EFFECTS OF COMPUTER ASSISTED INSTRUCTIONS ON ACADEMIC ACHIEVEMENT OF GEOGRAPHY STUDENTS IN SELECTED SECONDARY SCHOOLS IN BOSSO LOCAL GOVERNMENT AREA

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A PROJECT WORK SUBMITTED TO THE DEPARTMENT OF EDUCATIONAL TECHNOLOGY, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE. NIGERIA IN PARTIAL FULFILLMENT OF THE AWARD OF DEGREE OF BACHELOR OF TECHNOLOGY (B.TECH) IN EDUCATIONAL TECHNOLOGY

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ABSTRACT

The study was carried out to investigate the effects of computer assisted instructions on academic achievement of Geography students in selected secondary schools Bosso Local Government Area of Niger State. Influence of gender was also examined. Quasi experimental procedures of pretest, posttest, post posttest, nonequivalent design was adopted. Two research question where raised and two null hypothesis were tested at 0.05 level of significance. The sample of the study was made up of 127 senior secondary school students captured from the intact classes of two co-educational public schools within the study area. The two schools were randomly assigned to experimental and control groups. The experimental group which comprised of 72 students (40 male and 32 female) were taught through the computer assisted instruction package while their counterparts in the video group where in the control group which comprised of 55 students (25 male and 30 female) were taught using lecture method. The research instrument geography achievement test (GAT) was validated by experts and reliability coefficient of 0.75 was obtained. GAT was administered as pretest, posttest and post posttest on both groups. Data gathered were analyzed using t-test statistics. Findings reveals that there was a significant difference in the achievement scores of students taught with computer assisted instruction package and those taught in conventional way using lecture method; non-significant difference in the mean achievement scores of male and female student taught with computer assisted package.it was therefore recommended that among others that, Computer Assisted Instructions should be adopted in secondary schools to complement lecture method of teaching in order to improve the students ' achievement in geography.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Geography is a broad scientific discipline that brings different information. Geography helps pupils to have information about the location, distribution, distance, movement, region, scale, spatial association, and spatial interaction and change over time (Reinfried, Schleicher, Remfler 2007). The word Geography is coined from two Greek words 'Geo' meaning earth and 'graphy' meaning to describe. Therefore, Geography can also be defined as description of the earth. Geography (from Greek γεωγραφία, Geographia, literally "earth description") is a field of science devoted to the study of the lands, the features, the inhabitants, and the phenomena of Earth cited in Edeh, (2021). Geography is unique in bridging the social sciences (human Geography) with the natural sciences (Physical Geography). Geography is simply defined as a science that deals with Earth's surface. People who study Geography are called geographers. Geographers are interested in Earth's Physical features, such as mountains, deserts, rivers, and oceans.

The introduction of western education in Africa brought in the teaching of Geography in the Continent. During this time, the teaching of Geography was merely based on memorization and mainly on description. For example, students had to memorize rivers, mountains, oceans, major cities among others without verification of the facts. Learners had to learn on their own through explorers, travelers and hunting. The teaching of Geography was a global phenomenon. Since little or nothing was known about other parts of the world (Guadence, Too, & Nabwire, 2013). During this time teaching was from unknown, for example, learners could talk emphatically and copiously on the prairie of Canada, pampas of Argentina, great lakes of USA, with little or no knowledge about their own local environment. The teaching started from known to unknown, simple to

complex, concrete to abstract which are in consonance with pedagogical principle of teaching. Taylor (2003) the new approaches adopted were as follows; localized teaching, where materials such assoil samples, crops, rock types were used elaborately in teaching and it inculcates in the learners the skills such as critical reasoning, sound judgment, keen observation, data collection techniques and analyses. In outdoor approach, learners see things for themselves then give analysis of what they have observed and felt. And in learner centered, teaching always motivates and arouses learners' interest.

In Nigeria, the teaching of Geography has been thought of in terms of what it can contribute to the realization of the aims of secondary education. For example it is taught to give learners sound knowledge of their immediate environment, develop the ability to comprehend and explain natural phenomena, develop learners' critical thinking, ability and accuracy and develop a comprehension of the spatial relationship and various features on the surface of the earth.

Conventional teaching methods in the classroom have been changing due to the influence of technological development method of work and research in geography are developed, and the realization of the geographical studies and research and geographical teaching and learning are connected with information communication and technology. Availability of teaching and learning resources support teachers in making decisions on what and how to teach and effective selection of method to be used in teaching. Most educators are not Geographers' and require help in determining the important principles and concepts as well as necessary Geography practices to teach use during instruction. Teaching and learning materials such as atlases, maps were found not to be in use with such materials occasionally introduced. While appropriate teaching was being carried out in some classes, in the most classes essential skills were rarely accorded enough focus (Edelson, 2013). Therefore, Geography education cannot be effective if learners are not taught the

important skills of the subject. Furthermore, instructional resources must highlight Geographers thinking process with regards to problems, giving learners models for "thinking geographically" and creating chances for students to exercise this form of thinking.

Prattt (2008) views instructions as the activities of educating or instructing activities that impact knowledge or skill written or spoken directions for carry out a procedure if performing a task effective instruction often include visual element (such as pictures, diagrams and flowchart) that illustrate and verify the text. Instructional materials are materials which assist teachers to make their lessons explicit to learners. They are also used to transmit information, ideas and notes to learners. Instructional materials include both visuals and audiovisuals such as pictures, flashcards, posters, charts, tape recorder, radio, video, television, computers among others. These materials serve as supplement to the normal processes of instruction. Heffron and Downs, (2012) opinioned that Science is resource intensive, and in a period of economic recession, it may be very difficult to find some of the electronic gadgets and equipment for the teaching of Geography in senior secondary schools adequate.

Information Communication Technology (ICT) is essential for effective teaching/ learning, Mumtaz (2010) opined, lack of time is a factor that hinders technology integration in schools (release time & scheduled time). ICT have potential for enhancing quality education by increasing learner motivation and engagement hence promoting shift to learner- centered environment. Learners can construct more complete mental summaries written a week after viewing the video than those written a week after listening to lectures. CAI such as video, graphics, computers, projectors can present visual information that is more difficult to convey through conventional method for example students can visit erupting volcano and have a fieldtrip to rift valley without

leaving the classroom. This is affecting teachers, students; schools and there is a need to bridge the gap in digital competencies (Jacobs, 2013).

Computer assisted instruction can help to share information. Contemporary learning theory is based on the notion that learning is an active process of constructing knowledge rather than acquiring knowledge and that instruction is the process by which this knowledge construction is supported rather than a process if knowledge transmission (Duffy & Cunnigham, 1996). On the importance of computer assisted instructions, Abimbade & Egunjobi (2003) stated that CAI present information to the learner at his own pace. According to Abimbade & Egunjobi the tutorial programmed of the computer assume that the learners is in a "tabula rasa" state. It presents some learning materials and ask question, it then compare the response with the expected answers, if the learner is unable to get the correct answer it will then present to the learner some basic concept that will represent the first frame all over again.

Achievement may be measured through students' grade point average, whereas for institutions, achievement may be measured graduation rates. An achievement also goes with retention.

Retention refers to the ability of an individual to hold something for a period of time in such a way that it can be retrieved. The achievement and retention may vary in respect to the gender.

Gender comprises of both sexes (male and female) especially when considered with reference to social and cultural differences rather than biological ones. Some research has shown there is disparity in gender achievement and retention. Gender difficulties have also been connected to student performance on academic tasks in various research, but no definitive conclusion has been reached. However, there is a consensus that there is a general imbalance in computer use, access, career, and attitude. As a result, Davies, Klawe, Ng, Nyhus, and Sullivan (n.d.) suggested that the

existing gender disparity in technology, as well as the role that technology will play in the future, should be a worry for men and women, practitioners, policymakers, and parents, based on their review.

Some studies such as those of Bello (1990) did not find any form of influence being exerted by gender on students' academic performance in the sciences. Gender factor on the use of CAI has also been of interest to researchers. Gimba *et al.* (2015) in their studies established that there was no significant difference between male and female exposed to computer simulation. Similarly, Isiaka (2007) also revealed that there was no significant difference between male and female when exposed to video as an instructional medium. Collazos, Guerrero, Llana, and Oetzel, (n.d.) examined gender influence on collaborative use of computer based communication. They found that group with minority women had low index of collaboration compared to homogenous group and group with majority women.

The above background provides a basis in which the current studies sought to investigate the effect of computer assisted instruction on academic achievement of geography students in selected secondary schools in Bosso local government area of Niger State. Because of its nature, CAI has the ability to enhance teaching / learning abstract ideas. From literature review, CAI is associated with certain benefits in teaching or learning among them active learning, motivation, individualization, self-pacing and the ability of a CAI to address the problem of student understanding. Following the stated problem, there is need for improving teaching/learning of Geography, but one may wonder to what extent CAI are actively being put into use in class rooms.

1.2 Statement of the Research Problem

The poor or non- existence of internet connectivity, inadequate learning resource in most secondary schools in Niger State, including related educational tools and other learning materials

lead to student's lack of interest in the subject, fear and failure or poor performance recorded in geography examination. According to Edeh, 2021 stated that some students tend to avoid Geography during their studies due to its non-motivational aspects as a result of approaches or methods adopted by Geography teachers in the teaching of the subject while some tend to avoid Geography because of its numerous abstract nature and topics. It is on the basis of this problem that the study will be carried out the study seek to examine the effect of computer assisted instruction on the academic achievement of geography student in selected secondary schools in Bosso Local Government Area of Niger State, Nigeria.

1.3 Aim and Objectives of the Study

The aim of the study is to examine the effect of computer assisted instruction on the academic achievement of geography student in selected secondary schools in Bosso Local Government Area of Niger State, Nigeria.

The following objectives guided the study

1. Investigate the effects of computer assisted instruction on academic achievement of students in Geography in selected secondary schools in Bosso LGA of Niger State.
2. Find out the effects of computer assisted instruction on gender achievement in Geography.

1.4 Research Questions

The following research question were formulated to guide the conduct at the end of the study.

1. What effects does the use of computer assisted instruction has on the academic achievement of students in Geography in selected secondary schools in Bosso LGA of Niger State?

2. What is the influence of gender on the mean achievement scores of students taught Geography using computer assisted instruction ?

1.4 Research Hypotheses

For the successful completion of the study the following research hypothesis were formulated by the researcher and to be tested at 0.05 level of significance

HO_1: There is no significant difference between the achievements scores of students taught Geography using computer assisted instruction and those taught with conventional lecture method.

HO_2: There is no significant difference in the achievement scores male and female students taught Geography using computer assisted instruction.

1.6 Significance of the Study

Findings from this study will be beneficial to students, teachers, educational curriculum designers, researchers, and other experts to explore possibilities of developing more effective strategies of practicing active learning methods in the teaching of Geography.

First, this study will encourage the teachers the use of computer assisted instruction in teaching of geography at secondary school level for improved students' achievement in the classrooms to make learning of Geography interesting and enhance better understanding by the students.

Geography teachers are expected to find the result of the study useful as it highlights challenges they face during adoption and use of computer assisted instruction in secondary schools.

It will enable educational policy makers and other experts effectively plan the educational syllabus and help curb problems that hinder the practice of active learning of Geography.

The information provided in this study would also encourage the introduction of computer tablet into public schools in Niger state by the state government for general improvement in student's achievement in geography and other subjects.

Furthermore, it is believed that the use of CAI will immensely help in creating picture interaction in the mind of those that are slow to learn in the school. Thus, for proper discussion and understanding of abstract concepts and themes, CAI must be used to drive home the learning and in concrete terms.

1.7 Scope of the Study

This research was delimited to the effect of computer assisted instructions on academic achievement of geography student in selected secondary school in Bosso Local Government are. The study is limited to two (2) selected secondary schools in Bosso LGA Area of Niger State. The study will be limited to students offering geography in the two (2) selected secondary schools in Bosso LGA Area of Niger State. The study is also confined to students 'achievement in geography, the use of CAI package in teaching and learning processes, their effectiveness and capabilities in facilitating retention among learners.

1.8 Limitation of the study

Limitation of the study is inability of the researched to cover the entire population of the study, money, distance and time. In fact, time frame allocated to the study does not enhance wider coverage as the research has to combine other academic activities and examination with the study.

1.9 Operational Definition of Major Terms

Effective: Power to bring about a result of something that in evitable follows an antecedent (such as a cause or agent)

Computer Assisted Instruction: Computer assisted instruction is an interactive technique whereby a computer is used to present the instruction materials and monitor the learning that take place. Computer assisted instruction uses a combination of text, graphics, sound and video in enhancing the learning.

Academic Achievement: Academic achievement or academic performance is the extent to which a student, teacher or institution has achieves their short- or long-term educational goals. Cumulative GPA send completion of educational degree such as high school aid bachelor's degree represents academic achievement.

Geography: Geography is a science that deals with the description, distribution and interaction of the device physical, biological and culture features of the earth's surface.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Concept of Computer Assisted Instruction

Computer assisted instruction (CAI) can be a great asset to the classroom and curriculum as long as they are not over used. Too much of any mode of teaching can lead to breakdown and frustration in the student (Kim, & Axerod, 2005).

2.1.2 The Meaning of Computer Assisted Instruction (CAI)

According to Fourie (1995), computer assisted instruction is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place, it is also known as computer-based education (CBA), and computer-based training (CBT).

Computer assisted instruction refer to an interactive form of teaching in which instructional materials is presented by computer and the individuals learning is tracked using a computer. In simple words, CAI is a programmer of instructional materials presented by means of a computer of computer system. In some other instance it is a self- learning technique that is done offline or online usually with the student interacting with material programmed by the instructor.

Computer based education (CBE) aid computer-based instruction (CBI) are the broadest terms and can refers to virtually any kind if computer use in educational settings, including drill and practice, tutorials, simulation, instructional management supplementary exercise, programming, database development, writing using word processors, and other application. These terms may refer either to stand- alone computer learning activities or to computer activities which reinforce materials introduced and taught by teacher.

2.1.3 Geography and Computer Assisted Instruction

Shepherd cooper and walker published in 1980 was written for and organized into three distinct part to meet the needs of several types of reader. These are identified as the uncommitted teacher who knows nothing about computer or the role they play in geography teaching for the teacher of geography who is already interested in using the computer in his work, but does not know where to begin, and for the teachers who is at present using computer, but want to know more about what can be done with it in geography (Shepherd et al. 1980).

2.1.4 Characteristic of Computer Assisted Instruction.

Computer assisted instruction make use of multimedia software in the learning process including text, video technology, graphics, sound and internet technology. Computer assisted instruction is hereby used in the growing field if distance education. Traditionally computer assisted instruction, like programmed instruction, has been linear in nature. Web based instruction on the other hand is non-linear (Lawson, 1999).

The computer assisted instructions start by identifying the way a student seems to learn best reviews how past history of learning and then present programmed built on his strength. Sometimes the computer stores all the information gained from all student who have taken the computer course previously. This information may be re- analyzed and much of the teaching stratifies, which were not effective, may be rejected and strategies which have succeeded may be continued (Sampath *et al.*, 1990).

Intelligent computer assisted instruction is programmed so that the CAI adapt to the student's individual needs. It acquires information about the student's current knowledge of a subject and his/her goal in learning the subject and they create a user profile based on this knowledge it can

then adjust itself to the individual student. Web based instruction is unique in that student and or instructor can communicate with each other anywhere in the world within seconds via the internet. Feedback from the instructor can be obtained immediately (Moursun, 1998).

A typical CAI installation consist of individual learning booths, each with a console. The student is sited, facing him on the console a television screen for displaying information, before he starts a program the student checks in with the computer by displaying his identity numbers. This connect his with his with the part of the learning programmed.

A complete package of information stored in the system is presented sequentially. This information could take the form of video tape recording, slide, motion pictures, film, film strip, etc. the student may question the computer and feed answer into it by means if a typewriter keyboard. The computer response by printing out comment, answer and questions. Sometime the student may write directly on the cathode ray tube display screen with a light pen. His answer will be picked by the computer aid evaluated. When he has finished the computer assigns him the next programmed, records his progress and print out a report foe his teacher (Sampath *et al,* 1990).

2.1.5 Computer Assisted Instructions and Method of Teaching Geography

According to Bull, Bell, Mason and Garao Falo (2002) the use of technology is institution should either be improving efficiency or to reconceptualized the curriculum. The UN secretary of state (2005) speaking on the role of technology in education said we must ensure to help unluck the doors of education, as a result, Millemuim Development Goals (MDDFs) came up with this policy to co-operate with the private sector, to make available the benefits of new technologies, especially ICT to increase educational opportunities and unlock the door of education. As a result of this, new technologies are being disseminated into educational institutions at rapid rate. The World

Bank (2004) opened that ICT should be considered with in education for the purpose if reforming curriculum, reinforcing teaching/learning and to improve learning. All these are evidence supporting the introduction and use of new technologies in instruction. The use of CAI in geography helps student learn by providing access to large qualities if information in people, place and environment. It also provides the frame work for analyzing data to investigate patterns and relationship in geographical context.

2.1.6 Rationale for CAI in Teacher Education

Chauhan (1994) mention that CAI system has been utilized at all levels of education ranging from elementary school, secondary school, teacher training college, post graduate studies and in the job training in almost all subject. Developed Countries have been using CAI for more than three or more decades. A lot of research on various aspect of CAI has been conducted in these countries. They have refined this mode of instructions in the light if finding of research and are still looking for better use of it.

Site (2002) stated that it is important t- note that some vary strong models of teacher's education provide simultaneous professional development foe more than one group. For example, pre-service preparation can be aligned with in -service teacher education. A practicing teacher may work with pre- service teacher education student on an innovative educational project. This not only increase the research potentials of the in-service teacher, but the pre- service teacher also experiences role modeling and as a result may have an easier transition into teaching.

With CAI, student often become teacher using the process of peer tutoring or reciprocal mentoring. Instead a teacher ma facilitates learning by reversing the teaching learning roles, with student acting as expert learner who model the learning process. CAI extend the range if such opportunities

and provide access to extension relevant supporting materials. The teacher's role changes to manage and facilitate in many of these situations as the teacher helps the expert communicates with the learners and Scaffotts the learning process. The teacher also acquires professional development by learning the expert (Bozarth 2006).

2.1.7 Using CAI to Increase Efficiency in the Classroom

According to Leuhiman (1971) and Bull et, al (2002) technology application in classroom may be in the area of computer assisted instruction inter this, geography teachers may use the new technologies for words processing, grading, record keeping, web page production and lectures. Other scholars who supported the use of technology in teachers education to improve classroom efficiency among which are Chickeming & Erhmanb (1996), Freeman (1997), Leat & McAleary (1998), Hepp *et, al* (2004). According to Kozma *et, al* (2004) those advocating for the use of technology, described a range of potential impact that new technologies have a when applied to education.

2.1.8 Classroom Trainer Resistance of CAI

One among several researcher who investigated why teachers resist the application if CAI in their classroom teaching is Bozaith (2006) who opined that online workplace training offers many benefits, including reduction of employee time away from work and elevation if travel expenses. Yet in this try reports and anecdotal evidence show that many learners resist using CAI even when it would ease their own workloads and enhance the effectiveness of their time spent in the classroom. Concept of work role, beliefs about practice, belief about quality of E- learning, personality factors and vision of computer as a support tools rather than an enabler and enhancer of learning Bonzaith (2006) stated that these areas are explores in details as:

2.1.9 Work Roles

E-learning brings with its shift from the traditional trainer teaching hierarchy (Berge, 2003). Where the classis view of teachers tends to be that of oracle authority and expert (Humbert, 2005, Yang, 2005, Ertmer 1999, Zhao and (Ziko, 2001), E-learning demands some re-arrangement of positions with trainers moving to the role of guide, and learner and to that of explorer. Gasco *et, al* (2004) articulate this is the shift of trainer from the exclusive owners of a set if knowledge and wisdom to facilitators who see the student as someone who also help then to learn.

Wallace (2000) described university faculty, some with titles like professor, who felt they were being relegated to the roles of production workers, simply typing out content to be put online, and customer service representatives, available 24/7 to help student with technical problems.

A final area of concern regarding concept of role rest in the fundamental fear of being replaced by technology. Hodas (1993) comments that the nation that is would be possible to be replaced by a machine cuts deeper to the heart of teacher's identity and elf respect. The suggestion that (tasks) teachers are called upon to perform might be better performed by machined calls this self-image into question in a manner that is painful direct (pg. 10). There is a general notion that machines are gradually taken over the role if the teachers in the classroom the teachers who have that fear and belief is because they are not ready to move with the changes in modern classroom situations.

2.1.10 Practice and Belief about Teaching

So many individual and group have different conceptions about teaching, some people views it to be simple while others look at it to be mysterious. Researcher like Pederso and Lui, (2003), Zhao and (Ziko, 2001) (Uban, 1993) Honey, Moeller, (1990) have shown that instructors regarded as high tech as evidenced by use of computer and online approaches, tended to utilized constructivist

strategies such as learning and collaborative work. They additionally tended to plan instruction to meet the needs of individual students, and further discussed wanting to instill in learners a sense of curiosity and desire to learn.

According to Khitrykh and Nelsom (2003) CAI (E- learning) focuses on learning needs rather on trainers. However, those most resistant to new approach and technologies tends to be instructors' workings from a teacher centered perspectives (Pederson and Lui, 2003, Honey and Moeller 1990). Seeing themselves as the sole sources of knowledge (Zhoa & Ziko, 2001).

Honey Ns Moeller (1990) described resistor as a fearful that technology might alter their relationship of control and authority where the student center instructors utilized more freely-structures lesson plans and discovery learning techniques, those who subscribed to a more instructor- centered approach concentrated on following the textbook aid lesson plan, with emphasis on passing a final exam (Honey and Moeller 1990, Pederson and Liu, 2003).

2.1.11 Beliefs about Quality of CAI (E-Learning)

As notice by Humbert (2005), concerns here may also be attributes to the fact that many instructors have never experienced a quality online experience and this have no real standard of compares. Also, smith and Bierema (2000) discusses an issue that does not appear in the literature addressing CAI used in the k- 12 realm. The need to maintain the integrity at the adult learning programmed while simultaneously enabling the organization to respond to market conditions.

Smith and Bierema (2000) noted that the importance and quality of the learning experience is maintained and content not simply be dumped into web pages for the sake of promoting it online.

2.1.12 Personality Factors

There is the existence of individual difference and personality perception of things. Researcher like Maguire, (2005), Vannatta and Fordham, 2004), Wallace, (2000), Zhao and (Ziko, (2001), Wolcott and Betts, (1999), Biuney and Williams (1996), Honey and Moeller, (1990) revealed discernable patterns in personality traits and approaches to work relative to the used technology by instructors.

2.1.13 Vision into the Future by Researchers

Ertmer, Addition, Lane, Ross and Woods (1999) described instructors with an imagined enhances curriculum made stronger by the integration of new approaches and technologies. Ertmer et, al (2001) reported, what was most common across teacher was the belief that technology and provided a valuable tool for achieving their vision if teaching and learning. This was in keeping with an earlier report in which Ertmer *et al.,* (2001) remarked.

2.1.14 Benefit of using CAI in teaching and learning Geography

Benefit for Teachers: The following are the benefit of using computer assisted instructions for teachers in teaching geography

1. The internet increases access to authentic geographical data and information sources (Taylor, 2003).
2. Using geographical information system (GIS) software to produce and manipulate maps range of scales can sort time and give better quality result (Taylor, 2003)
3. Geographical information system (GIS) software can enable teachers to focus more closely on teaching geographical skills in addition to developing a sense of location and place (Keiper, 1999).

4. Using geographical information system (GIS) can significantly enhance geography teaching and learning environments (Audet and Paris, 1997).
5. Digital photography allows teachers to record pupils work undertaken on field trips and other learning outcomes not readily recorded in traditional ways (Storey, 2002).

Benefit for Student: The following are the benefit for students in using computer assisted instructions (CAI) in teaching geography

1. Using digital photography in a classroom mapping activity helps develop recall, reflection and self-assessment skills (Storey, 2002).
2. Using stimulation and modelling tools can lead to enhances understanding of geographical topics such as erosion and agriculture (Cox and Abbott, 2003)
3. Geographical information system (GIS) simplify many geographical concept and present larges amount of non- sequentially related data in simple and readily accessible formats, allowing pupils to concentrate on interpreting and analyzing data (West, 1999).
4. Using emails alongside poste arts to make compares of place helps pupils to again a better appreciation of their culture (Storey 2002).
5. Using geographical information system (GIS) software enhances spatial awareness and decision-making skills (Audet and Paris, 1997, Taylor, 2003, West, 1999).

2.4.15 Using CAI to improve efficiency in the classroom

According to Leuhrman (1971) and Bull *et al* (2002) technology application in classroom may be in the area of computer assisted instruction under this geography teachers may use the new technologies foe word processing, grading, record keepings web page production and lectures. Other scholars who supported the use of technology in teacher education to improve classroom efficiency among which are Chickeming ans Erhmann (1996) Freeman (1997), Leasr and MC

Aleavy (1998) Hepp et al (2004). According to Koznet et al (2004) those advocating for the use of technology, described a range of potential impacts that new technologies have when applied to education.

The primary form of student learning from computer is what Murphy, Penuel, Means, Korbak ns Whaley (2001) described as Discrete Educational software (DES) program such as integrated learning system (ILS). Computer assisted instruction (CAI) and computer Based instruction (CBI). These software application of educational technology in schools today, along with word processing software and have existed in the classrooms for more than 20 years (Becker, Ravitz, and Wong, 1999). According to Murphy et al, (2001) teachers used DES not only to supplement instruction, as in the past, but also to introduce topics, provide means for self- study, and offer opportunities to learn concept otherwise in accessible to students. The software also manifests two key assumptions about how computer can assist learning. First, the user's ability to interact with the software is narrowly defined in ways designed specifically to promote learning with the tools. Secondly, computers are viewed as a medium for learning rather than as tools that could support further learning.

While discrete educational software (DES) remained the most commonly used approach to computer use in student learning in more recent years use if computers in schools has grown more diversified as educators recognize the potential of learning with technology as a means for enhancing students reasoning and problem – solving abilities.

2.1.16 Computer Assisted Instructional Materials Available for the Teaching of Geography

According to Nato and Omoro (2013) the following ICT materials are generally useful for the teaching of geography:

1. Cell phone

2. Computers
3. Television
4. Scientific calculator
5. Internet
6. Weather focus device
7. Radios
8. Audio visual device
9. Magnetic compasses

2.1.17 Problems of CAI in teaching in Nigeria Schools

There are several problems to the successful use of computer assisted instructions in Nigeria schools Aduwa Ogiegbaen, and Iyamu, (2005) summarized these problem/obstacles to include cost, weak infrastructure, lack if skills, lack if relevant software and limited access to the internet.

Cost of Computer Hardware and Software; the price of computer hardware and software in the developing countries such as Nigeria rises geometrically, while the price continue to drop in most developed countries. Many schools in Nigeria lacks adequate classrooms and only few are equipped with television or radio. A part from basic computers themselves, other costs associated with peripherals such printer monitors, papers modem, external disk drives are beyond the reach of most schools in Nigeria. The school cannot even afford the exorbitant internet connection fees.

West Infrastructure; Ogiegbaen, and Iyamu, (2005) found out that in Nigeria a formidable obstacle to the use of CAI id infrastructure deficiencies. Computer equipment was made to function with other infrastructure such as electricity under controlled conditions. For the past fifteen years Nigeria has been having difficulty providing stable and reliable electricity supply to every nook and cranny of the country without success.

Electronica equipment such as radio, television, video recorder and even computer has been damaged due to irregular power supply. When electricity supply is not stable and constant is id difficult to keep high- tech equipment such as computer functioning especially under extreme weather condition as obtained in Nigeria. Another obstacle to CAI development in Nigeria is inadequate telecommunication facilities.

Lack of Skills; Okebukola, (1997) stated that Nigeria does not only lack information infrastructure, it also lacked human skills and knowledge to fully integrate CAI into the education system. To use CAI in school in Nigeria the need for locally trained workers to install, maintained support these systems cannot be over emphasized. Information transfer using CAI is minimal or nonexistence in secondary schools in Nigeria in Nigeria (Anao, 2003).

Lack of relevant software; Software that is appropriate and culturally suitable for Nigeria education system is in short supply. There is a great discrepancy between relevant software supply, and demand in developing country like Nigeria. According to Solomon (1989) there are clear indications from many countries that the supply of relevant and appropriate software is a major bottleneck obstructing wide application of the computer, even if Nigeria tries to approach this software exerting by producing software that would suit its educational philosophies, there are two major problems to be encumbered. First, the cost of producing relevant software for the country educational system is enormous. Secondly, there is death of qualifies computer software designer in the country, and to overcome this people need to be trained in instructional design.

Limited Access To the Internet; Solomon (1989) stated that the few reputable companies which render reliable service charged high fees thus limiting access to the use of the internet. The greatest technological challenge in Nigeria is how to establish reliable cost-effective internet connectivity. In Nigeria there are few internet providers that provide internet gateway service to Nigerians who

are in partnership with foreign information and communication companies. Many of these companies provide poor defeated.

Some schools in Nigeria are not given adequate funds to provide furniture, requisite books, laboratories and adequate classrooms let alone being given adequate funds for high- tech equipment (computers) and internet connectivity. Again, due to the lack of adequate electricity supply, especially in rural areas in Nigeria.

2.5 **Theoretical Studies**

2.2.1 Piaget's Constructivist Theory

This theoretical frame upon which this research is based, defined the constructivist theory as an environment where student is actively engaged in the learning process rather than attempting to receive knowledge in a continuously passive instruction (Taber G.M 2011 referred to Abdullahi 2018). Constructivism, is a theory which posits that individual or learners do not acquire knowledge and understanding by passively perceiving it within a direct process ok knowledge transmission but rather construct new understanding and knowledge through experience and social discourse, integrating those new acquired information their previous knowledge. The theory is referred to as learner-centered instruction, learners are makers of meaning and knowledge. Whenever a student encounter new problems, they tend to reconcile it with their prior knowledge, ideas and experience, probably changing their methods, accept or disregard the new information as irrelevant. Constructivist theory have guided teachers, tutors, instructor to involves form of guided discovery method where instructors avoid giving specific instruction and attempts to students through questions and activities using relevant instructional materials to discover, appreciate and verbalize new knowledge. This has resulted into many teaching and learning

strategies, tools and resources involving the use of computers, simulations, multimedia projectors, animations, and the World Wide Web (Internet connectivity).

2.2.2 Cooperative Learning Theory

Cooperative Learning theory, an offshoot of Constructivism, incorporates the idea that the best learning occurs when students are actively engaged in the learning process and working in collaboration with other students to accomplish a shared goal. While Constructivism focuses on personal experience as the foundation for learning new material, Cooperative Learning utilizes not only the student's own experience to solidify knowledge, but also uses the experiences of others. Both theories emphasize the importance of interactivity with respect to the design and implementation of lesson plans.

In cooperative learning, the focus moves from teacher-centred to student-centred education. Instead of sitting in a lecture or reading text, students are given a task or problem and are asked to identify a possible solution on their own and with the help of others. Rather than disseminating information directly, the teacher guides students to the source of the information they may require. In contrast to traditional teaching methods where students are perceived to be empty vessels awaiting the teachers' knowledge, Cooperative Learning theory recognizes the importance of the student's existing knowledge and puts that knowledge to work.

2.6 Empirical Studies

In a review of empirical studies on CAI, (Mudasiru O.Y& Adedeji O.A, 2010) investigated the effects of computer assisted instruction (CAI) on secondary school students performance in biology. Also, the influence of gender on the performance of students exposed to CAI in individualized or cooperative learning settings package was examined. The research was a quasi-experimental involving a 3*2 factorial design. The sample for the study comprised 120 first year

senior secondary school students (SSI) sampled from three private secondary schools, in Oyo State, Nigeria. The student's pre-test and post test scores were subjected to Analysis of Covariance (ANCOVA). The findings of the study showed that the performance of students exposed to CAI either individually or cooperatively were better than their counterparts exposed to the conventional classroom instruction. However, no significant difference existed in the performance of male and female students exposed to CAI in either individually or cooperative settings. Based on the research findings recommendations were made on the need to develop relevant CAI packages for teaching biology in Nigeria secondary schools. This study aim to examine the effect of computer assisted instruction on the academic achievement of geography student in selected secondary schools in Bosso Local Government Area of Niger State, Nigeria.

Cotton (1997) concluded, among others, that the use of CAI as a supplement to conventional instruction produces higher achievement than the use of conventional instruction alone and CAI alone, and that computer-based education (CAI and other computer applications) produce higher achievement than conventional instruction alone.

Mill (2011) revealed that CAI was found to be effective as classroom for fact based learning, but not as effective for topics requiring critical thinking or mathematical problem solving. In addition, the time required for by learners to use CAI was higher overall than conventional classroom instruction. In another study by Akour (2006), students taught using traditional instruction combined with the use of computer performed significantly better than students taught using traditional instruction in a college setting. This project study aim to examine the effect of computer assisted instruction on the academic achievement of geography student in selected secondary schools in Bosso Local Government Area of Niger State, Nigeria.

2.7 **Summary of Literature reviewed**

Mill (2011) revealed that CAI was found to be effective as classroom for fact based learning, but not as effective for topics requiring critical thinking or mathematical problem solving. In addition, the time required for by learners to use CAI was higher overall than conventional classroom instruction. This study integrate two theories which are Piaget's constructivist theory and Cooperative learning theory. From the empirical reviews, it is clear that instructional materials CAI are essential for effective teaching of some subjects and should be made adequately available in all schools. To help teachers become better teachers, most schools in developed countries are provided with a variety of computers and adequate infrastructures and facilities. However, this is not the case with developing countries like Nigeria. Most secondary schools in Nigeria lack inadequate facilities, technician, poor equipment, inadequate computers. Therefore, this project study aim to examine the effect of computer assisted instruction on the academic achievement of geography student in selected secondary schools in Bosso Local Government Area of Niger State, Nigeria.

CHAPTER THREE

3.0 METHODOLOGY

This chapter described the procedures involved in achieving the purpose of the study under the following sub-headings: Research Design, Population of the Study, Sample and Sampling Techniques, Research Instrument, Reliability of the Research Instrument, Method of Data Collection and Method of Data analysis.

3.1 Research Design

The research design adopted for this study was a quasi-experimental, non-randomized, pretest-posttest control group design. The design involved an experimental group and a control group using intact classes. It was adopted because it was not possible for the researcher to randomly sample the subjects and assign them to groups without disrupting the academic programs of the Schools involved in the study. Hence, this design was very suitable for this study. The experimental design allows the researchers to manipulate the independent variables to determine its effects on the dependent variable.

The research design illustration of the study is represented in Figure 3.1 below

Figure 3.1 Research Design Layout

Group 1: EG $\longrightarrow O_1 \longrightarrow X_1 \longrightarrow O_2 \longrightarrow O_3$

Group 2: CG $\longrightarrow O_1 \longrightarrow X_0 \longrightarrow O_2 \longrightarrow O_6$

Where,

EG = Experimental group

CG = Control group

X_1 = Represents Treatment for Experimental group

X_0 = No treatment (Teaching using the lecture method only)

O_1 = Represents Pre-test observation on experimental group

O_2 = Represents Posttest observation on experimental group

The groups were given pre-test in their first week to determine their entry behavior and whether the groups are equivalent before the experiment. After the treatment, the experimental group and the control group were post-tested. The independent variables were CAI and gender and the dependent variable is academic achievement and retention.

3.2 Area of the Study

The city of Minna is located on latitude 9^0 37^1 North and longitude $6^0 33^1$ East and occupies an area of about 884 hectares. The Minna metropolis has grown to engulf suburb settlements such as Bosso, Maitumbi, Dusten Kura, Kpagungu, Shango and Chanchaga. The study was carried out in Minna, Niger State and it covers selected Senior Secondary Schools in Bosso Local Government Area of Minna, Niger State, Nigeria.

3.3 Population of the Study

The population of Senior Secondary Schools in Bosso Local Government Area is Nine Hundred and Fifty-Eight (958). The Senior Secondary Schools used for the study were selected from Bosso Local Government Area of Minna, Niger State. The target population of SSII Geography Students in the three (3) sampled Schools are shown in table 3.1.

Table 3.1: Population Distribution of Sampled Schools.

S/N	SCHOOL	MALE	FEMALE	TOTAL
1.	Bosso Secondary School Minna.	222	198	420
2.	Day Secondary School Maitumbi	271	265	536
TOTAL		**493**	**465**	**956**

Source: *Niger State Ministry of Education Minna 2017 – 2019 ASC Report.*

3.4 Sample and Sampling Techniques

A total number of 127 SSII Geography Students drawn from two (2) public Senior Secondary Schools of Bosso Local Government Area from the sample of the study. Subjects were randomly assigned to experimental and control groups before the administration of treatment using Simple Random Sampling technique. The schools sampled for the study are comparable in terms of the following characteristics: Possession of a well-equipped computer laboratory, heterogeneous nature of the schools, standard of instruction and knowledge of basic computer operations at their previous classes. Two classes (one from the experimental group and one from the control group) were used for the study.

Table 3.2: Sample Size of the Study

SCHOOL	NO.	MALE	FEMALE	TOTAL
D. S. S. Bosso	55	25	30	55
B. S. S. Minna	72	40	32	72
TOTAL	127	65	62	127

3.5 Research Instrument

Two research instruments were used for this study. They include:

Treatment Instrument: The Computer Assisted Instructional Package on Geography (CAIPOG) was developed by the researcher to serve as treatment to the experimental group. It was designed to guide the students through independent study where students can navigate from one link to the other and interact with the content, listen to narration and view the graphics and images. The CAIPOG was developed to teach a topics from

Physical geography which include:

i. Renewable and non-renewable resources

Test Instrument: Geography Achievement Test (GAT) which was used for pre-test and post-test respectively was adapted from senior secondary school examination past questions conducted by West African Examination Council (WAEC) from 2018-2022 with reference to senior secondary school two (SS II) curriculum and was administered as pre-test, post-test and retention test. The instrument eventually consisted of 20 multiple choice test items the questions covered all the topic from geography. These instruments were used to measure student's academic achievement in Geography. GAT were reshuffled and re-administered as retention test to measure student's ability to retain the geography concepts taught.

3.6 Validity of Research Instruments

3.6.1 Validity of the CAIPOG

The Computer Assisted Instructional Package on Geography (CAIPOG) was validated by a computer programmer and Educational Technology Experts These experts examined the package and contributed for its improvement. All observations and criticisms were fully effected.

3.6.2 Validity of Geography Achievement Test :

The Geography Achievement Test (GAT) contained 20 multiple choice items and was validated by two senior lecturers from educational technology department of Federal University of Technology, Minna.

3.7 Reliability of Instrument

To test the reliability of the CAIPOG, it was pilot tested on 25 randomly selected SS1I students of Ahmadu Bahago Secondary School Minna. The sample was part of the research population but was not used for the real study. The test was administered once on the sample (split-half method)

after which the scores was divided into two parts and arranged. One part represents odd numbers and the other part represents the even numbers. Kuder Richardson (KR – 20) revealed a reliability value of 0.67 which was considered very adequate for the research study.

3.8 Method of Data Collection

The schools sampled for the study were visited a week before the commencement of the experiment to seek for official permission from the school authorities through a letter of introduction and also commence the training of research assistants. A Total of four (4) weeks were used for the study.

During the first week, pre-test was administered to all the (treatment and control) groups, followed by the treatment instrument which took the total of two weeks to the experimental group using (CAIPOG) and the control group using a conventional method. During the administration of the treatment instrument, student were paired to a computer system and each lesson lasted for thirty-five (35) minutes for a single period and 70 minutes for the double period. The control group were thought for the same periods using traditional teaching method. After the successful completion of the lessons, followed by the administration of Geography Achievement Test (GAT) as post-test to all the groups. After a week interval, on the fourth week, Geography Achievement Test (GAT) was re-administered to both experimental and control group as retention test. The scores of the experimental and control group on pre-test, post-test and retention test were computed and used for data analysis.

3.9 Method of Data Analysis

The researcher used Mean and Standard Deviation to analyze data and provide answers to the research questions. Mean and Standard Deviation were used because mean is a reliable measure

to central tendency and the more reliable estimate of variability while t-test statistics were used to test the hypothesis formulated for the study at 0.05% level of significance using IBM SSPS statics(version 23).

CHAPTER FOUR

4.0 DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The focus of this the researcher is to investigate the effects of Computer Assisted Instruction on the academic achievement of Geography students in selected secondary schools in Bosso Local Government Area of Niger State. This chapter analyzed the data used from the test scores to test for the null hypotheses outlined to guide the investigation to develop and assess effects of Computer Assisted Instruction on the academic achievement of Geography students in selected secondary schools in Bosso Local Government Area of Niger State. In Chapter three, the methodology used in conducting the study was discussed.

The concern of this chapter is to analyze the data collected in relation to the research questions and null hypotheses stated in Chapter One.

4.2 Research Questions

4.2.1 Research Question one:

What effects does use of computer assisted instruction has on the academic achievement of students in Geography in selected secondary schools in Bosso LGA of Niger State

Table 4.1: Mean and Standard Deviation of Achievement Scores of Experimental and Control Group

Groups	N	Df	− x	S.D
Exp. Group	55	135	16.58	4.329
Ctr. Group	72		11.50	2.668

Table 4.1 Shows the mean and standard deviation of the experimental and control group. Mean score of the experimental group is 16.58 and S.D = 4.329, While the mean score of the control group is 11.50 and S.D = 2.668 and df = 135. Therefore the mean score of the experiment group is greater than that of the control group, this means that the use of computer assisted instruction enhances students' achievement. This finding answers research question one.

4.2.2 Research Question two:

What is the influence of gender on the mean achievement scores of students taught Geography using nine planets instructional video package?

Table 4.2: Mean and Standard Deviation of Achievement Scores of Male and Female in Experimental Group

Gender	N	Df	$\bar{x}$	S.D
Male	25	53	12.40	2.531
Female	30		14.35	2.614

Table 4.2 shows the mean and standard deviation of achievement scores of the experimental group based on gender. Mean score of male is 12.40 and S.D = 2.531, While the mean score of female is 14.35 and S.D = 2.614 and df = 53. Therefore the mean score of the female in experiment group is greater than that of male, this means that the female gender achieved more than the male when taught using computer assisted instruction. This finding answers research question two.

4.3 Testing of Hypotheses

Null Hypothesis I: There is no significant difference between the achievements scores of students taught Geography using computer assisted instruction and those taught with conventional lecture method

To test HO_1 the post test data of experimental and control groups were subjected to t-test statistics to determine if there is any significant difference between the achievement of the experimental group and the control groups. Summary of the analysis is shown in Table 4.3.

Table 4.3: t-test Analysis of the Posttest Scores of the Experimental and Control Group

Group	N	$\bar{x}$	Df	S.D	t.val	p.val	Remarks
Experimental	55	16.58		4.329			
			135		-3.887.	0.000	S
Control	72	11.50		2.668			

S =significance $P < 0.05$

From Table 4.3 Shows the t-test analysis of the experimental and control groups. The mean score of the experimental group is 16.58, SD = 4.329 and df = 135. The control groups has a mean score of 11.67, SD = 2.668. The t-value = -3.887 and p-value = 0.00 which is significant. Therefore, result of HO_1 states that there is no significant different between the experimental and control groups is rejected. Hence there is a significant difference between the two groups.

Null Hypothesis Two: There is no significant difference in the achievement scores of genders taught Geography using computer assisted instruction.

The Null hypothesis is analyzed using t-test statistics and summary of the analysis is shown in Table 4.4.

Table 4.4: t-test, analysis of Posttest Scores of Male and Female Students in the Experimental Group

Group	N	$\bar{x}$	Df	S.D	t-val	p-val	Remark
Male	40	17.40		4.372			
			70		-0.584	0.351	Not S
Female	32	14.15		2.958			

S = Significant at 0.05

Table 4.4: Shows the t-test analysis of the posttest scores of male and female. The mean score of male is 17.40, SD = 4.372 and df = 70. The mean scores of female is 14.15, SD = 2.958. The t-value = -0.584 and p-value = 0.351 which is not significant. There is no significant difference between the two mean. The null hypothesis states that there is no significant difference in the mean scores of Male and Female students taught Geography concept with nine planets instructional video package is therefore rejected. This means there is significant difference in the achievement scores of Male and Female students taught Geography concepts using nine planets instructional video package.

4.4 Discussion of Results

This study investigated the Computer Assisted Instruction on the academic achievement of Geography students in selected secondary schools in Bosso Local Government Area of Niger State. Two hypotheses were tested and the results obtained are discussed in the following paragraphs: -

Findings of research question one revealed a significant difference in the performance of students taught Geography with the use of computer assisted instruction when compared with those taught Geography without the use of computer assisted instruction. As a result, experimental group has the mean scores of 16.58 with standard deviation of 4.329 while control group has the mean scores 11.50 with the standard deviation of 2.668 It was noted that students taught Geography with use of computer assisted instruction. Therefore the mean score of the experiment group is greater than that of the control group, this means that the use of computer assisted instruction enhances students' achievement.

Hypothesis one, analysis of post test scores of experimental and control groups using t-test with the P-value of 0.00 < 0.05, which revealed that students who were exposed to the use of the

computer assisted instruction in the teaching of Geography concepts significantly performed better than those not exposed to the use of computer assisted instruction. The null hypothesis was therefore rejected. This means that the use of computer assisted instruction in the teaching of Geography concepts increased students' academic achievement in the subject.

Findings of research question two revealed a significant difference in the performance of students taught Geography with the use of computer assisted instruction when compared with those taught Geography without the use of computer assisted instruction base on gender. As a result, in the experimental group the male students has the mean scores of 12.40 with standard deviation of 2.531 female students with the standard deviation of 2.641. It was noted that male students taught Geography with use of computer assisted instruction has better mean score than the female gender taught with the use of computer assisted instruction.

Hypothesis Two, this hypothesis centers on whether male and female students exposed to computer assisted instruction differ significantly in their academic achievements in the subject. The result shows that P-value $0.351 > 0.05$ this did not reveal significant difference in the academic achievements of the male and female students in the experiment. The Null hypothesis was therefore retained. The observation from the test confirms the fact that both male and female students receive the same impact when exposed to the use of computer assisted instruction package in the teaching and learning of Geography.

4.5 Summary of Findings

Major findings of the study are summarized as follows: -

1. It was revealed that students exposed to computer assisted instruction (i.e. experimental group) performed significantly higher than the students who were taught without computer assisted instruction (control group). The null hypothesis HO_1 was

therefore rejected.

2. It was revealed that there is no significant difference in the achievements of male and female in the experimental group.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this, the researcher has the intention to investigate the effects of Computer Assisted Instruction on the academic achievement of Geography students in selected secondary schools in Bosso Local Government Area of Niger State. This chapter gives an over-view of the study and is presented under the following subheadings: Introduction, Summary, Conclusion and Recommendations.

5.2 Summary

The research was carried out to investigate the effects of Computer Assisted Instruction on the academic achievement of Geography students in selected secondary schools in Bosso Local Government Area of Niger State. The quasi-experimental design was adopted for the study specially. The non-equivalent control group design. The study was carried out in Bosso Local Government comprising of two schools. The sample for the study comprises of 127 students from two secondary schools in Bosso Local Government, Minna Niger State, they were selected by simple random sampling, two research questions and their corresponding null hypotheses were formulated and tested at 0.05 level of significance. Academic achievements and gender were the variables investigated.

5.3 Conclusions

From the findings of the study it is clear that the use of computer assisted instruction in the teaching of Geography at Senior Secondary Schools has significant impact on the student's academic achievements. The study has demonstrated that CAI can be used successfully to teach Geography, that CAI contribute to students' academic achievement. It is therefore concluded that the use of computer assisted instruction significantly improves students' academic achievements among Geography students in Niger State., Students taught using CAI perform better than their

counterparts who were taught without the use of CAI. It was pointed out that CAI enable learners to achieve the best in learning source which offers immediate feedback on any task that is undertaken.

5.4 Recommendations

Based on the findings emanating from this study, the following recommendations are suggested:

1. Teachers and Students should be given sufficient training on how to use CAI in teaching and learning Geography.
2. Government and other stakeholders should mobilize resources for equipping schools with CAI infrastructure.
3. More teacher with CAI experience be employed in secondary schools and trained in CAI skills to make them effectively deliver CAI based curriculum.
4. Teachers must make meaningful planning before they use computers for instructional purposes since lack of knowledge on the use of computer is detrimental to the academic achievement of the learners.

5.5 Limitations of the Study

This study has some limitations that include the following:

1. There was limited time and facilities for the study.
2. The School time table and activities did not give enough room for extensive research work.

5.6 Suggestion for Further Studies

This study can be extended further in the following ways: -

1. Conducting a similar study in other Local Government Areas of Niger State to find out if the same findings can be established or determined.

2. A pilot study; carryout similar study to propagate the effect of computer assisted instruction in teaching Geography and other science subjects.

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APPENDIX A

LESSON PLAN

NAME OF TEACHER	ISHAYA AUTA ERIC
SCHOOL	Day Secondary School Maitumbi
CLASS	SS2
DATE	17th, Feb 2023
DURATION	45 min
NUMBER OF STUDENTS	55
SUBJECT	Geography
GENDER	Mixed
TOPIC	Environmental Resources
REFERENCE BOOK	Secondary School Geography
ENTRY BEHAVIOUR	The students are already familiar with resources around them
BEHAVIOURAL OBJECTIVES	At the end of the lesson the students should be able to (a) Define Environmental resources (b) Mention the types of natural resources (c) Distinguish between renewable and non-renewable resources (d) List the advantage and disadvantage of renewable and non-renewable resources

Content Development	Teacher Activities	Student Activities	Skill Strategies
Introduction	The teacher ask the students question as follows: what are those natural things you can find around your environment	The students answer the teacher question, they also ask questions for better clarity to them.	Set induction
Step 1 Definition of Environmental Resources	The teacher defines the term Environmental resources are features of the environment provided by nature, which are used by man to achieve certain goals or satisfy human needs.	The students pay close attention	questioning
Step 2 Types of Natural Resources	The teacher mentions them (a) Renewable resources (b) Non-Renewable resources	The students listen with keen interest as the teacher explains and copy the note on the board while they write	Listening Questioning Explaining
Step 3 Explanation of the types of naturals and their advantage and disadvantage	The teacher explains the types of natural resources and also mention their advantage and disadvantage of natural resources	The students pay close attention as the teacher explains	Listening and questioning
Evaluation	The teacher ask the students the following questions after teaching 1. define environmental resources 2. list and explain the types of natural resources 3. mention the advantage and disadvantage of natural resources	The students respond to the questions actively	closure

APPENDIX B

Geography Achievement Test (GAT)

School: _____

Class: _____

Gender: _____

Date: _____

INSTRUCTION: Answer All Questions

1. ---------- are features of the environment provided by nature, which are used by man to achieve certain goals or satisfy human needs. (a) Vegetation resources (b) Economic resources (c) Environmental resources (d) Social resources.
2. Natural resources occur in ----------,----------,and ---------- (a)Sand, oil, and water (b) Air, water and land (c) Land, clay and fuel (d) None of the above
3. Natural resources are classified into ---------- (a) 4 (b) 6 (c) 8 (d) 2
4. ---------- can be finite or non-sustainable, so they can be used up and exhausted? (a) Renewable (b) Resources (c) Non-Renewable (d) All of the above.
5. ---------- are generated through a continuous "flow of nature" as in the case of rivers and this guarantees a replacement. (a) Non-Renewable (b) Solar (c) Renewable (d) Energy
6. The following are the examples of Renewable resources **Except?** (a) Solar Energy (b) Water Vapor (c) Soil (d) Vegetation
7. When Non-Renewable resources are over-exploited or mismanaged this can lead to ------ (a) Pollution (b) Environmental Degradation (c) Construction (d) Disturbance
8. Man is regarded as ---------- (a) Vessel (b) Solution (c) Resources (d) Visitor
9. Non-Renewable resources are not ---------- (a) Available (b) Optional (c) Visible (d) Sustainable
10. Advantages of Renewable Resources include the following? (a) The resources are renewable and easily generated (b) They can cause natural disaster (c) They can be depleted (d) None of the above.
11. Renewable Resources are ---------- everywhere (a) Consumed (b) Available (c) Resources (d) Energy
12. Another Advantage of Renewable Resources are (a) they can cause a natural disaster (b) provides nuclear energy (c) maintenance cost is cheap (d) All of the above.
13. Disadvantages of Renewable Resources include the following **Except?** (a) Easily generated (b) No optimum use of it (c) Affected by weather (d) Wastage
14. Advantages of Non-Renewable Resources include ---------- (a) Availability of technology (b) Availability of fossil fuels and coal (c) Environmental use (d) A and B
15. Environmental pollution is the disadvantage of ---------- resources (a) Water resources (b) Vegetation (c) Climate (d) Non-Renewable

16. ---------- is the energy that comes from the sun (a) Panel Energy (b) Hydro-Energy (c) Solar Energy (d) A and B
17. ---------- and ---------- are released in large quantities when fossil fuel and coal are used (a) Carbondioxide and Climatic gas (b) Water and vapour (c) Carbon and Hydrogen (d) Resources
18. Non-Renewable resources are affected by ---------- (a) Climate (b) Water (c) Weather (d) Crop
19. Natural resources are ---------- and ---------- (a) Renewable and Non-Renewable (b) Vegetation and Land (c) All of the above (d) Water and resources
20. Examples of non-renewable resources include the following **Except?** (a) Fossil fuel (b) Coal (c) Natural gas (d) Paper

APPENDIX C

MARKING / SCORING GUIDE FOR THE GEOGRAPHY ACHIEVEMENT TEST

One mark for each correct answer

1. C
2. B
3. D
4. C
5. C
6. C
7. B
8. C
9. D
10. B
11. B
12. C
13. A
14. D
15. D
16. C
17. A
18. A
19. A
20. D