: There is no significant difference between the retention mean score based on gender of students taught using flipchart instruction.

1.6 Scope of the Study

This study focused on the impact of flipchart instruction on the academic achievement and retention of students in Geography in some selected secondary schools in Minna metropolis of Niger state. The study was carried out in 2 senior secondary schools limited to Minna metropolis of Niger State which includes; Maryam Babangida secondary school Minna and

Ahmadu Bahago secondary school Minna. The study will make use of the flipchart instructional material to teach “Cloud Formation” in Geography, the study will last for a period of two (2) weeks.

1.7 Significance of the Study

This study will be of benefit to the following stake holders, the teachers, policy makers, school administrators and curriculum designers.

The outcome of this study will be of great importance to Geography teachers who are being constantly urged to diversify their teaching strategy by changing teaching strategy that can ensure optimum utilization of instructional materials. The teacher, who is called upon to teach, cannot succeed unless he or she is able to utilize appropriate instructional materials in teaching a particular content of the subject. In other to make teaching more meaningful, optimum utilization of instructional materials is to be employed (Adalikwu & Iorkpilgh, 2013). Another importance of this study is to bring awareness to teachers especially at the pre-service period, that diversification of teaching strategy is the gateway to proper utilization of instructional materials. Objectives of curriculum planning and development as stated by Yusuf (2012) can only be successfully achieved when adequate opportunities are available to both learners and teachers to have suitable instructional materials to interact with. Furthermore, if the teachers selecting materials take cognizance of the diverse backgrounds and interests of the learners, it will go a long way in enhancing and promoting teaching and learning.

The research findings would also assist policy makers (the officers of Federal Ministry of Education (FME) and relevant curriculum agencies) because, they will be further informed

on the use of instructional materials for teachers and learners. This research project will also serve as a guide to the policy makers to see the justification for a great investment in the procurement of relevant, suitable and adequate instructional materials for teaching and learning.

The research outcome would also be of benefit to administrators of schools (principals, HODs, and counsellors etc.) for the need to encourage teacher in the use of the available instructional materials and where they are not available, they would be encouraged to improvise them. If a teacher within the school context is highly motivated and encouraged by his immediate supervisors, he will appreciate the need to always use instructional materials.

Furthermore, the study outcome will assist designers of various instructional materials. When the various factors that enhance and promote the use of the various instructional materials are taken into consideration, the various centers of educational technology both at institutional needs and at resources centers will benefit. They will be encouraged to produce more materials that are recent in the teaching of Geography at secondary school level.

1.8 Operational Definition of Terms

Academic Achievement: academic achievement is the extent to which a student, teacher or institution has attained their short or long-term educational goals

Education: Education is the simple process of learning and knowing.

Geography: Geography is a broad scientific discipline that involves the study of the diverse environments, places, and spaces of Earth's surface and their interactions.

Technology: Technology is the sum of techniques, skills, methods, and processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation

Flipchart: flipchart is a series of sheets of paper bound together which can be flipped over, one at a time, to show a series of thoughts, pictures, outline points, questions, cartoons, symbols, or almost anything that helps teach the lesson.

Retention: retention is individual ability to hold information or store learned material for future use

CHAPTER TWO

2.0 LITERATURE REVIEW

The major areas reviewed under this project work have been classified under

- Conceptual Framework
- Theoretical Framework
- Empirical Study
- Summary of Literature Reviewed

2.1 Conceptual Framework

Education is vital in the life of every and any individual as it is instrumental for obtaining the required knowledge and skills that have equally contributed to societal and national building. There is no doubt that Nigeria as a nation had witnessed various Educational Systems since its birth in 1914. After independence in Nigeria, there were a lot of shortcomings in Nigerian educational system as it was based on the British educational system which did not gave way for yearning needs, interests and aspirations of Nigerian society. This gave birth to 1969 curriculum conference that focused on Nigerian children in Nigerian society with National policies on Education in 1977, 1981, 1998 and 2004 respectively (FRN, 1977; 1981; 1998; 2004), all with the prime purpose of improving the quality of Nigerian Education.

Education is referring to an art of training and teaching the young ones in an organized and formal system of learning. This includes the learners, facilitators, resources, facilities and management system for efficiency and effective coordination and administration. Education

in a broad sense is a process by which an individual acquires the many physical and social capabilities demanded by the society in which he/she is born into function (Uwadia, 2010).

Education promotes literacy and capable of modifying illiterate person to be literate so as to interpret into his/her environment. Thus, the standards for what level constitutes 'literacy' differ from society to society. Literacy has also been expanded to include skills in computer, basic numeracy, sound, still and moving images and graphical elements in digital based communication. Also, it is reported that the National Council of Teachers of English (NCTT) and the International Reading Association (2008) have added "visually representing" to the list of communicative competences that constitute literacy.

Education has played a vital role in the development of our nation in the developmental and sustainability of our nation. Education is an important key of achieving a sustainable national development, the quality of its education should be improved. (Boyi, 2014).Knowledge is acquired through the actions and interaction of the child, the meaningful written and spoken information a child learn depend largely in his/her actions and interactions in the environment, therefore it is imperative to improve the quality of education especially science, language for communication and technology at all level of education.

Most developing countries like Nigeria, efforts have been made by various stakeholders such as professional organizations and experts towards acquisition of qualitative and functional education. In respect to this, a curriculum reforms have attempted to bring change in education for instance, there were two historic curriculum conference in 1969 and 1973 respectively which leads to the birth of National policy on Education (NPE).

Good number of the recommendations of the seminar gives birth to the present document on education called National Policy on Education (2004).

The five main national goals of Nigeria, which have been endorsed as the necessary foundation for the National Policy on education, are the building of: -

(a) A free and, democratic society;

(b) A just egalitarian society;

(c) A united, strong and self-reliant nations;

(d) A great and dynamic economy;

(e) A land full of bright opportunities for all citizens.

For the purpose of this study, the sections on secondary education are the main focus. This type of education is an education that learners receive after primary education and before tertiary stage, the broad aims of secondary education according to Section 4 of the National Policy on Education (NPE) (2004) are to prepare individual child for useful living with the society and Acquire skills in preparation for higher education. Amongst the specific aims and objective of secondary education are to: Provide an increasing number of primary school pupils with the opportunity for education of a higher quality irrespective of sex, social, religion and ethnic background. Diversify its curriculum to cater for the differences in talents, opportunities and roles possessed by or open to students after their secondary school course. Equip students to live effectively in our modern age of sciences and technology.

Education is defined as the process of creating appropriate character and skills that makes an individual fit into his immediate society. Education seeks to develop the capacities of man to enable him know the truth as it is. It is aim at acquiring sufficient knowledge of the inner working of the universe, so that the learners may deliberately adjust to what is real.

The knowledge gained facilities the learner to form habits and tendencies to seeks for the truth and utilizes it in every aspects of life. Adam (2011), incited that education seeks to bring about efficient and effective delivery of quality education to meet the objectives of learners as well as stakeholders in the district and the nation as a whole. This could be achieved if the basic needs of the pupils are provided by parents who understand and appreciate their significant roles in support of good and sound education. The instructors of educational programmers need to be equipped with sufficient capacity and skills to manage the needs of pupils in the classroom. The process of education consists of teaching and learning.

Teachers are expected to teach while students learn what is been taught. It is expected that schools provide a conducive atmosphere and environment that makes teaching and learning easy and possible to involve into productive activities during the school days. Effective teachers knows how to adjust to the level of learners so that learning is made essay and possible, the teacher knows how to manage and maintain both high intelligent students and low learners, learning as experience gained through modifications, learning is considered an active process and not a passive observation when students are involve, the learner carried out learning activities, learning is a personal involvement which means the learner should be able and willing to assimilate the internal being presented.

We learn different things in a unique way, how one learns depends on what is to be learned. We learn how to ride a bicycle by doing (Kinesthetics learning), we make bread by kneading dough with the hands, to sing, we play a musical instrument or appreciate music by listening (auditory learning) and we learn about the movement of stars and planets by information available to us.

It is imperative on the part of federal government of Nigeria to invest her huge resources in education and clarified. A clear term guiding the educational policies be spelt out, also lack of uniformity, ambiguities in educational practice in different parts of the country should be removed to ensure an even and orderly development in the country.

2.1.2 Concept of Geography

The word 'geography' originates from two Greek words. The first is 'geo' which means 'the earth' and the second Greek word is "graph" which means 'to write'. The first recorded use of the word geography was by Eratosthenes, a Greek scholar who lived from 276–194 BC who is credited with creating the discipline of geography (Roller, 2010).Geography is the science discipline that deals with the description of the Earth's surface and it featured (Johnston, 2020). Geography is much more than cartography, the study of maps. It not only investigates what is where on the Earth, but also why it's there not somewhere else, sometimes referred to as "location in space" Geography studies talks on whether, the causes are natural or human. It also studies the consequence of those difference.

Geography is divided into two main areas: physical geography and human geography (Borneman, 2017). Physical geography focuses on earth science, making use of biology to global flora and fauna patterns, mathematics, and physics to understand the motion of the

earth and it relationship with other bodies in the solar system. It also includes the following environmental geography (Dempsey, 2013).

The human, or political/cultural, branch of geography, it also called anthropogeography focuses on the social science, non-physical aspects of the way the world is arranged. It examines how humans can adapt adjust themselves to the land and to other people, and in macroscopic transformations they enact on the world (Dempsey, 2013).It be divided into the following broad categories: economic geography, political geography (including geopolitics), social geography (including urban geography), environmentalism, cartography, and military geography.

The Greeks are the first known culture to actively explore geography as a science and philosophy, with major contributors including Thales of Miletus, Herodotus, Eratosthenes, Hipparchus, Aristotle, Dicaearchus of Messana, Strabo, and Ptolemy. Mapping by the Romans as they explored new lands added new techniques. During the Middle Ages, Arabs such as Idrisi, Ibn Battuta, and Ibn Khaldun built on and maintained the Greek and Roman learnings. Following the journeys of Marco Polo, interest in geography spread throughout Europe (Dempsey, 2013).

During the Renaissance and into the 16th and 17th centuries the great voyages of exploration revived a desire for solid theoretical foundations and accurate detail. The Geographia Generalis by Bernhardus Varenius and Gerardus Mercator's world map are prime examples.

By the 18th century, geography had become recognized as a discrete discipline and became part of a typical university curriculum. Over the past two centuries the quantity of

knowledge and the number of tools has exploded. There are strong links between geography and the sciences of geology and botany (Dempsey, 2013).

2.1.3 Objectives of Geography to Secondary Schools

The goals of the Nigerian nation as stated in the National Policy on Education (2004) are to create a free, democratic, just, egalitarian, united, strong and self-reliant nation. Also, an economy that is great and dynamic, a land full of bright opportunities for all citizens. Education is seen as an instrument per excellence to accomplishment of these goals. Thus, the philosophy of education in Nigeria is geared towards helping learners achieve self-realization and actualization. Mezieobi (2010) says: developing the capacity to learn and acquire basic skills including those of listening, reading, speaking, writing and calculation together with those of observation, analysis and inference is essential for the formation of sound judgment.

Geography as a discipline, gives us the comprehension about the earth we are living in from spatial perspective (Dastrup, 2020).It gives opportunities to enquire about the world that surrounds us, geography bridge gaps between the social science and the physical science through the provision of an understanding of different cultures, societies and economics, on the one hand and those of physical landscapes and environmental processes on the other. Geography as a secondary school subject enables students to explore their potentials and understand the relationship between the earth and its people through the study of space, places and environment. The study of geography at senior secondary school level is built on the knowledge and skills students will have acquired in the junior secondary school curriculum (Amosun, 2016). Students completing the junior secondary,

geography skills and have had experience of making values judgements through investigating issues from a geographical perspective.

Furthermore, the study of geography gives opportunities for students to develop their general intellectual capacity for life-long learning, and for generic skills such as critical thinking, communication, information processing, problem solving, decision making etc. (Bailey, 2017). The enquiry approach adopted in geography allows students to build the important knowledge involved in values clarification and value judgement which are fundamental while person development.

Geography education provides students with learning experiences which enables them to see the relationships between the individual society and environment and through this to build the skills which can be transferred to other learning and life.

2.1.4 Methods of Teaching Geography to Secondary Schools

The importance of Geography in secondary school curriculum cannot be overemphasized. The learners are trained to manage their immediate environment for the good of the society as a whole. The efficiency of teaching in the school can be determine by examining the methods of teaching applied by the teacher and the performance of students in the school examination.

Sezer and Pinar (2016) review that the integration of technology to teaching, during their education, prospective geography teachers should be encouraged to produce technology aided instructional materials that could be utilized in teaching geography in lower level of education. Babacan (2018) concludes that most participants think primarily about holding a teaching position in state schools or having an academic career, while some intend to work

as public servant, police officer, GIS expert and in different job positions in the private sector also. Wilmot and Irwin (2015) present the teachers' perceptions of the geography curriculum. Artvinil (2017) focuses the views of geography teachers on innovative geography teaching that the geography teachers are open and willing to use current education technologies in their classes, but with some challenges.

2.1.4.1 Observation Method

Psychologist came to know the fact that children possess instinct of curiosity and are curious to see the things for themselves and particularly those things which exist around them (Dalavi, 2021).The geographers exploited this fact to their own advantage. A thing observed and a fact discovered by the child for himself his own efforts become a part of mental life of the child. It is certainly more valuable to him than the same fact or facts learnt from the teacher or a book. The principles aspects of observation method are; (1) to observe (2) To record (3) To interpret.

The technique of obtaining geographical information by direct observation is basis to the subject. Observation method for teaching geography may be used inside the class room as well as outside the classroom (Dalavi, 2021).Inside the classroom, the following aids help observation:

(i) Globe: Globe is a useful aid. By observation, children easily developed such concepts as longitude, latitude, meridian etc.

(ii) Charts: Charts prepared by children themselves or those commercially produced also enhance children's observation.

(iii) Models: Children observe things and they can convert the results of their observation into models.

Outside the Classroom

The teacher can enrich children's observation by adopting certain modes outside the class room. The teacher may use the following modes for this purpose Geography is essentially an observational science (Dalavi, 2021). Within the four walls of the class room, the teaching of geography is limited to the globe, maps and the textbook. The real geography exists outside the class room. The children should be made to observe geographical facts like the temperature, pressure, direction and velocity of the wind, clouds, lakes and mountains. The firsthand experience about these phenomena of nature gives clear understanding of natural happenings. Out sides the class room, there are fields, crops, soil etc. which also forms part of geographical content. On the spot observation of these entities followed by discussion in the classes enriches children's knowledge of geographical facts. The teacher of geography would like to make children study the surrounding environment, the landscape and what it offers to man to make his living meaningful.

(a) Field Trips: Field trips help in exploring the environment. Children may be taken out into the larger landscape to observe geographical objects, prepare brief notes, and collect specimens and so on.

(b) Excursions: Excursions educate as well as entertain. Children learn by interacting with the environment. Excursions to hill stations, to geographical monuments help children to understand certain phenomena (Dalavi, 2021).

Merits of Observation method:

1. Trains the pupils to observe and reason about the fact they observe. This method brings the students of geography into direct relationship with the environment.

2. By this method we interpret the unknown in terms of the known-the known by observation and experience. It is essentially an outdoor work. Nothing should be allowed to take the place of direct observation whenever this is possible (Dalavi, 2021). So, this is direct method of gaining geographic knowledge.

3. The merit of this method lies in the work and not in the results. It is training in intelligent observation and no in collecting the data.

Limitations of observation methods

1. This method is suitable for lower classes because young children observations are necessarily limited.

2. Observation study needs a lot of time out which in turn doesn't give the teacher and learner enough time to carry out their research appropriately as the school operate on class timetable.

2.1.4.2 Laboratory Method:

The laboratory method of instruction, used so successfully in the natural sciences, has been adopted for application to geography with equal success (Dalavi, 2021). This method seems to have grown out of the directed study. The laboratory method places primary emphasis upon equipment and its use. So, this method presupposes a well-equipped room in which the students have access to books, magazines, maps, pictures, drawing and construction material and other type of material which will promote better work. In those situations, a

special room is not available, the teacher of geography can place these instruments in an ordinary classroom. The procedure of the laboratory method is similar to that of problem-solving approach or a completion of a project or preparation of charts, models, and maps or conducting of experiment to arrive at a general principle.

Good Features of the Laboratory Method:

(i) Much of the modern education practice is based upon the assumption that children 'Learn by Doing. If this method pupil's own experience is the basis of real learning. Students taught in this way learn to be observant, exact and to think for themselves.

(ii) The natural way of making discoveries and the way the human race has taken, is from the concrete to the abstract. Laboratory work is exceedingly concrete and hence interesting and enjoyable to the young students. It emphasizes the doing and it requires the students to accomplish something that is within their capacity (Dalavi, 2021).

(iii) The use of laboratory method helps to develop in the student's valuable personal

qualities, such as balances judgement and consideration for others, for instance, in moving about in the class-room, sharing material of making experiments, children learn to exercise self-restraint for the benefit of the group.

(iv) Learning achieved by this method is of a higher quality, more real and more extensive than that acquired by the old didactic method.

Limitations of Laboratory Method

(i) It is not so easy to make the students discover geographical facts or concepts by experiments.

(ii) It is very slow method of learning and teaching.

(iii) It degenerates sometimes into a kind of manual training.

(iv) Geography rooms in Indian schools are not properly with material to follow this method.

2.1.4.3 Project Method

Kilpatrick defined a project as "a purposeful activity which proceeds in a social environment." Stevenson who perfected it as a method of teaching said "it is a problematic act carried to completion in its natural setting." Good defined "Project is a significant unit of activity, having educational value and aimed at one or more definite goals of understanding (Dhiman, 2008).

Among all the methods of teaching geography, the project method is the most important which is frequently applicable to teaching-learning process. In propagating this method, American educationist John Dewey did much work (Dalavi, 2021).

Merits of project methods

i. In applying this method, education gets more meaning and value in comparison to the traditional method of teaching.

ii. It helps develops values like cooperation, fellow-feeling and brotherhood.

iii. This method employs the sense and not mere words or symbols

iv. This method helps the students to evaluate the works.

Demerits of Project Method:

Something efforts are wasted in an attempt to base the whole of geographical syllabus on projects. This is not very practicable in real sense.

The main drawbacks of the method are:

i. It requires more money to be spent and this is very difficult to manage.

ii. Trained and qualified teachers to put this method into practice are not available.

iii. All schools do not have resources to use this method.

iv. Projects are difficult to devise for all stages of teaching.

2.1.5 Geography Instructional Materials

Instructional materials that are available for used in teaching of geography are many for this study, relevant ones will be discussed.

2.1.5.1 Maps and Globes

Maps and globes are very important in the teaching of Geography. In a research conducted by Kozah (2010), the researcher showed that maps and globes are universally accepted as an important instructional material in teaching and learning Geography, Social Studies, History, etc. Their values lie in their ability to give an almost accurate visual representation of the earth's surface, which makes the study of large and remote areas more accurate and meaningful. Maps are visual scaled representation on a flat surface of the land and water masses of the earth or some portion of it. Although maps are not generally as accurate as globes, they are useful for detailed study and viewing the earth at one time. They also

enable students to understand, compare and contrast political units, land masses and water bodies, as well as furnish information about areas, directions, sizes, shapes and distances.

2.1.6 The Use of Projected Instructional Materials in Teaching and Learning

Projected materials such as opaque projector, transparent still projector and slide projector. The advantage of projected materials in resource utilization is “their ability to reproduce real objects and events with high fidelity (Encyclopedia Vol. 4). Therefore, to be resourceful, the teacher needs to optically utilize projected materials for his capacity building.

The sometime teachers are faced with lot of problems trying to make the best out of these aids. In the first place there are great deals of fuss and recognition which discourage teachers to use them. In addition, the projected materials are costly and may therefore be difficult to come by. This is worsened by erratic power supply in the country. This means the conducive environment to fully use the projected materials is not there. Abdullahi (2011) explains these to be the problems which force teachers to concentrate on lecture method which will automatically alienate other human resources, like the student who are very relevant to the teaching and learning activities.

Therefore, this category of media, very relevant to both teachers and learners, but are expensive and require talents to use them, are just virtually there for use. Even if some schools do have them and can be used to enhance performance in Geography, there is the erratic power supply and apparent lack of technical competence. However, a teacher who finds it difficult to use the projected materials for himself and his students must make every effort to diversify his source of enrichment.

2.1.7 The Computer Assisted Program in Teaching and Learning Geography

The enormous power of the computer as a resource is underlined by the claims made that it took radio and television several years to make their impact while the computer made its impact in 4years with 119 million connected to the internet by April, 2019 (Sun, 2019). The internet in 2014 continues to offer novel opportunities to enhance teaching process by opening up the world to class room and vice versa. For the Nigerian educational system, however, the story of this promising impact is a different one. Nigeria is just beginning to be computer literate. Majority of Nigerians, teachers, learners and other citizens are not computer literate. For the possibility of enhancing teachers and learner's performance and thereby improving on the Nigerians educational practice which the computer provides Nigeria still has a long way to go.

2.1.8 Radio Recorder and Record Player in Teaching and Learning Geography

Radio recorder and radio player is an important way through which participatory learning will be assisted in which learners' participation and individual differences are taken into consideration is for the teacher to use the medium of radio and tape records.

However, for the teacher and students hoping to make the best out of the radio, they can get much; this is because most of educational programs by the Nigerian Broadcasting Corporation (NBC) are now effective. But, a good number of the schools do not have the radio even though it is cheap. The radio programs which started as far back as the 1960 began on a shaky foundation.

The record and record player like the radio help in enhancing participatory learning. This is more so as they can be used in reproducing pre- recorded materials. It can also be used in

individualized learning to enhance performance. Slow learners can benefit from record and record player as they can learn at their own pace. The argument is that, lower Intelligent Quotient (IQ) student gain relatively more using tape recorder. In addition, the teacher needs the recorder to help in reducing the drudgery involved in repeating a representation to a succession of class (Encyclopedia vol.9123).

2.1.9 The Use of Instructional Print Materials in Teaching and Learning Geography

The role of print materials is enormous as they equip the teacher to become versatile in the teaching and learning activities. This is particularly so as a result of the fact that the information technology in Nigeria is slow in its materials.

Considering the state of Nigeria's economy and the extent to which the stakeholders in Nigerian education are willing to invest in education, it is not out of place to agree with Udo (2010), that education can succeed at least for Nigeria as at now, only if it is ensured that books are regularly supplied. This is necessary because for foreseeable future, print materials will continue to provide an important source of intellectual empowerment of the teacher and the learners without which their roles as resources will be impaired. This is to suggest that a large proportion of instructional materials found in most Nigerian schools are relying on books, but the books are in short supply.

2.1.10 The use of non-projected instructional materials in teaching and Learning Geography

The non-projected pictures are most widely used and most readily available. They are easy to prepare and cost little. This is why Geography teachers as well as those who are still in training as Geography teachers are advised to collect and preserve pictures for future use

because they are many teachers who fail to think of them as instructional aids; they fail to realize the values that can be derived from them if they are put to proper shape in teaching of Geography by the teacher.

2.1.11 Utilizations of Flipchart Instruction

Flip charts, this is type of media that do not require projection for viewing. They are used in classroom extensively, especially in developing country, like Nigeria where supply of electricity is low. Flip charts are used in teaching and learning process for explanation, illustration, clarification, and reinforcement of certain points in specific lessons.

White (2011), says some presenters prepare two sets of flip charts placed side by side; one set as a prepared series of charts and the other is a blank set use as chalkboard to write additional points and deal with questions/answers from the students. Flip chart can be turned off from the top edge or otherwise separated for future use. For example, the student may like to see some charts separately in the tutorial classes and the teacher may like to rearrange them to make another set of flip chart. Unlike the chalkboard, flipcharts preserve their own record. A quest speaker may be provided with flip chart which may be review letter. Some students who might have been absent from a class may benefit from the flip charts employed by the teacher.

Single sheet chart can be displayed one by one and so arranged on the board as to make a pattern, a flow diagram or the sequence of steps. For this, the chart should be shown in quick succession. Sometime a teacher may prepare the outlines of a complicated diagram in advance by using monochromatic harmony. He can then trace the diagram quickly with bright colors during the classes. It is very effective to show some movement or a chart. Its

magnetic code out may be incorporated in it or a pointer may be turned. Written some words underlying or encircling them are also effective action. The used of flip chart are different settings such as in any type of presentation where the paper pads are pre-filled with information on a given type, for capturing information in meeting and brainstorming session, in classroom and teaching institutions of any kind, to record relevant information in manufacturing plants, and a palette for artist in "life-drawing" classes.

Onyekwelu (2011) states that the main way in which flip chats can be used is by providing an instantly-renewable series as blank surfaces on which material can be jotted down on an impromptu basis in the course of lesson, group discussion or other activity. They can, for example, be used to list replies from class members to questions or ideas generated by buzz groups. When a series of flip charts is produced arising from discussions and questions, it is often useful to arrange that they can continue to be visible. This can be done by using 'Blutak' or adhesive tape to stick completed charts onto doors, walls, windows, frames and other surfaces of the room. With flipcharts pads, there are useful two holes punched near the top of the charts that are then placed over protruding bolts built into the flipchart easel. A bar is then screwed on, to retain the flip chart pad securely. However, when you intend to paste up flip charts sheets round the room, it is useful when you remove the bar, so that you can tear off sheets neatly at the very top of each sheet, leaving the holes intact. This means that if you later wish to bring back a particular chart, for detailed discussions, you can replace it over the bolts on the eased. Sometimes, a part of the charts may be over lead by a cell phone paper chart.

Resources are very important in teaching and learning process are identified and well utilized in most advanced countries like Britain where geography is taught with flip chart.

Canada and United States use flip charts as one of their instructional materials to teach students effective environmental degradation Also the defunct West Germany used it as one of their instructional media to teach means their students know how to develop better ecological system Japan used it in their schools to teach how to build the foundation for a democratic society, in the same vein Thailand used it in their schools to teach how to foster individual and national development. Geography is a tool for solving environmental and societal problems.

In the developed countries such as USA in Kansas Middle School, the geography flip charts have been created for the indicators that have been targeted for the Kansas Assessment in Geography. The flip charts are available for all three assessed areas. Assessed indicators are identified with a cognitive category of application or knowledge. The teachers in Kansas were encouraged to use the three-story intellect as a model for cognitive understanding, Bello, (2012). Defines knowledge as the ability to recognize and recall geography definitions, facts, concepts, and procedures. Application is defined as the ability to use or apply geography knowledge to interpret, analyze, problem solve, make informed decisions and impact civic participation.

Bello (2012) explains that, since most presentations are delivered before small groups of 35 people or less in most schools in USA the flip chart is the perfect size and enumerated its advantages as follows: they need no electricity to operate, they do not require the use of any special films or printers to produce them, an inexpensive box of flip chart markers allows all the creativity you want and any last minute changes can easily be made.

Nawadays many presenters feel they have to create a presentation which shows off their ability to use computers and their latest clip art library. Although, the software available today does allow every one the ability to create colorful slides and overheads, we often find that, the visuals become the presentation and not the speaker. As a speaker, your visual aids should not be the presentation even though flip charts are low technology, they are reliable and don't require any special skill to use them.

Bello (2012) outlines the following procedure as regard the use of flip charts. The best flip chart stands have clamps at the top and will hold most type of flip charts pads. Most allow you to hang your flip charts while some stands will only allow you to prop them up, make sure the flip charts you use will fit the flip chart stand you will be using, flip chart pads are usually sold in packages of two and come either plain or with grid lines on them. Using the pad with grid lines makes your job easier for drawing straight lines and keeps your text aligned. Also, make sure the pad has perforations at the top to allow easier removal of sheets, when preparing your charts, it is best to first design your charts on paper first before drawing them on the actual flip chart pad, lightly write your text in pencil first before using the actual flip chart markers. This will allow you to make any adjustments with text spacing and any figures you will be drawing. Do not use all block letters (upper case) using upper- and lower-case letters makes it easier to read. Using a 6 x 6 rule is even better, Flip chart markers will not "bleed" through the paper. Avoid using the colors yellow, pink or orange. These are extremely difficult for the audience to have strain their eyes to see your points, avoid too many colors, using one dark color and one accent color works best, you can write "lightly in pencil" any notes text to key points you need. The audience won't be able to see them. You may also write what is on the text sheet. Knowing this will allow you to

properly introduce your next sheet, If you make mistakes you can use “white out” to correct any small errors. For larger areas, cover the mistake with a double layer of flip chart paper and correct the small error, have blank sheet of paper between each of your text sheets. This will prevent the written material from other sheets to “peek” through, store and transport your flip charts in a case. This will protect your flip charts and keep them fresh and ready to use each time. The most important point to remember in preparing flip charts is to start them early to enable one to review when necessary to allow for changes or corrections beforehand.

Flip chart as a teaching tool has many uses and some of these are as follows: Flip chart can be used to display a succession of prepared sheets which can be shown in the required order either by flipping them into view from back of the suspension system one by one, they can be read or seen clearly by all the members of the class or group, they can be used to list replies room class members to questions or ideas generated by buzz group, when a series of flip charts is produced arising from discussion and questions, it is often useful to arrange them in such a way they can be visible, it is a visual media suitable for presenting information principles and ideas in sequences, it is suitable for teaching units or topics that lend themselves to step by step presentation. Muhammad (2010), flip charts do not need electricity, flip charts are economical. They do not require you to use any special films or printers to produce them, color can be added very easily – An expensive box of flip chart markers allows you all the creativity you want, flip chart allows spontaneity. Any last minute changes can easily be made, flip charts are reliable and not require any special skill to use them, flip charts are quick, inexpensive visual aids for briefing small group, it helps the presenter to compose desired visual aid in-house, It helps the speaker proceed through

the material, Convey information, provide the audience with something to look at in addition to the speaker, Can be prepared prior to as well as during the presentation, demonstrate that, the speaker has given thought to his/her remarks, can be used to record audience questions and comments and Can be converted to slides.

Generally, there are few limitations in the use of flip charts. These include; Lack of adequate knowledge about instructional media by the teachers, wrong application of instructional media, failure of the media to generate or stimulates interest in the students, failure of the class/group to partake in the activities generated by the instructional media (Muhammad, 2010).

Instructional media generally make the teaching and learning pro cess more effective and easier. It captures attention of the students. They provide common background for students. The use of common materials for all students help to present new concepts upon which discussions would be built; they stimulate interest as well as motivate students. The use of instructional materials does not only help to stimulate students but also sustain their interest. Instructional materials make it possible for students to learn through seeing, touching and hearing events remote in time and space.

2.1.12 Gender Issues on academic performance

One of the major concerns of researchers today is the innate sex discrimination in the world and its effect on various parts of human endeavors. For example, issues related to differences in gender have no effect on academic performance in mathematics and English and that the eventual achievement by learners depends more on personal effort. Most

studies show that average girls do better than boys in school. Girls get higher grades and complete high school at a higher rate compared to boys.

Abdu (2015) investigates the differences in the cognitive achievement and attitude towards Geography between junior secondary school boys and girls. The results reveal no significance in the cognitive achievement and attitude in Geography. However, it is not surprising, if the sex factor does not influence performance in Geography. This is because Geography deals with the study of man in all his interaction with the environment.

2.2 Theoretical Framework

Two theories are used to support this study, they include the constructivism theory and the Technology Acceptance Model (TAM).

2.2.1 Constructivism Theory

Constructivism is ‘an approach to learning that holds that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner’ (WGU, 2020). In elaborating constructivists’ ideas McLeod (2019) states that constructivism believes in personal construction of meaning by the learner through experience, and that meaning is influenced by the interaction of prior knowledge and new events. Constructivism's central idea is that human learning is constructed, that learners build new knowledge upon the foundation of previous learning. This prior knowledge influences what new or modified knowledge an individual will construct from new learning experiences (McLeod, 2019).

The second notion is that learning is an active rather than a passive process.

The passive view of teaching views the learner as ‘an empty vessel’ to be filled with knowledge, whereas constructivism states that learners construct meaning only through active engagement with the world (such as experiments or real-world problem solving).

Information may be passively received, but understanding cannot be, for it must come from making meaningful connections between prior knowledge, new knowledge, and the processes involved in learning.

Learning is a social activity - it is something we do together, in interaction with each other, rather than an abstract concept (McLeod, 2019).For example, Vygotsky (1978) as cited by Mcpherson (2013), believed that community plays a central role in the process of "making meaning." For Vygotsky, the environment in which children grow up will influence how they think and what they think about.

Thus, all teaching and learning is a matter of sharing and negotiating socially constituted knowledge.

For example, Vygotsky states that cognitive development stems from social interactions from guided learning within the zone of proximal development as children and their partner's co-construct knowledge (McLeod, 2015).

Each individual learner has a distinctive point of view, based on existing knowledge and values. This means that same lesson, teaching or activity may result in different learning by each pupil, as their subjective interpretations differ. This principle appears to contradict the view the knowledge is socially constructed. Individuals have their own personal history of learning, nevertheless they can share in common knowledge, and that although education is

a social process, powerfully influenced by cultural factors, nevertheless cultures are made up of sub- cultures, even to the point of being composed of sub-cultures of one (McLeod, 2015). Cultures and their knowledge-base are constantly in a process of change and the knowledge stored by individuals is not a rigid copy of some socially constructed template. In learning a culture, each child changes that culture.

The primary responsibility of the teacher is to create a collaborative problem-solving environment where students become active participants in their own learning.

2.2.2 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) was proposed by Davis in 1989 and has been one of the most influential models of technology acceptance, with two primary factors influencing an individual's intention to use new technology: perceived ease of use and perceived usefulness (Charness & Boot, 2016). An older adult who perceives digital games as too difficult to play or a waste of time will be unlikely to want to adopt this technology, while an older adult who perceives digital games as providing needed mental stimulation and as easy to learn will be more likely to want to learn how to use digital games. While TAM has been criticized on a number of grounds, it serves as a useful general framework and is consistent with a number of investigations into the factors that influence older adults' intention to use new technology (Braun, 2013).

The *actual system use* is the end-point where people use the technology. *Behavioral intention* is a factor that leads people to use the technology. The behavioral intention (BI) is influenced by the attitude (A) which is the general impression of the technology.

Wikipedia (2021) observed that the model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably:

- Perceived usefulness (PU) – This was defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance". It means whether or not someone perceives that technology to be useful for what they want to do (Wikipedia, 2021).

- Perceived ease-of-use (PEOU) – Davis defined this as "the degree to which a person believes that using a particular system would be free from effort" (Wikipedia, 2021). If the technology is easy to use, then the barriers conquered. If it's not easy to use and the interface is complicated, no one has a positive attitude towards it.

External variables such as social influence is an important factor to determine the attitude. When these things (TAM) are in place, people will have the attitude and intention to use the technology. However, the perception may change depending on age and gender because everyone is different.

2.3 Empirical Studies

Adam (2011) carried out a research on Effect of flipchart on learning of cloud formation in Minna, Niger State of Nigeria. He used questionnaires and sampled eighty students from four selected secondary schools in Minna town. The study reveals that, application of flipchart in Instructional delivery could improve learning skills. It also reveals that failure of students in Geography is usually attributed to shortage of qualified teachers. He

concludes by saying that, the root of the problem is lack of use of instructional material by teachers.

Adalikwu and Iorkpilgh (2013) investigated the influence of instructional materials (teaching aids) on students 'academic performance in senior secondary school Chemistry in Cross River State. Atwo-group pre-test posttest quasi-experimental design was adopted for the study. One research question and one hypothesis were formulated to guide the study. A total of 100senior secondary one (SS1) Chemistry students were selected from five (5) Schools in Yakuur Local Government Area of Cross River State through simple random sampling and stratified random sampling techniques. Fifty SSI 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 t-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 analyse 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 achievements. Recommendations were made on how to improve academic performance of chemistry students by encouraging the use of instructional materials in teaching-learning chemistry.

Adipo (2015) determined the impact of instructional materials on academic achievement in Public Primary Schools in Siaya County when compared to only abstract mathematics symbols. The project was based on four objectives including; to establish the impact of

concrete materials on achievement in measurement involving money, to establish the impact of Geoboard on achievement in Geometry, to determine the impact of Algebra tiles on achievement in Algebra and to determine the impact of place value blocks on achievement in mathematics number operations. The study adopted experimental design involving pretest, posttest of treatment and control groups. The study was conducted in public primary schools in Siaya County. The target population was 20564 Children and 696 standards four teachers and sample size comprised of 392 children and 8 teachers of mathematics. The findings from the research project indicated that teachers have undergone an education system that had enlightened them on need to know when, why and how to use manipulative effectively in the classroom as well as opportunities to observe; first-hand impact of allowing learning through exploration with concrete objects. According to findings, it can be seen that the control group of schools had mean and standard deviation of 52.70and 13.57, respectively, while the experimental group of schools had a mean and standard deviation of 74.30and 8.74, respectively. The difference in performance of children in control group of schools and those in experimental group of schools was found to be statistically significant ($t(8) = -5.482$, $p = .004$, two tailed). This suggests that children who are taught mathematics using instructional materials perform better than those who are only taught mathematics using abstract mathematics symbols only. The difference in performance is due to interventions (treatment) done to the experimental group of schools. Instructional material had more impact in achievement in measurement involving money. Further findings show that children in control group scored higher marks when they used place value blocks than children in experimental group where instructional materials were applied. Geo board as an instructional material had big impact on geometry achievement as compared to only mathematical symbols in learning mathematics. Algebra

tiles on achievement in Algebra as a concept in mathematics had greatest impact compared to only mathematical symbols. These findings show that children in experimental group scored higher marks than children in control group where instructional materials were not applied. Study recommends that since children taught mathematics using instructional materials perform better than those who are taught mathematics using abstract mathematics symbols only, they should be taught by use of instructional materials for better performance in mathematics. In study where impact of place value blocks in achieving basic operations on numbers in mathematics, Children in control group scored higher marks than children in experimental group where instructional materials were applied. Study recommends that all stake holders involved in the management of mathematics performance to rethink the way forward. Government and ministry of education need to encourage elementary teachers to use manipulative to help teach mathematics thereby positively affecting student learning. Incorporating manipulative into mathematics lessons in meaningful ways helps students grasp concepts with greater ease, making teaching most effective.

Olayinka (2016) highlighted the contribution of instructional materials to the academic achievement of secondary school students in Social Studies in Ekiti State. The population for the study comprised of all Junior Secondary School Class II students from among which 180 were sampled. The instrument for the study is a 30multiple-choice self- designed Social Studies Achievement Test (SSAT). The instrument was validated by specialists in Social Studies Test and Measurement and Educational Management. Test-re-test method and estimation of internal consistency was used to ascertain the reliability. The reliability co-efficient of 0.73 and 0.75 were obtained respectively. The study generated four hypotheses that were tested at the significance level of 0.05. ANOVA and ANCOVA

statistical tools were used to analyse the data collected. The study found that there was a significant difference in the pre-test and post-test of students in the experimental group. The study also found that gender effect was not statistically significant in social studies. The study concluded that students who were taught with instructional materials performed better than those taught without. The study therefore recommended that teachers of Social Studies should employ the use of essential instructional materials for their teaching and also improvise where and when the materials are not available. It therefore becomes imperative to have concerted efforts among parents, school and the government to make available important and necessary instructional materials to teachers of Social Studies for enhanced teaching and consequents improved achievement of students in the subject.

Igiri and Effiong (2013) determined the impact of instructional materials in teaching and learning of Biology by SS II students in Yakurr local government area of Cross River state. In order to effectively handle the study, four research questions were formulated to guide the study. The descriptive statistical method was employed so as to determine the impact of teacher's effectiveness. Five (5) comparable secondary schools were selected to represent the population of the study. The data collected were analyzed using simple percentage method to verify the research questions formulated for this study. The result of the findings revealed that there is a positive achievement in students taught by highly qualified biology teachers and those exposed to instructional materials during lessons. It was recommended that government make available to schools the basic instructional materials as this will enhance an effective teaching and learning process

2.4 Summary of Literature Reviewed

This study investigates the impact of flipchart instruction on the academic achievement and retention of geography in Secondary Schools in Minna, Niger State. The literature review builds its conceptual framework on instructional materials under which it dwells on types of instructional materials and (visual, audio and audio-visual), its advantages, disadvantages and reasons for using instructional materials in teaching. The literature reviews go further to look at the concept of flipchart where it dwells on the objectives and purpose of flip charts, how to use flip charts effectively, types of flip charts, rules for using flip charts, flip charts fundamentals, how to build a flip charts, procedure to build a flip charts, recommendations for the use of flip charts, disadvantages of flip charts, use and value of flip charts in teaching geography.

The literature review further looks at the concept of Geography, its nature and scope, rationale for teaching Geography in Nigeria. Academic performance is reviewed in this project where factors influencing academic performance and factors militating against effective teaching and learning of Geography are investigated. Two theories were found to support the study which includes the constructivism theory and technology acceptance model which advocates for the learners to construct their own knowledge via past experience while the latter explains the use of new technologies in the classroom. Findings from the empirical studies revealed that instructional materials such as flipcharts are capable of enhancing academic achievement and retention significantly.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Research Design

The researcher used quasi-experimental research design, specifically the pretest, posttest, non-equivalent control group design was used. This implies that, intact classes (non-randomized group) participated in the study. Egbule and Okobia (2012) noted that quasi-experimental design allows for the use of intact classes so as to avoid disruption of normal classroom activities in the school. The quasi experiment design is therefore considered appropriate for this study since intact classes were used. In studying the impact of an independent variable (flipchart instruction) on dependent variable (academic achievement and retention), a comparison was made between the experimental group who were taught by using a flipchart instruction and the other group in a control one was taught using the conventional method of discussion and dialogue, along with a teacher. The variables were controlled, which mean that both groups are equivalent in terms of specialty, academic level, teacher and teaching location and the two groups have undergone a pre and post academic achievement tests.

3.3 Population of the Study

The population for this study consists of all the secondary schools in Minna Metropolis.

S/N	Schools	Population
1	Ahmadu Bahago Secondary school	166
2	Government Day secondary school	164
3	Police Secondary school	172

4	Brighter Schools	165
5	Army Day secondary school	173
6	St. Clement secondary school	163
7	Government Girls secondary school, Minna	166
8	Galaxy International School, Minna	165
9	Himma International School	150
10	Divine Excellence International School, Minna	120
11	Kowa Secondary schools	170
12	Aisha Memorial School, Minna	120
13	El-Amin International secondary school, Minna.	163
	Total	2057

Field work by the researcher, 2021

The target population of this study consists of all the first year secondary school (SSI) students who offered Geography in the two selected secondary schools (Maryam Babaginda senior secondary school, Bosso and Ahmadu Bahago secondary school, Bosso) in Niger state in Minna Metropolis of Niger state with a total population of (2,057) students which constitute the population of the study (Niger State Educational Data, Senior Secondary Education Board (NSSEB) while the target population comprises students who offered Geography in the secondary schools.

3.4 Sample and Sampling Technique

A sample refers to a small group of elements drawn through a definite produce from a specific population. Shapiro (2008) refers sample as the "number of units that were chosen from which data were gathered" A sample size of 134 students was drawn from the two

schools. To produce the sample, the simple random sampling technique was employed to select two classes from the two purposively selected schools, balloting was used to represent the experimental and control groups. The sample for the experimental group of one of the selected schools was used as experimental group and the other as the control group. SSI of Maryam Babaginda secondary school, Bosso with a class population size of 72 students which comprises of 40 males and 32 females formed the experimental group while SSI of Ahmadu Bahago secondary school, Ahmadu Bahago with a class population of 62 students which comprise of 36 males and 26 females formed the control group.

S/N	School	Male	Female	Total
1	Maryam Babaginda Secondary School, Minna	40	32	72
2	Ahmadu Bahago Secondary school, Minna	36	26	62
	Total	**76**	**68**	**134**

The experimental group were taught using the flipchart instruction and the control group were taught using conventional method.

3.5 Research Instrument

The researcher designed a flipchart instruction. The researcher constructed a test instrument; Geography Achievement Test (GAT) used for data collection. The instrument was constructed by the researcher and it consists of Twenty (20). The achievement test consists of multiple-choice questions with four (4) options (A-D) out of which one serves as the correct answer based on the topic taught (Cloud Formation). However, at the second face (posttest) the options were interchanged likewise the numbering method (reshuffled). Each score per correct answer is one (1) mark. The questions were selected to determine

effects of multimedia. The items in the Geography Achievement Test (GAT) were constructed and tested by the researcher to ensure the inclusion of all the contents of the lessons covered in the topic. The Geography Achievement Test (GAT)will be used to assess the students' achievement in Geography.

3.5.1 Procedure for Constructing the Multimedia Package

The researcher designed a vivid and eye-catching flipchart to explain the concept of the "Cloud Formation", some of the images used was adopted from NASA's website with several images of planets, these images were digitally arranged using Corel Draw and then printed as hardcopies to make up the flipchart which were later arranged and spiral binded so as to enable them to be flipped over. The flipchart was developed with the secondary school curriculum contents.

3.6 Validity of Instrument

The Geography Achievement Test (GAT), which consists of twenty (20) multiple choice questions was face and content validated by two experts from the Department of Educational Technology in the School of Science and Technology Education (SSTE), Federal University of Technology Minna. Meanwhile, the Flipchart instructional material was validated by two experts in the department of Educational Technology. These experts scrutinized the instruments and made necessary corrections and modification to the subject, proper wording of the items, appropriateness and adequacy of the items for the study,

structure and adequate timing. The comments and recommendations of these experts helped to identify and correct the items in the instruments.

3.7 Reliability of the instrument

The reliability of Geography Achievement Test (GAT) was determined through pilot test by administering the instrument to 20 senior secondary school Geography students after instruction with the Flipchart in FUT Model secondary school, Minna, Niger State which is not among the sampled schools for the study, a reliability coefficient of 0.89 was determined from the data using Kuder Richardson 21.

3.8 Method of Data Collection

The school selected was visited by the researcher. Permission was taken from the Principal of the school which was given. The researcher was introduced to the Geography teacher of SS1 students. The aim and mode of research was explained to both the teachers and the students for their maximum cooperation. Thereafter, the students were sampled from the two (2) schools; pretest was administered to the students in order to assess their entry behavior. The test was administered to the two schools used for experimental and control groups in the first week of the visit to the schools. The Geography Achievement Test (GAT) consists of 20 test questions which were drawn from the "Cloud Formation" in accordance with SSI Geography curriculum. Each question is followed by four multiple-choice optional answers (A-D) and students were expected to choose the correct answer. Each correct answer chosen earn one mark, zero awarded to any wrong answer chosen and overall score is then converted to percentage. The test lasted for thirty (30) minutes, the lesson commenced in all groups in the second week of experiment which was conducted using the regular period allocated to Geography during class hours. The experiment

continued for two (2) weeks followed by revision. The two (2) schools were taught “Cloud Formation” for this period of two weeks. The experimental group was taught with flipchart while the control group was taught without the flipchart instructional materials. On the third week, posttest was administered to the two schools to test the achievement of the students for both experimental and control groups. The same items contained in the pre-test were used but this time around the questions numbering were reshuffled as well as the options. Each correct answer chosen earn one mark, zero was awarded to any wrong answer chosen and the overall score is then converted to percentage. The test lasted for 30 minutes and scripts were collected immediately for scoring.

3.9 Method of Data Analysis

Mean and standard deviation were used to answer the research questions while t-test was used to test the hypotheses at 0.05 level of significance. This level of significance formed the basis for rejecting or accepting each of the hypotheses, from which findings, discussions and summary was arrived at. Computer software Statistical Package for Social Science (SPSS) version 23.00 was used for the analysis.

CHAPTER FOUR

4.0 RESULT AND DISCUSSION

4.1 Result

In this chapter, data for the study were analyzed and presented based on the research questions and hypotheses that guided the study. The research questions were answered using mean and standard deviation while independent statistics was used to test the research hypotheses. All the hypotheses were tested at $P < 0.05$ level of significance.

Table 4.1.1 t-test analysis of pre-test scores of students in the experimental and control group

Group	N	Df	$\bar{x}$	SD	t-value	p-value	Decision
Experimental group	72		4.30	0.81			
		132			-0.78	0.43	NS
Control group	62		4.41	0.85			

NS=Not Significant at P>0.05

Table 4.1.1 shows the t-test analysis of pretest scores of students in the experimental and control group, with a p-value of 0.43 at p>0.05. This implies that there is no significant difference in the pretest scores of students before the treatment.

Research Question One: What is the impact of flipchart instruction on the academic achievement in the teaching and learning of geography? The answer is shown below on table 4.2

Table 4.2 Mean and Standard Deviation of posttest scores of students in the experimental and control group

Group	N	Pretest		Posttest	
		$\bar{x}$	SD	$\bar{x}$	SD
Experimental	72	4.30	0.81	18.19	1.59
Control	62	4.41	0.85	12.35	1.10

Table 4.2 indicates that students taught Geography using Flipchart has a mean achievement score of 18.19 with a standard deviation of 1.59 at the posttest while those taught using the conventional method had a mean achievement score of 12.35 and a standard deviation of 1.10. from the posttest mean scores, it is revealed that the students that were taught with the Flipchart scored higher than those taught using traditional method. The level of significance was presented in table 4.6

Research Question 2: What is the influence of gender on students' achievement when taught using flipchart instruction? The answer is revealed in Table 4.3

Table 4.3 Mean and Standard Deviation of male and female achievement scores of students in the experimental group

Gender	N	Pretest		Posttest	
		$\bar{x}$	SD	$\bar{x}$	SD
Male	44	4.40	0.72	18.09	1.92
Female	28	4.14	0.93	18.35	0.86

Table 4.4 reveals the influence of gender on the mean achievement scores of students taught using the Flipchart. The male students had a mean achievement score of 18.09 and a standard deviation of 1.92 at the posttest, the female students had a mean achievement score of 18.35 and a standard deviation of 0.86. This indicates that males achieved higher than their female counterparts, although the difference in the mean achievement score is shown in table 4.7

Research Question 3: What is the impact of flipchart instruction on retention in the teaching and learning of geography? The answer is revealed in Table 4.4

Table 4.4 Mean and Standard Deviation of retention test scores of students in the experimental and control group

Group	**N**	**Posttest**		**Retention**	
		$\bar{x}$	**SD**	$\bar{x}$	**SD**
Experimental	72	18.19	1.59	18.09	1.61
Control	62	12.35	1.10	12.54	1.21

From Table 4.3, reveals that students taught Geography using the Flipchart had a higher posttest score with a computed mean of 18.19 and standard deviation of 1.59 while the retention score had a mean of 18.09 and standard deviation of 1.61. The control group had a posttest mean of 12.35 and standard deviation of 1.10 while the retention mean score was 12.54 and standard deviation of 1.21. The table indicates that students taught Geography using the Flipchart retained higher than the students taught using conventional method. Table 4.8 reveals the significant difference in retention scores of the experimental and control group.

Research Question 4: Find out male and female Geography student retention score taught using Flipcharts? The answer is revealed in Table 4.5

Table 4.5 Mean and Standard Deviation of male and female retention scores of students in the experimental group

Group	N	Posttest		Retention	
		$\bar{x}$	SD	$\bar{x}$	SD
Male	44	18.09	1.92	18.09	1.92
Female	28	18.35	0.86	18.10	0.95

Table 4.5 presents the influence of gender on the mean achievement scores of students taught using Flipchart. The male students had mean retention score of 18.09 and a standard deviation of 1.92 while the females had a mean of 18.10 and a standard deviation of 0.95. This indicated that the female students retained higher than the males.

4.2 Hypothesis Testing

HO_1: There is no significant difference in the performance between students taught using Flipcharts and those taught without using Flipchart

Table 4.6 T-test for the posttest achievement scores of the experimental and control groups

Group	N	Df	$\bar{x}$	SD	t-value	p-value
Experimental group	72		18.19	1.59		
		132			24.22	0.00
Control group	62		12.35	1.10		

Significant at $p < 0.05$

The t-test for table 4.6 shows the mean achievement scores of students taught Geography using the Flipchart and those taught using convention method. There was a significant difference between the mean achievement scores of students taught Geography using Flipchart and those taught using conventional teaching methods as determined by the t-test analysis with a t-value at 24.22 and a p-value of 0.00 < 0.05. Students taught using Flipchart (M=18.19, S.D=1.59) scoring higher than students taught using the conventional method (M=12.35, SD=1.10). Therefore, the null hypothesis was rejected.

Hypothesis 2: There is no significant difference between the achievements mean score based on gender of students taught using flipchart

Table 4.7 T-test analysis of male and female students taught Geography using Flipchart

Gender	N	Df	$\bar{x}$	SD	t-value	p-value	Decision
Male	44		18.09	1.92			
		70			-0.68	0.49	NS
Female	28		18.35	0.86			

NS= Not Significant at p > 0.05 level

The t-test for table 4.7 shows the mean achievement scores of male and female students taught Geography using the Flipchart. There was no significant difference between the mean achievement scores of male and female students taught Geography using Flipchart as determined by the t-test analysis with a t-value at 0.68 and a p-value of 0.49 > 0.05. Male students (M=18.09, S.D=1.92) while the female students (M=18.35, SD=0.86). Therefore, the null hypothesis was accepted.

Hypothesis 3: There is no significant difference between the retention mean score of students taught using flipchart instruction and students taught using conventional instruction.

Table 4.8 T-test for the posttest retention scores of the experimental and control groups

Group	N	Df	$\bar{x}$	SD	t-value	p-value
Experimental group	72		18.09	1.611		
		132			22.2.	0.00
Control group	62		12.54	1.21		

Significant at $p < 0.05$ level

The t-test for table 4.8 shows the mean retention scores of students taught Geography using the Flipchart and those taught using convention method. There was a significant difference between the mean retention scores of students taught Geography using Flipchart and those taught using conventional teaching methods as determined by the t-test analysis with a t-value at 22.2 and a p-value of $0.00 < 0.05$. Students taught using Flipchart (M=18.09, S.D=1.61) scoring higher than students taught using the conventional method (M=12.54, SD=1.21). Therefore, the null hypothesis was rejected.

Hypothesis 4: There is no significance between male and female Geography student retention score taught using Flipcharts

Table 4.9 Retention t-test analysis of male and female students taught Geography using Flipchart

Group	N	Df	$\bar{x}$	SD	t-value	p-value	Decision
Male	44		18.09	1.92			
		70			-0.04	0.96	NS
Female	28		18.10	0.95			

NS= Not Significant at p > 0.05 level

The t-test statistics for table 4.9 shows the mean retention scores of male and female students taught Geography using the Flipchart. There was no significant difference between the mean retention scores of male and female students taught Geography using Flipchart as determined by the t-test analysis with a t-value at -0.04 and a p-value of 0.96 > 0.05. Male students (M=18.09, S.D=1.92) while the female students (M=18.10, SD=0.95). Therefore, the null hypothesis was accepted.

4.3 Discussion of Findings

The data analyzed in this chapter were interpreted and discussed on the results derived from four research questions and hypotheses. The main objective of the research is to determine the impact of flipchart instruction on the academic achievement and retention of students in Geography in some selected secondary schools in Minna metropolis of Niger state. The posttest scores in table 4.2 shows that the experimental group (M=18.19, S.D=1.59) had a higher achievement scores than the control group (M=12.35, S.D=1.10). Similarly, the p-value associated with the calculated value of t.val (24.22) in table 4.6 is 0.00 which is less than the level of significance, the null hypothesis was therefore rejected. Hence, there is significant difference in the mean achievement scores of students taught Geography with

the use of Flipchart. The use of Flipchart therefore has a significant effect on student's achievement in Geography as compared to conventional teaching method.

The experimental retention group scores at the posttest level in table 4.3 shows that the experimental group (M=18.09, S.D=1.61) had a higher achievement scores than the control group (M=12.54, S.D=1.21). Similarly, the p-value associated with the calculated value of t.val (22.2) in table 4.7 is 0.00 which is less than the level of significance, the null hypothesis was therefore rejected. Hence, there is significant difference in the mean retention scores of students taught Geography with the use of Flipchart. The use of Flipchart therefore has a significant effect on student's retention in Geography as compared to conventional teaching method.

The female students at posttest level (M=18.35, S.D=0.86) achieved higher than the male Geography students (M=18.09, S.D=1.92). Although, the p-value revealed there was no significant difference (p=0.49), in table 4.7 the p-value was greater than the 0.05 level of significance hence, the null hypothesis was accepted. This indicated that there is no significant difference in the mean achievement scores of male and female Geography students.

The mean retention score of male students exposed to the Flipchart (M=18.09, S.D=1.92) while the mean scores of female students (M=18.10, SD=0.95). Similarly, the value associated with the value of t (t.val=-0.04, df=70, p>0.96). In table 4.9, the p-value is greater than the level of significance (0.05), hence the null hypothesis was accepted. This indicates that there is no significant difference in the mean retention score between male and female students taught using Flipchart.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Based on the findings and discussion of the study, the following conclusion were drawn;

The effective and adequate use of Flipchart improves the academic achievement and retention in Geography students. The evidence of the experimental group that use the Flipchart in teaching enhances student's achievement more than the convention method. The use of Flipchart has a great significant effect on student's retention level and also on gender achievement in Geography. Emphasis should be laid on the use of Flipcharts and software for teaching Geography in senior secondary schools.

5.2 Recommendations

In view of this project findings, the following recommendations was made;

1. The teachers should be encouraged to enroll in the study of educational technology whereby they can learn the process of producing Flipcharts and the use of modern instructional media.
2. Seminars, conference and workshops should be organized and put in place for the teachers on the use of Flipcharts as instructional materials
3. There should be adequate reinforcement to hardworking and dedicated teachers through prize awards as a means of appreciation.
4. Government, school administrators should show support and dedication to encourage creativity shown by co-science teachers by providing teaching materials which will promote science and technology in Nigeria.

5.3 Major Findings of the Study

The following findings have been made from the research work

1. There was significant difference between the mean achievement scores of students taught Geography using Flipchart and those taught using conventional method
2. There was significant difference between the mean retention scores of students taught Geography using Flipchart and those taught using conventional method
3. There was no significant difference between the mean achievement scores of male and female students taught Geography using Flipchart.
4. There was significant difference between the mean retention scores of male and female students taught Geography using Flipchart.

5.4 Contributions to Knowledge

The result of the study has contributed to knowledge in the following ways

1. Helping the teacher understand the use of instructional materials and Flipchart will reduce the abstract nature of Geography concepts thereby making learning interesting.
2. Adequate use of Flipchart will help save the teacher's time and energy
3. Retention of students during learning activities can be enhanced through the use of Flipchart
4. It helps to contribute to the existing literature and use to provide platform for further research.

5.5 Implications of the Findings

Various implications have been adopted but the most important is the use of Flipchart in teaching Geography in senior secondary schools so as to improve student's achievement and retention level in Geography. Therefore, teachers should be encouraged and enlightened on the use of Flipchart as it creates interaction between the teacher and the students. It can also be used to enhance the student knowledge and enables them to contribute their own quota on whatever they have been taught.

5.6 Suggestions for further Research

Areas where further research could be done are as follows;

1. The perceived use and perceived ease of use of flipchart in teaching secondary schools
2. Effect of Flipchart in teaching, achievement, retention and interest on student's performance
3. Further research should not be limited to a specific area, it should cover a wider geographical area.

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APPENDIX I

GEOGRAPHY ACHIEVEMENT TEST

PRETEST

The region above the planetary boundary layer is commonly know as.....(A) Cloud (B)plant (C) Atmosphere (D) Surface

Winds that are not directly retarded by surface is called..... (A) Friction (B) Rigid (C) Fog (D) Layers

Which one of this way cloud frequently occur.....(A) Fog (B) Dog (C) Dew (D) Rain

Cloud are form when water vapor an invisible gas, turns into.....(A) Solid state (B) Crystal form (C) Liquid water droplets (D) Ice block

Water vapor gets into air mainly by.....(A) Evaporation (B) Transportation (C) Atmosphere (D) Air

Cloud also form when air is forced upward at areas of.....(A) High pressure (B) Low pressure (C) Medium pressure D Maximum

When the cloud droplets become heavy enough, they form.....(A) Blooddrop (B) Rain drop (C) Dots (D)dew drop

All cloud contain water.....(A) Vapor (B) Fog (C) Rain (D) Wind

The following are types of cloud expect.....(A) Cirro (B) Stratus (C) Cumulus (D) Rainfall

Cirro cloud means .....(A) Twist (B) Curly (C) Cool (B) Smooth

Stratus cloud means .....(A) Fibrous (B) Layered (C) Surface (D) High

Cumulus cloud mean.....(A) Lumpsy (B) Rain (C) Bone (D) Shapes

Cloud size are influenced by many factors EXCEPT.....(A) heat (B) Season (C) Mountain(D) Events

Clouds form when air becomes.....(A) hot (B) Cooler (C) Saturated (D) gray

Cloud are classified into.....main groups (A) 2 (B) 5 (C) 3 (D) 14

Cirrus cloud are higher than.....(A) 6000m (B) 4000m (C) 6600m (B) 10000m

Stratus cloud can.....the entire sky (A) Cover (B) Rise (C) Blanket (D) Close

Cumulus the comes from the Latin word meaning ..... (A) Heap and pile (B) Documents and file (C) Stretch (D) Warm

Stratus cloud are usually in the form of .....(A) Hot snow (B) Dry snow (C) Light snow (D) white Snow

Cloud are vary in terms of.....(A) Shape and size (B) Growth and development (C) Rainfall (D)Long and Short.

APPENDIX II

ANSWERS

1. C

2. A

3. A

4. C

5. A

6. B

7. B

8. A

9. D

10. B

11. A

12. A

13. D

14. C

15. C

16. A

17. C

18. A

19. C

20. A

APPENDIX III

GEOGRAPHY ACHIEVEMENT TEST

POSTTEST

The following are types of cloud expect.....(A) Cirro (B) Stratus (C) Cumulus (D) Rainfall

Cirro cloud means .....(A) Twist (B) Curly (C) Cool (B) Smooth

Stratus cloud means .....(A) Fibrous (B) Layered (C) Surface (D) High

Cumulus cloud mean.....(A) Lumpsy (B) Rain (C) Bone (D) Shapes

Cloud size are influenced by many factors EXCEPT.....(A) heat (B) Season (C) Mountain(D) Events

The region above the planetary boundary layer is commonly know as.....(A) Cloud (B)plant (C) Atmosphere (D) Surface

Winds that are not directly retarded by surface is called..... (A) Friction (B) Rigid (C) Fog (D) Layers

Which one of this way cloud frequently occur.....(A) Fog (B) Dog (C) Dew (D) Rain

Cloud are form when water vapor an invisible gas, turns into.....(A) Solid state (B) Crystal form (C) Liquid water droplets (D) Ice block

Water vapor gets into air mainly by.....(A) Evaporation (B) Transportation (C) Atmosphere (D) Air

Cloud also form when air is forced upward at areas of.....(A) High pressure (B) Low pressure (C) Medium pressure D Maximum

When the cloud droplets become heavy enough, they form.....(A) Blooddrop (B) Rain drop (C) Dots (D)dew drop

All cloud contain water.....(A) Vapor (B) Fog (C) Rain (D) Wind

Clouds form when air becomes.....(A) hot (B) Cooler (C) Saturated (D) gray

Cloud are classified into.....main groups (A) 2 (B) 5 (C) 3 (D) 14

Cirrus cloud are higher than.....(A) 6000m (B) 4000m (C) 6600m (B) 10000m

Stratus cloud can.....the entire sky (A) Cover (B) Rise (C) Blanket (D) Close

Cumulus the comes from the Latin word meaning ..... (A) Heap and pile (B) Documents and file (C) Stretch (D) Warm

Stratus cloud are usually in the form of .....(A) Hot snow (B) Dry snow (C) Light snow (D) white Snow

Cloud are vary in terms of.....(A) Shape and size (B) Growth and development (C) Rainfall (D)Long and Short.

APPENDIX IV

ANSWERS

1. C

2. A

3. A

4. C

5. A

6. B

7. B

8. A

9. D

10. B

11. A

12. A

13. D

14. C

15. C

16. A

17. C

18. A

19. C

20. A

APPENDIX V

LESSON PLAN FOR THE CONTROL GROUP

School	Maryam Babaginda secondary school
Date	20th May, 2021
Number in Class	72
Sex	Mixed class
Average age	14-17
Subject	Geography
Topic	Cloud Formation
Time	10:00 - 10:40
Duration	40mins
Period	1st

Method of Teaching	Discussion, Demonstration
Teaching Techniques	Set induction, Questioning
Instructional materials	Whiteboard, Flipchart
Specific Objective	At the end of the lesson students should be able to; a. Define cloud formation b.List the three types of cloud c. Explain the three types of cloud d. Identify Cirro, Stratus, Cumulus cloud
Introduction	Teacher introduce the lesson by asking the students the following questions: a. What is cloud b. Mention the types of cloud
PRESENTATION	Teacher presents the lesson by the following steps
Step I	Teacher defined cloud formation are created when water vapor, an invisible gas, turns into liquid water droplet
StepII	Teacher lists the types of cloud formation as 1. Cirro 2. Stratus 3. Cumulus
Step III	Teacher Explain the three types of cloud: a. Cirrus is a genus of atmospheric cloud generally characterized by thin, wispy, strands, Latin word Cirrus meaning a ringlet or curling lock of hair b. Stratus cloud; are low-level layers with a fairly uniform grey or white colors, Latin word meaning "layer" as Stratus cloud look like a blanket covering the sky. c.Cumulus cloud Large, white, puffy clouds that generally appear during fair weather, although they also form thunderheads on hot days. Some carry rain.

Step IV	Teacher demonstrate with instructional material (Flipchart) types of cloud formation Cirro, Straus, Cumulus
EVALUATION	Teacher evaluates the lesson by asking the students the following questions. i. What is cloud formation? ii. Lists three types of cloud? iii. Explain three types of cloud?
Conclusion	The teacher concludes the lesson by summarizing the main point of the lesson
Assignment	Draw and label the diagram of Cumulus cloud
Reference material	Essential Geography for Secondary schools.

APPENDIX VI

LESSON PLAN FOR THE CONTROL GROUP

School	Ahmadu Bahago Secondary School
Date	19th May, 2021
Number in Class	62
Sex	Mixed class
Average age	14-17
Subject	Geography
Topic	Cloud Formation
Time	10:00 - 10:40
Duration	40mins
Period	3rd

Method of Teaching	Discussion, Demonstration
Teaching Techniques	Set induction, Questioning
Instructional materials	Whiteboard
Specific Objective	At the end of the lesson students should be able to; a. Define cloud formation b.List the three types of cloud c. Explain the three types of cloud d. Identify Cirro, Stratus, Cumulus cloud
Introduction	Teacher introduce the lesson by asking the students the following questions: a. What is cloud b. Mention the types of cloud
PRESENTATION	Teacher presents the lesson by the following steps
STEP I	Geography
Topic	Cloud Formation
Time	10:00 - 10:40
Duration	40mins
Period	3rd
Step I	Teacher defined cloud formation are created when water vapor, an invisible gas, turns into liquid water droplet
StepII	Teacher lists the types of cloud formation as 1. Cirro 2. Stratus 3. Cumulus
Step III	Teacher Explain the three types of cloud: a. Cirrus is a genus of atmospheric cloud generally characterized by thin, wispy, strands, Latin word Cirrus

	meaning a ringlet or curling lock of hair b. Stratus cloud; are low-level layers with a fairly uniform grey or white colors, Latin word meaning "layer" as Stratus cloud look like a blanket covering the sky. c.Cumulus cloud Large, white, puffy clouds that generally appear during fair weather, although they also form thunderheads on hot days. Some carry rain.
Step IV	Teacher demonstrate with instructional material (Flipchart) types of cloud formation Cirro, Straus, Cumulus
EVALUATION	Teacher evaluates the lesson by asking the students the following questions. iv. What is cloud formation? v. Lists three types of cloud? vi. Explain three types of cloud?
Conclusion	The teacher concludes the lesson by summarizing the main point of the lesson
Assignment	Draw and label the diagram of Cumulus cloud
Reference material	Essential Geography for Secondary schools.