EFFECT OF INTERNET-BASED TOOLS ON PERFORMANCE OF GEOGRAPHY OF SOME SELECTED SENIOR SECONDARY SCHOOLS IN MINNA METROPOLIS

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ABSTRACT

This is to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria. Three research question and two hypothesis were formulated to guide the study. The design adopted was a quasi-experimental description research. Thirty (30) students were selected from two school senior secondary school Minna Metropolis making a total sample of 60 students. The two schools selected are Model Day Secondary School and Hilltop Model School all in Minna Metropolis were used as research sample. The Purposive sampling procedure was used to select the sample school and size. Two instruments was used to collect data for data analysis which are internet-based tools and traditional method of teaching.Descriptive statistics of mean and standard deviation (SD) was used to answer research question and t-test was used to analysis the research hypothesis at 0.05 level of significant. The instrument were validated by experts and the reliability coefficient index of r=0.75 was obtained using Pearson product mount correlation. The finding of the study revealed that students who were taught through internet-based tool gain more achievement or recorded higher average score than those who were taught using a conventional teaching method. The results of the experimental group outshine those of the control group. The null hypothesis was rejected since the sample t-test revealed a statistically reliable difference between the mean of the study group and the control group. Recommendation included among others that teachers and students should be provided with adequate training on the usage of internet-based tools in teaching and learning of geography. Students taught with internet-based tools outshine students taught with conventional method of teaching, installing and integrating internet-based tool as a method of teaching should be encouraged and imbedded by teachers of geography in secondary schools not only in Bosso local government but in Niger State as a whole.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Geography is a field of studies that emanated from the Greek scholars in the early 15th century. It is the science or study of the universe and human behavior in respect to their physical environment. Geography is applied to all human endeavors, as every profession require knowledge of Geography in order to understand their physical environment. Schibille, (2022), defined Geography as the chorological science of the earth or the science of the earth areas and places in terms of their differences and their spatial relations. Geography provides accurate, orderly, and rational description and interpretation of the variable character of the earth surface. It is that discipline that seeks to describe and interpreted the variable character from place to place of the earth as the world of man. The significance of geography has made it imperative for its inclusion in the Nigerian senior secondary school curriculum for science-oriented students. In spite of the importance of geography as a requirement for many specialized science and social science courses at the tertiary educational institutions (Rasulov, 2022). Geography is closely related to its location, specific characteristics and interrelationships of the region as a whole. This opinion was later called the Concept of Natural Attribute of place. Geography is that field of learning in which the characteristics of particular places on the earth's surface are examined. It is concerned with the arrangement of things and with the association of things that distinguish one from another. Geography seeks to interpret the significance of likenesses and differences among places in terms of causes and consequences. According Long (2022), Geography is a science of spatial relationships which focuses attention mainly on the interaction between man and his

environment. Geography is a science of synthesis which seeks to understand a given area in terms of the total integration of various phenomena of which characterized it. Aman (2012) viewed Geography as an inter-disciplinary field of study that influences agriculture, industry, commerce, economic development, spacecraft, anthropology, environmental studies, navigation, security and national development. The Australian Curriculum Assessment and Reporting Authority [ACARA] (2021) asserts that geography potentially assists cross-disciplinary learning and helps students to recognize the connections between geography and other fields of study or specialization. Therefore, knowledge of Geography is essential for successful living because of its practicable intellectual value.

Today Geography means much more than writing about the earth but it is difficult discipline to define geography is a fascinating subject. It reveals all the wonderful changes and activities that have been going on in the world since the beginning of time. Geography draws from across the physical, cultural, economic & political spheres to the local and the global. Through Geography we learn to appreciate the diversity of landscapes, peoples & cultures, Geography is therefore a vital subject resource for 21st century global citizens, enabling us to face questions of what it means to like sustainably in an interdependent world.

Computer technology plays a critical role in the discipline of geography. For instance, many studies tout a variety of different benefits stemming from the development of GIS, including its use as an educational tool (Ali, 2020). The complexity and sheer volume of data required in geographic analysis and map generation necessitates the use of computers. While the body of literature surrounding GIS technology is large and multi-faceted, literature regarding the effectiveness of Internet-based instruction in geography is small but growing. The Internet – Based Learning Tools are those Educational platforms that provide academic information via the

wide web world, offering free lessons, and information's, teaching and learning strategies, promoting research activities, academic presentations for both the teachers and students. Some of these Internet – Based Learning Tools include, Dassault, Centegage, Khan Academy, Encarta Micro Soft, Wikipedia, ERASYAPP, Slide rule, Google scholar etc

The Internet is a powerful communication tool in education whether it is used in a distance-learning environment or within the classroom (Kim, 2020). Lessons can be posted on a web page for students to access at their convenience, chat rooms may be set up so that those students can communicate with each other and the instructor, unlike textbooks, and online materials are easily updated(Onyema *et al,* 2019). Additionally, multimedia such as high-resolution graphics, maps, videos and animated images can be made readily accessible to students. Many Colleges and Universities departments, including geography departments, recognize the Internet as an instructional tool and currently offer online lessons and supplementary course materials to their students. The acquisition of spatial knowledge in geography courses is a highly visual process and the Internet can be a useful tool to deliver visual representations of both the physical and cultural environment. The ability to display animated graphics makes the Internet a particularly intriguing instructional tool for explaining complex phenomena in physical geography. For instance, fundamental concepts such as differential heating and cooling, pressure gradients, the Coriolis Effect and Hadley circulation must be learned before a student can be expected to understand global atmospheric circulation. Although spatio-temporal in nature, these fundamental concepts have traditionally been taught using static images such as those found in introductory physical geography textbooks or their complementary overhead transparencies. On the other hand, the Internet can be used to display animated graphics, allowing students to view moving simulations of these concepts.

The introduction of western education in Nigeria in the early 19th century has brought with it variety of teaching methods and instructional materials. Instructional materials were meant to assist the teacher in presenting the lesson in a manner that will be well understood by students. Some of the initial teaching aids used by the teachers included maps, charts, flip charts and physical objects. In the corvette of time and with the development in technology, there was the introduction of slides, transparencies, audio materials and videos. Mhlolo (2007), says, this enhanced the ability of teachers to teach more effectively and for the students to learn in more concrete ways. It is the responsibility of a teacher to prepare his lesson properly, and major component of writing the lesson is the selection of appropriate instructional materials to ensure effective lesson delivery. The importance of curriculum materials in teaching and learning Geography in secondary schools cannot be over emphasized, some of the importance includes; stimulation of the learners interest, making teaching and learning more productive, making teaching become more concrete, real and immediate, contributing to performance analysis, stimulation of problem solving in students and helping to clarify complex events and situation among others. These are some of objectives of Geography According to Aman, (2012) Include: To enable students develop interest in both physical and cultural environment as a place, and home of humans and thus broaden their outlook. To enable the pupils to acquire knowledge of natural resources. To develop in pupils an understanding of how environment and climatic factors have influenced our lives. To develop in them an understanding of basic concepts, principles and theories relating to geographical and environmental phenomena. To train the pupils in nature studies. To help students to understand the concept of human environment relationships. To help students to develop a sense of responsibility towards the physical and cultural aspects of environment. This cannot be effectively achieved unless students are exposed

sufficiently to practical work and laboratory experiments. The creative use of curriculum materials by teachers has increased the probability that the students will learn more, retain better what they learn and improve the performance of the skills that they develop. The aims of secondary Education according to the NPE are to equip the students to live effectively in the modern age of science and technology. The Geography Curriculum recognizes the utilization of discovery approach in the teaching and learning of Geography. This involves the use of demonstration, individual practical work, group discussions, field work, project work and building models.

Lelei (2019), says, Nigeria witness a gradual improvement on the quality of teaching with the introduction of computers, later the internet based learning tools were introduced into the Educational system especially in the field of science which has changed the way teaching and learning takes place in our secondary schools today. The invention of the telegraph, telephone, radio, and computer set the stage for unprecedented Integration of capabilities. The Internet based learning tool is the wholesome integration of modern telecommunications equipment and ICT resources into the educational system. Internet based learning tools as aspect of ICT is relatively new in Nigeria's educational system. It is a departure from the use of conventional tools for curriculum implementation. The introduction of the computer opened another opportunity for the Geography Education sector; most secondary schools in Nigeria today are using the computers as learning tool, the World Wide Web created a wider platform for the teaching and learning of Geography in secondary schools. Today there are several instructional materials and learning tools that have made the Classroom to become boarder less. Yusuf (2021), says, the primary purposes of curriculum implementation are to achieve the objectives of instruction and achieve retention and transfer of knowledge. Naidoo (2021), says, Internet based

tools are used as instructional medium that permits alternative approaches to curriculum implementation. With the internet based learning teachers no longer need to be worried about whether an instructional material is appropriate for the lesson to be taught, its relevance, simplicity simplification of concepts and the accuracy of the teaching aids, because the materials are seen as in real life, real situation and the information is quiet

Interactive technology encourages active learning; hence teaching should no longer center around transfer of content from teacher to student (Hakami, 2020). With the advent of Internet based learning, the features, functions, Climate, Weather, Settlement, Map reading etc could be seen life and in action, while some are viewed as Animation, simulations etc as seen in real life, answers that students assume is impossible to be answered are answered. The internet-based learning tools arouse learning, stimulate interest, motivate and promote the spirit of research among learners. The internet-based learning tools can provide the students with examples of real-life situations with specific knowledge required in addition to sound, color, and movements and stimulate the student's sensorial apparatus and bring a sense of enjoyment to the learning process (Kononets, 2020). The development and expansion of the modern technology which involves the use of the internet –Based Learning Tools has now become part of the teaching and learning in Nigerian Secondary Schools, Colleges of Education, Polytechnics and Universities. However in spite of these expansions is not every school that uses these tools in their teaching. In order to use the recent technology in Niger State in recognition of its importance and as one of the measures to reduce the rate of failures in Geography subject in the West African Examination Council (WAEC), National Examination Council (NECO), the Government of Niger State have made several efforts to ensure that all its secondary schools are ICT compliant by providing computers and installation of Internet facilities in all its Secondary Schools across the state

which there are still challenges inputting these facilities. Some rural areas are left behind and some secondary schools that are not up to standard are still left behind. However, despite the opportunity provided the effectiveness of the internet-based learning tools has not yet been established and documented especially in Geography teaching in Niger State. Despite the expansion and efforts made by the Niger State Government and the Federal Government is not every teacher and every school that has adopted the use of the Internet –Based Learning Tools in their teaching and learning of Geography. This project is aim to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

1.2 Statement to the Problem

Geography has been taught at schools for years, the teachers have been facing a problem on how to get students to fully understand Geography. Many students perceived Geography as a complex and broad subject as it is a subject that explains the phenomena of their environment, while the Geography textbooks are too difficult to read and understand which has contributed to the fluctuating results of Geography in their internal examination and in NECO and WEAC. The call for application of internet- based learning tools in Geography teaching in Niger State Senior Secondary Schools is to infuse and inject efficiency and effectiveness in Geography curriculum implementation. The effective integration of internet- based learning tools in the implementation of Geography Curriculum and its pedagogy require the schools readiness, and the proficiencies of its teachers. However even the developing countries like Nigeria; internet -based learning is challenged with problems of inadequate and functional computers, absence of the internet itself can be as a result of it high cost of installation and maintenance, problem of power supply has consistently been poor in Nigeria. Lack of trained Geography Teachers on ICT to effectively

utilize the Geography software's for effective teaching of Geography. Inadequate infrastructures and poor environment for internet-based learning to take place effectively among others. The study therefore intends to find out the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

1.3 Aim and Objectives of the Study

The aim of this research is to find out the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria. However, the following are the objectives of the research;

1. Determine the effect of Internet-Based Learning Tools on the Performance of Senior Secondary School Students in Geography in Niger State, Nigeria.

2. Find out the impact of Internet – Based Tools on Performance of Senior Secondary School Students taught Geography Internet-Based Learning Tools with respect to gender difference in Niger State, Nigeria.

3. Examine the extent to which Internet-Based Learning Tools affect Senior Secondary School Students' Performance in Geography as a result of school location difference in Niger State, Nigeria

1.4 Research Questions

To guide this investigation, the following research questions have been established.

1. What is the effect of the use of internet – based learning tools on the performance of senior secondary school students in Geography in Niger State?

2. Are there any gender differences in the performance of students taught Geography using Internet – Based Learning Tools?

3. Are there any differences in the performance of students from rural and urban centers taught Geography using Internet – Based Learning Tools in Niger state?

1.5 Research Hypotheses

The study will be guided by the following hypotheses listed below.

Ho_1: there is no significant difference between performances of students taught Geography with traditional method, and those taught with Internet – Based Learning Tools.

Ho_2: there is no significant difference between performances of boys and girls taught Geography with the Internet – Based Learning Tools.

1.6 Basic Assumptions

Internet – based Learning tools are available and utilized in some senior secondary schools in Niger state.

The performance of both boys and girls taught Geography with the use of the Internet – Based Learning tools is the same with no indication of Gender difference.

1.7 Significance of the Study

The inculcation of Internet Based Technology Tools into the teaching of Geography will be of great importance. Teachers are the implementers of the curriculum in the classroom and it's expected that their sound knowledge of the use of Internet and how to use the Internet tools in teaching and learning of Geography would not only go a long way in achieving this goal, but

also improve the standards of Geography education towards achieving excellence. This study is therefore significant to the major beneficiaries:

Students: by improving their understanding of the Geography as a subject, because they see things as in real life. It will as well increase their motivation and inculcate in them the spirit of research and give them the freedom to expose their inner talent which will also be beneficial to the country's development, the use of the internet – based learning tools will give the students the opportunity to communicate and interact with other students or teachers across the globe and compete with them effectively. It will as well give the students some sense of responsibility to be able to take of their learning and reduces too much dependent on teachers for answers to their questions. The use of the internet – based learning tools will enhance their performance leading to a better result in their both their internal and external assessment. Enhance or promote collaborative, group studies, and interactive learning among Geography students' from different part of the country. This will enhance their further understanding and retention of biology content, leading to the development of new ideas and understanding. With collaborative learning, students exchange ideas, share experiences and develop new concepts suitable for their studies. With collaborative learning students can exchange ideas and information's without travelling wide through the internet.

Teachers: when students understanding and performance is enhanced, it promotes the teachers spirit and motivate the teacher. The teachers work is also made easy because the students are taking the responsibility of some aspect of their learning. It assist the teacher by providing understanding of the lesson in addition to different approaches and other teaching and learning techniques employed by the teachers. The internet – based platforms provide teachers with the opportunities to develop themselves as well as the students, private classrooms are provided.

School: Create more awareness of the opportunities offered by the use of Internet- Based Tools as an important educational tool in effective teaching and learning of Geography in Senior Secondary Schools in Niger State especially to schools that are yet to recognize and understand the importance of the internet – based learning tools for fast delivery of instruction and quick understanding response by the students. Promote the harmonization of Geography teaching and learning activities approach to be same with other senior secondary schools across the globe through collaborative learning by sharing different information as well as improving the spirit of research in Geography. Facilitate the development and use of Internet Based Tools as a pedagogical tool for teaching and learning of Geography and for the professional development of Geography teachers in Senior Secondary School in Niger State.

Government: Provide state governments with comparison on the effect of use of internet – based learning tools on the performance of senior secondary school students in Geography with other schools within same zone, which could facilitate effective and urgent action towards providing and making their schools ICT compliant.

1.8 Scope of the Study

The aim of this study is to find out effectiveness of the Internet – Based Learning Tools in teaching of Geography in Selected Secondary School Student's in Minna, Niger State. It strives to find out the extent to which the Internet – Based Learning Tools affect the student's performance, whether gender differences has any effect on the student's performance using the Internet – Based Learning Tools in Teaching Geography. The study would be conducted in Senior Secondary Schools in Niger State. The study would be centered on Internet Based Tools and Geography teaching in Senior Secondary Schools Niger State. The study is limited to the

Geography SSII Students who are the key players in the performance objectives of the study. The study will consider the SSII, who are more familiar with the subject than the SS1. The SS3 are not considered because they will be busy with both Qualifying examinations and external examinations. The study will also make use of the downloaded programs from the Internet – Based Learning Tools using the Flash Drive and a computer at least two pairs to conduct the lesson for experimental group. The independent variable effects and internet-based tools and dependent variable is academic achievement of students in Minna, Niger State. The study will last for four weeks.

1.9 Operational Definition of Terms

1. **Geography:** It is the science or study of the universe and human behavior in respect to their physical environment

2. .**Internet-Based Tools**: are those Educational platforms that provide academic information via the wide web world, offering free lessons, and information's, teaching and learning strategies, promoting research activities, academic presentations for both the teachers and students. Some of these Internet – Based Learning Tools include, Dassault, Centegage, Khan Academy, Encarta Micro Soft, Wikipedia, ERASYAPP, Slide rule, Google scholar etc

3. **Internet:** is a system architecture that has revolutionized communications and methods of commerce by allowing various computer networks around the world to interconnect. (Britannica)

4. **Secondary School Student:** Educational settings where post primary students are trained and equipped with skills that can help them in tertiary institution.

5. **Effectiveness:** it entails achieving a desired result. It refers to a possible result of Geography in term of enhancing academic achievement of senior secondary school.

CHAPTER TWO

2.0 RELATED LITERATURE REVIEW

2.1 Conceptual framework

The review of the relevant literature is conducted to meet the following objective. This is to assess the results of previous research on the effectiveness of Internet-based instruction and traditional method of teaching. Insights from the literature are necessary to determine the most appropriate lessons in geography to be used in a controlled experiment comparing Internet-based and traditional-based instruction. This chapter is classified into three sub-headings as follows: The first part is the conceptual framework (review of related variables in the study), then, the theoretical framework and empirical studies.

2.1.1 Genesis/ History of Internet

The internet started in the 1960s as a way for government researchers to share information. Computers in the 60s were very large and immobile and in other to make use of information stored in any one computer, one had to either travel to the site of the computer or have magnetic computers tapes sent through the conventional postal system. It is strongly believe that the formation of internet was due to the heat up of the Cold War in which the Russian lunch the Sputnik satellite which spurred the U.S Defense Department to consider ways information could still be disseminated even after a nuclear attack. This led to formation of advance research projects agency network (APRANET). The efforts to build and interconnect computer networks that arose from the research and development in the United States and involved international collaboration, particularly with researchers in the United Kingdom and France. The advance research projects agency (APRA) of the U.S department of defense awarded contracts in 1969

for the development of the APRANET project, directed by Robert Taylor and managed by Lawrence Roberts. This network which ultimately evolved into what we now know as the internet. APRANET was a great success but membership was limited to certain academic and research organizations who had contracts with the defense department. In response to this, other networks was created to provide information sharing.

January 1, 1983 is considered the official birthday of the internet. Prior to this, the various computer networks did not have a standard way to communicate with each other. This led to creation and establishment of a new communication protocol called Transfer Control Protocol/Internet Protocol (TCP/IP). This allow different kinds of computers on different networks to communicate with each other but in time APRANET changed to the TCP/IP standard on January 1, 1983, hence the birth of the internet. Today, the Internet is a public, cooperative and self-sustaining facility accessible to hundreds of millions of people worldwide. It is used by many as the primary source of information consumption, and fueled the creation and growth of its own social ecosystem through social media and content sharing. Furthermore, e-commerce, or online shopping, has become one of the largest uses of the Internet.

2.1.2 Concept of Internet

The internet is a global network of networks commonly known as “mother of all network” connecting millions of users worldwide via many computers networks using a simple standard common addressing system and basic communications protocol called TCP/IP which allows messages sent over the internet to be broken into small pieces, called packets, which travel over many different routes between source and destination computers. The use of internet in the educational environment has enabled easy access of many resources, and information sharing has

therefore, significantly increased. Moreover, the prevalence of this sharing has brought additional balance of this resources can be used in any location and any time. The internet which is an integral aspect of the information and communication technology (ICT) is becoming an indispensable tool for quality teaching, learning and research in an academic setting. Its impact on education has been massive, thereby engendering such term like e-teaching, e-learning, virtual teaching/learning, e-training among others, all developed around internet application in the field of education. The internet is a useful tool in the "tri-personality" of a lecturer, a teacher, a life-long learner and a researcher. It provides a wealth of resources for optimum achievement of the ends targeted by the personality within seconds, a lecturer can retrieve information through the internet to update his/her knowledge, students, mark their assignment and also work with colleagues and specialists (Scholastic, 2019).

2.1.3 Operational of Internet

The Internet uses a portion of the total resources of the currently existing public telecommunication networks. Technically, the only distinguishable of Internet in its use is of a set of protocols called Transmission Control Protocol/Internet Protocol (TCP/IP). Two recent adaptations of Internet technology, the Intranet and the extranet, also make use of the TCP/IP protocol. The Internet has two major components: network protocols and hardware.

The protocols, such as the TCP/IP suite, present sets of rules that devices must follow in order to complete tasks. Without this common collection of rules, machines would not be able to communicate. The protocols are also responsible for translating the alphabetic text of a message into electronic signals that can be transmitted over the Internet, and then back again into legible, alphabetic text.

Hardware, the second major component of the Internet, includes everything from the computer or smartphone that is used to access the Internet to the cables that carry information from one device to another. Additional types of hardware include satellites, radios, cell phone towers, routers and servers.

These various types of hardware are the connections within the network. Devices such as computers, smartphones and laptops are end points, or clients, while the machines that store the information are the servers. The transmission lines that exchange the data can either be wireless signals from satellites or 4G and cell phone towers, or physical lines, such as cables and fiber optics. The process of transferring information from one device to another relies on packet switching. Each computer connected to the Internet is assigned a unique IP address that allows the device to be recognized. When one device attempts to send a message to another device, the data is sent over the Internet in the form of manageable packets. Each packet is assigned a port number that will connect it to its endpoint.

A packet that has both a unique IP address and port number can be translated from alphabetic text into electronic signals by travelling through the layers of the OSI model from the top application layer to the bottom physical layer. The message will then be sent over the Internet where it is received by the Internet service provider's (ISP) router. The router will examine the destination address assigned to each packet and determine where to send it.

Eventually, the packet reaches the client and travels in reverse from the bottom physical layer of the OSI model to the top application layer. During this process, the routing data -- the port number and IP address -- is stripped from the packet, thus allowing the data to be translated back into alphabetic text and completing the transmission process.

2.1.4 Types of Internet Resources

Today the number of resources available on the Internet is immense. Companies, organizations, educational institutions, communities, and individual people all serve as information providers for the electronic Internet community. This sharing of resources and information is an example of societal cooperation on a grand scale and has fostered professional and personal communications throughout the world. Electronic resources on the Internet manifest themselves in numerous categories.

1. Electronic Journals:

The term Electronic journals refer to any journal, magazine, newsletter or type of electronic serial publication that is available over the Internet. Electronic journals, also called "e-journals", are those journals and newsletters that are prepared and distributed electronically. With the Internet becoming a fast and easy mode of communication several traditional journals are now being published both on the Web and in print. Current issues or content lists for most of the journals are available on the Web or distributed to subscribers as e-mail text messages. Publication of electronic journals is faster and economical and offers quicker access to desired articles. Table of contents, as well as full text of journals, are now available on the web. Electronic journals could be electronic versions of print journals, electronic versions only or journals accessible free on the Internet. Some of the important journals available in full-text in the web are: D-Lib Magazine, Ariadne: a print and Web magazine of Internet issues for librarians and information specialists.

2. Electronic Conferences:

Electronic conferences, variably known as electronic forums, electronic user groups, list-servers, discussion groups, form an ideal tool for collaborative or cooperative learning. Electronic-conferencing enables researchers and scholars to interact with each other and share information and ideas without the constraints of time and location. Electronic Conferencing can be synchronous (real-time) or asynchronous and includes (but is not limited to): discussion boards, chat rooms, instant messaging, e-mail, and whiteboards. In "real-time" synchronous conferences all participants communicate at the same pre-arranged time. (NetMeeting is one such program from Microsoft). Web conferences also take place in an asynchronous environment where participants logon to the conference site when convenient and respond to comments and concerns of other participants. Usenet newsgroups, also called bulletin boards, are e-mail conferencing systems in which messages are posted to Usenet sites or thousands of newsgroups worldwide. Millions of people around the world regularly read newsgroup messages, following their favourite topics of interest. New newsgroups are added and old ones are deleted every day. Listservs are also called mailing lists or discussion lists. These are accessed by subscription

3. Online-Courseware & Tutorials:

The web-based educational tutorials or guides are online courses that offer courses in various subjects online. These online courses provide distance learning irrespective of geographic boundaries. They also offer a higher degree of interactivity, flexibility and benefit of self-pace to the users. The online courses are the best example of technological, multimedia and instructional innovations designed to provide computer based training to the users over the Internet. The courseware available on the Internet varies to a great extent, in terms of their coverage and quality. It could be basic lecture notes and lecture support material to the integrated and highly

interactive tutorial packages. Some of these are tutorials focused on developing practical skills that can be applied immediately. These are electronic resources using all features and facilities offered by the new technology like graphics, animations and images etc. Institutions of higher learning are actively supporting the development and implementation of these computer-assisted instructions and multimedia courseware.

4. Patents & Standards:

Patents are specifications concerning the design or manufacture of products and processes that are protected and secured for the exclusive profit of the designer or inventor for a limited number of years that varies in different countries from fifteen years to twenty years. The department that controls the registration of patents in a country is known as the Patent Office. Most, Patent Office, provide full-text of patents registered in their respective countries through their web sites. Information on patent laws and filing procedures of various Patent offices located worldwide is also available on the web. Examples of some sites are: NIC Patent Cell – http://pk2id.delhi.nic.in/ sera.html, US Patents & Trademark Office – http://www.uspto.gov/main/ patents.htm, World and so on. Standards are agreed on targets for performance, or an accepted format for the operation of a system. Standards are issued by various national and international organization like BIS, ANSI, ISO, IEEE, and NIST. The information regarding these is available on the Internet.

5. Electronic Preprints:

A preprint is a draft of a scientific research paper before peer review. There might be a succession of revised drafts, all preprints, until the final accepted draft. As peer review takes quite some time (several months to one year), preprints are the medium of choice to

communicate current results within a scientific community. Even after publication, the draft might be further revised to correct the errors. These post-publication drafts (including the official, accepted, published draft itself) are called post prints. E-prints are either preprints or post-prints in electronic form.

E-prints are scientific or technical documents circulated electronically to facilitate peer exchange and scientific advancement. In certain research areas, it is common to publish very specialized or technical results of temporary importance only as e-print without submitting them to a peer-reviewed journal as they are expected to become superseded during the review delay. It has benefits such as low cost, the reduction of time in announcing research findings, and the provision of access to all with Internet capability.

6. Electronic Thesis and Dissertations:

Electronic theses and dissertations (ETDs) consist of masters or doctoral research work that is submitted or archived electronically by an institution, either on an internal network or on the web. Although a large number of doctoral theses are submitted to every university each year they are kept as a closed-access collection. Several universities and institutions have already implemented electronic submission of doctoral dissertations under an international digital library initiative called "Networked Digital Library of Theses and Dissertations" (NDLTD).

2.1.5 Challenges/issues of Internet

1. Security

Large amounts of information, both public and private, are collected across the Internet, opening users up to the risk of data breaches and other security threats. Hackers and crackers can break into networks and systems and steal information such as login information or bank and credit

card account records. Some steps that can be taken to protect online privacy include: Installing antivirus and antimalware, creating difficult, varied passwords that are impossible to guess. Data security concerns posed by advances in technology and the manner in which consumers, businesses and other organizations use that technology will be a significant concern in the year ahead. Data-related issues permeate virtually all evolving technologies. With huge amounts of business and personal data transmitted and stored electronically, the opportunities for data breaches are dramatically increased and businesses must anticipate quick responses to satisfy a patchwork of state and federal data breach regulations. While those regulations continue to raise the standards for data security practices, contracting parties also expect greater accountability for these standards. Enhanced encryption and biometrics may also provide solutions for some of these problems.

2. Big data

By one estimate, computer and device users create over 2.5 quintillion bytes of data daily! This is the world of Big Data. Technologies to analyze, use, and, in some cases, commercialize such vast amounts of data are beginning to be more widely deployed. However, the significant productivity gains and commercial opportunities are offset by serious security concerns and encroachments on privacy. Major issues will include who should control and be compensated for such data.

3. Cloud Computing

Cloud computing continues to show great promise for major cost savings for businesses and convenience for consumers. Yet, as more software applications and other computing resources are hosted and accessed online in the “cloud,” data privacy and security risks are increasing, and contracting and licensing norms are evolving and becoming more difficult to manage.

4. Open Source Software

Non-proprietary open source software applications offer many benefits and costs savings, but compliance with open source license terms can be tricky. If not handled properly, use of open source software can compromise ownership of company software and jeopardize acquisitions and other significant business transactions.

5. Mobile Payments

Several consumer surveys suggest that we keep better track of our mobile devices than we do of our wallets, so the rapid spread of mobile payments is no surprise. However, liability issues remain to be worked out for many transactions – misdirected payments, unauthorized access and account balance mistakes, among others – that may not go as intended.

2.1.6 Effectiveness of Internet-based Tools in Education

The internet is useful for searching information easily and helps students to do their assignments with just only search on search engine that they want to know. It also let them to interact with each other for exchanging their idea and information from a different location in a same time. The internet is the key information and communication technology that led to a worldwide revolutionary change in the information scenario. The interaction between students offers them to gain different perspectives on a problem discussion by sharing one's own learning activities with other learners into problem solving strategies. Siraj (2015). So, internet based learning increase students' satisfaction with learning as a very important mediating role (Hsieh, 2011). The use of internet grants its users great awareness of the importance of the world around them. The internet is a platform for several types of information. Internet use will continue to grow as long as its users are not denied easy access (Olatokun, 2012). Recent statistics indicate that the

internet gives people the option to access information sites as well as other sites such as social media sites, internet games, and cyber-sex (Siraj, 2015). A study by (Ellore, 2014) on the influence of internet use on academic performance and face to face communication revealed that as a result of the availability of internet, most students have had access to internet on their cellphones. This helps students to broaden their academic information (Siraj, 2015) the use of computer and access to online resources according to (Bamise, 2017) are comparatively important to students.

The internet is developed to serve as a platform for various activities for all age groups in society (Akin Adaeamola, 2014). The internet is a technology that has become an enormous part of people's daily lives. Through its ability to act as a support medium in different functions for which people use it, the internet was introduced to academic institutions as a tool to enhance student's academic experience in the mid-1990s (Ngoumandjoka, 2012).

Over the last decades, internet connectivity has improved tremendously and is available everywhere such as homes, offices, travels and schools (Ellore, 2014) Today, empirical studies (Akende, 2015) report that access to information can influence the academic performance of students. The use of credible internet resources is of greater importance for academic study, especially in high class courses which require an academic review of literature (Sahin, 2010). Intern use for educational purpose is found by (Kim, 201) to be the heart of adolescent academic achievement. The availability of internet is almost everywhere; most students have had access to internet on their cellphones (Ellore, 2014). This helps students to broaden their academic information, research and assignments by accessing information worldwide and also enhances easy communication to the academic community (Siraj, 2015). Therefore, the investigation on the impact of internet use on students learning outcomes 1S necessary for the implementation of

internet use in learning. The relationship of internet use and learning will provide an avenue to enhance learning environment and technology for problem solving in economics, society and politics. This project is aim to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

2.1.7 Benefits of Internet-based tools application

1. Access to endless information, knowledge and education.

2. An increased ability to communicate, connect and share.

3. The ability to work from home, collaborate and access a global workforce.

4. The chance to sell and make money as a business or individual.

5. Access to an unlimited supply of entertainment sources, such as movies, music, videos and games.

6. The ability to amplify the impact of a message, allowing charities and other organizations to reach a wider audience and increase the total amount of donations.

7. Access to the internet of things (IoT), which allows home appliances and devices to connect and be controlled from a computer or smartphone.

8. The ability to save data and easily share files with cloud storage.

9. The ability to monitor and control personal accounts instantly, such as bank accounts or credit card bills.

2.2 Theoretical Framework

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 that 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 problem, 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 John Piaget Cognitive Learning Theory

Cognitive Learning Theory postulates that an individual learns based on the ability to select, perceive, process and encode information, and to retrieve it from memory (DiVesta, 1987). According to this theory, a key component to learning is the transfer of information from short-term to long-term memory, a process that requires coding (Rieber, 1994). According to Paivio's

theory (1971, 1986) of dual coding, long-term memory consists of separate verbal (language) and non-verbal (imagery) codes. He states further that an individual who successfully codes both verbal and non-verbal information regarding the same concept into long-term memory will be twice as likely to retrieve that information as a person who codes the information via one or the other (Paivio, 1971, 1986). The concept of cognitive coding also forms the basis for what Downs and Stea (1973, p. 9) termed cognitive mapping, defined as "a series of psychological transformations by which an individual acquires, codes, stores, recalls, and decodes information about the relative locations and attributes of phenomena in his everyday spatial environment". Cognitive mapping is especially salient to research in human navigation in unfamiliar environments, where cognitively stored and recalled information is heavily relied on (Golledge, 1999). A commonly held conclusion is that more experience within an environment leads to better cognitive mapping (Golledge & Rushton, 1976; Thorndyke, 1981). This conclusion suggests that whether geographic education occurs within the classroom or an Internet-based environment, students with real-world experience within the environment discussed will be better able to cognitively map that information.

Golledge and Stimson (1987) devised a system of spatial knowledge categorized into three types of knowledge: declarative, procedural and configurational. MacEachren (1991), in his simplified explanation of the system, defines declarative knowledge as the ability to recognize and characterize objects and places, and in geography it is essential to the study of regional geography (MacEachren, 1991). Procedural knowledge enables an individual to navigate from one place to another and represents a higher cognitive level than declarative knowledge (MacEachren, 1991). The majority of research in spatial knowledge acquisition focuses on both declarative and procedural knowledge, particularly as they pertain to the coding of spatial

information from maps and direct experience in order to navigate (Garling *et al*., 1983). Configurational knowledge, however, is the highest level of spatial cognition and, according to MacEachren (1991, p. 154) "allows geographic patterns to be identified, relationships between patterns to be noticed, and hypotheses about spatial association to be developed". Configurational knowledge, therefore, is most critical of the three to understanding spatial processes in physical geography. Unfortunately, research in configurational knowledge and its relationship to understanding physical

2.3 Empirical studies

Ukwetang J. O (et al, 2017) the study examined the utilization of internet resources and academic performance of Educational Technology Students in faculty of education, University of Calabar, Nigeria. Four research questions were posed and four hypotheses formulated to guide the study. Related literatures in the variables involved internet resources and academic performance of Educational Technology students were reviewed. The research design adopted for this study was survey research design. The instrument for data collection was a questionnaire of twenty-five (25) items titled internet resources and academic performance of educational technology students in the faculty of education. The samples of 133 educational technology students were randomly selected from a population of 333 in the educational technology unit in the study area. Their responses were used as data to answer the research questions using Pearson product moment correlation coefficient analysis at .05 level of significance. The findings revealed that e-journals, e-books, e-blogs/forum and search engine have a significant relationship on the academic performance of educational technology students. In the light of these findings, it was recommended that awareness should be created and importance be placed on the various internet resources, students should be educated on the proper use of this available internet resources to

enhance effective outcome. This project is aim to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

Letchumanan & Tarmizi (2011) worked e-book on utilization among mathematics students of University Putra Malaysia (UPM). The purpose of this preliminary study was to identify the e-book utilization habit of postgraduate and undergraduate students from the Mathematics Department of University Putra Malaysia (UPM), and to determine the reasons why students are feeling comfortable or uncomfortable with the services offered by the library and the role the librarians can play in solving the identified obstacles. Design/methodology/approach – A qualitative approach which employs a face-to-face interview session was used to collect information on e-book utilization habit and to capture perception of the e-book services offered by UPM library. Findings disclosed that most of the participants use one common e-book reading habit. Factors such as easy access reduce physical visits to the library and user-friendly features offer a comfortable platform for the participant to use the mathematics e-books. However, unreliable service, eye fatigue, lack of manipulability of online features and flaws in the physical design and insufficient e-book collection cause the participants to feel uncomfortable with the service. This project is aim to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

Jeong (2010) research the influence of electronic books and paper books on reading comprehension, eye fatigue and perception. The purpose of the study was to assess the usability of electronic books (e-books) and paper books (p-books) with objective measures, including user comprehension, eye fatigue and perception. The result revealed that there is a significant “book

effect" on quiz scores; compared to e-books, p-books appear to enable better reading comprehension. Regarding eye fatigue, students had significantly greater eye fatigue after reading e-books than after reading p-books. Students were satisfied with the e-books, but they preferred p-books. This project is aim to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

Lazonder (2000) investigated the novice users and their training needs. In the search for information on the World Wide Web (WWW), noting that locating a website is more important than locating the information on the website. This is true because they lack the skill to utilize the abundant resource at their fingertips. The main purpose of the study was to examine undergraduates' preference between web search engines and reference sources for research activities. Descriptive survey design was adopted for the study and the study population consisted of all 12,173 regular undergraduates in University of Ibadan (Ul) and 2,388 in Redeemer's University Ede Osun State, Nigeria (RUN). Multistage random sampling technique was used to select the sample size of 386 and the questionnaire was research instrument. Findings showed that most of the undergraduates in Ul 195 (97.0%) and RUN 130 (92.9%) indicated that Google was their most used search engine. While, 179 (89.1%) and 124 (81.4%) of undergraduates in Ul and RUN pointed out that dictionaries were the most used reference sources. Results also showed that majority of undergraduates in Ul 161 (83.1%) and 1 11 (79.3%) in RUN indicated their preference for web search engines for research activities as against reference sources. This project is aim to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

Affum, M.Q, (2022). This paper is a literature review on effects of internet use on students' academic performance. Assessing to factors that affect students' use of the internet is the main objective of this research. The paper additionally aims to find out the various activities that students use the internet to do and assess the various technologies students use to access the internet. Several articles were reviewed by the researcher. Articles reviewed were all on factors influencing students' use of the internet. Out of the twelve articles, nine of them looked at the functions of the internet of students activities whiles fourteen articles was also based on the technology students use to access the internet. The inclusion criteria focused only articles relating tertiary education. The internet has a vital impact on student academic outcomes as it helps students to access journals and articles which otherwise are not made available in the libraries. The study concluded that increase in internet use was very useful in the improvement of the learning outcomes. The study also found the negative impacts of internet use which leads to distraction as time is spent on social media instead on studies. Therefore, it is proposed that University authorities should provide guidelines to help students overcome some of the challenges faced when using the internet. This project is aim to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

2.4 Summary of Literature Reviewed

The research on whether Internet-based instruction is better than traditional instruction has produced mixed results, which some results provided significant evidence on the impact on student learning in geography education. Geography involves the study of spatial relationships and interactions, and, in order to capitalize on the innate human capacity to understand spatial representations of the environment, visual learning should be used in geography instruction. The

constructivism theory and cognitive learning theory were the models that supported the study as they advocated for the use of internet-based tools in teaching and learning. From the empirical studies, it was proven that internet-based tools is crucial to support the learning of students in geography. This project is aim to investigate the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

This study adopted a quasi-experimental, pretest-posttest experimental control group which means the researcher couldn't randomly pick and assign subjects because intact classes were used to give the treatment. Because intact classes were used instead of randomly composed samples, the design was deemed appropriate for this study. Kerlinger (1979) and Tuckman (1978) advocated for the use of this design in a situation where two or more respondents posses the same or "Relevant variable". The following is the format for the research design:

Fig. 3.1 Research Design Layout

Group	Pretest	Treatment	Posttest
E:	**O_1**	**T**	**O_2**
C:	**O_3**	**-**	**O_4**

E = Experimental Group

O_1 = is the first observation (pretesting) of experimental group before treatment

T = Treatment

O_2 = is the second observation (post-testing) of experimental group after treatment by administering posttest.

C = Represent the control group exposed to the routine teaching

O_3 = is the first observation of the control group by administering pretest.

O_4 = is the second observation (post testing) of the control group.

3.2 Population of the Study

The population of the study was all Senior Secondary Schools in Bosso Local Government Area with one thousand, eight hundred and ninety-five (1,895) students in Minna Niger State. The Senior Secondary Schools used for the study were selected from Bosso Local Government Area of Minna, Niger State. From this table, 894 were male while 1,001 were female of average age of 16 years plus. The target population of SSII Geography Students in the five 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.	237	254	491
2.	Government Day Secondary School Chanchaga.	72	60	132
3.	Day Secondary School Maikunkele	205	182	387
4.	Day Secondary School Maitumbi	128	163	291
5.	Ahmadu Bello Model Secondary School Chanchaga.	252	342	594
TOTAL		894	1,001	1,895

Source: Niger State Ministry of Education Minna 2019 – 2021 ASC Report.

3.3 Sample and Sampling Techniques

A total number of 138 SSII Geography Students drawn from two (2) public Senior Secondary Schools of Bosso Local Government Area Minna, Niger State. Purposive sampling procedure

was used for the study to obtain 60 sample sizes. The purposive sampling was adopted based on the knowledge and experience of the Researcher that the schools are not well equipped with functional Internet facilities and most importantly the study involve the use of Internet-based tools for the experimental group and traditional method for the control group. Therefore, each group consists of thirty participants from each senior secondary school (SSII). Researcher using Guilford (1965) Central Limit Theory reported in Hassan (2011) supported by Salaudeen (2012) and Nma (2017) asserted that the sample Size of $n \geq 30$ will suffice for the normal approximation to be reasonable. This theory will be used in this research study

3.3.1 Names of schools with their corresponding number of (SS1I) students

NAMES OF SCHOOLS	NO OF STUDENTS IN SSII
1. Bosso Day Secondary School, Minna	75
2. Day Secondary School, Maikunkele, Minna	63

3.4.2 Distribution of Students from the sampled class (SS1I)

Name of Schools	Number of Students		Groups		Total
	Male	Female	E	C	
Model Day Secondary School	15	15	15	15	30
Hilltop Model School	15	15	15	15	30
Total	30	30	30	30	60

Source: School board, (2022)

3.4 Research Instrument

There are two instruments for this study, they include:

I. Internet-based Tools

II. Traditional method of teaching.

Internet-based Tools was used as the treatment Instrument. Lessons on Rocks and types of Rocks were recorded and store in a flash drive and it was used to teach the students and in which after the treatment, questions were administered. The flash drive was connected to a computer which the students watch and questions were asked and records were taken.

Traditional method of teaching: this method was applied on the control group in which the teacher write the topic on a chalk board, read and explain to the students and asked the students to copy. After the lesson, the teacher gave a short quiz for the students to answer.

3.5 Validity of the Research Instruments

One specialist from the Federal University of Technology Minna Niger State's Department of Science Education and another specialist in Geography department from one the sampled schools. All verified the instrument utilized in this study. They all provided helpful suggestions to help the researcher gather the necessary information and data for the study. Their ideas and corrections were taken into account.

3.6 Reliability of the Research Instrument

The experimental and control groups were given a test retest at two-week intervals to determine the instrument's dependability. The Pearson Product Moment Correlation Coefficient statistics

were used to examine the test results. The correlation coefficient was found to be r= 0.75, indicating that the instrument is reliable.

3.7 Method of Data Collection

Hilltop Model School was used as the experimental group while Model Day Secondary School was chosen to be the control group. The researcher visits the sampled schools for an introduction and to obtain permission to utilize the schools, as well as to sample the classes and students who will be involved in the study during the first week.

On the first day of the second week, the researcher visits the school for the control group which is Model Day Secondary School and Pretest was then administered to all the students involved. On the second day the researcher personally teaches the control groups using his first lesson plan, the third day with the second lesson plan and the fourth day with the third lesson plan. At the end of the second week, three (3) lessons were taught altogether. On the first day of the third week, the researcher visits the school he uses for experimental group which is Hilltop Model School and then pretest was then administered to all the students involved. On the second day the researcher personally teaches the experimental groups using same lesson plan that was used for the control group in his first lesson, the third day with the second lesson plan and the fourth day with the third lesson plan. Three (3) lessons were taught in total by the end of the second week. For the control and experimental groups, both schools used the same pretest and lesson plans. After a week, a Posttest was given to all of the Students in the two schools who were involved in the study, both experimental and control groups, to measure their academic performance. The scores from the tests were combined together to generate the study's data, and the average was calculated.

3.8 Method of Data Analysis

Descriptive statistics of mean and standard deviation (SD) was used to answer the research questions and the influential statistics of the t-test was used to test the hypothesis at 0.05 level of significance using Statistical Package for Social Science (SPSS) version 23.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Answers to Research Questions

Research Question One:

What is the effect of the use of internet – based learning tools on the performance of senior secondary school students Geography in Niger State?

The Mean and Standard Deviation were used to answer this research questions, and the results are shown in Table 4.1.

Table 4.1: Mean and Standard Deviation of pretest and post-test performance scores of Experimental and Control group

		Pretest		Posttest			
Group	**N**	$(\bar{X})$	**SD**	$(\bar{X})$	**SD**	**Mean Gain**	**Mean Diff**
Exp.	30	9.83	2.55	13.20	2.85	3.37	
Control	30	7.27	2.30	8.70	2.78	1.43	1.94

The pretest mean value for experimental group is 9.83 as against 7.27 of the control group. Also their posttest mean are 13.20 and 8.70 respectively. Hence, the mean gain score are 3.37 for experimental group and 1.43 for the control group.

Research Question Two:

Are there any gender differences in the performance of students taught Geography using Internet – Based Learning Tools?

The Mean and Standard Deviation were utilized to address this research question, and the results are shown in Table 4.2.

Table 4.2: Mean and Standard Deviation of Male and Female on the Academic Performance of students' taught Geography Using Internet-Based Learning Tools

		Pretest		Posttest			
Group	**N**	$(\overline{X})$	**SD**	$(\overline{X})$	**SD**	**Mean Gain**	**Mean Diff**
Male	15	9.10	2.42	12.30	3.42	3.20	
Female	15	8.71	2.60	11.78	2.44	3.07	0.13

The mean value for pretest of the Male is 9.10 as against 8.71 of the female. Also their posttest mean are 12.30and 11.78 respectively. Hence, the mean gain score are 3.20 for male and 3.07 for the female.

Research Question Three:

Are there any differences in the performance of students from rural and urban centers taught Geography using Internet – Based Learning Tools in Niger state?

The Mean and Standard Deviation were utilized to address this research question, and the results are shown in Table 4.3.

Table 4.3: Mean and Standard Deviation of students' from Rural and Urban areas academic performance for experimental and control group

		Rural		Urban			
Group	**N**	$(\overline{X})$	**SD**	$(\overline{X})$	**SD**	**Mean Gain**	**Mean Diff**
Rural	15	12.41	3.17	13.81	2.45	1.40	
Urban	15	11.06	2.98	8.56	3.17	2.50	1.10

The mean value for rural experimental group is 12.41 as against 13.81 of the Urban in the group. Also the Urban experimental group mean are 11.06 and 8.56 respectively. Hence, the mean gain score are 1.40 for urban area and 2.50 for the rural area.

4.2 Testing of Research Hypothesis

Hypothesis one

$H0_1$: There is no significant difference in academic accomplishment between students who are taught geography through internet-based tools and those who are taught using traditional methods.

Table4.4: Summary of t-test Analysis Comparing Students Academic Achievement using internet-based tools and traditional method

Group	No	Df	Mean ($\bar{X}$)	SD	t-value	p-value
Exp.	30	58	11.20	3.942	6.244	0.000
Control	30		6.50	2.533		

The findings of the t-test on the comparison of mean academic achievement scores using internet-based tools and the traditional method are shown in Table 4.4.

Where t-value= 6.244, Df =56, p=0.0000.05, according to the results Obtained. The findings from the result showed that there is a significant difference in academic achievement between students who were taught geography through internet-based tools and those who were taught through traditional methods. Hence, the null hypothesis is accepted and the alternative is rejected.

Hypothesis two

$H0_2$: Student taught utilizing internet-based tools shows no significant difference in academic achievement between male and female students in Geography.

Table 4.5: Summary of t-test Analysis Comparing Male and Female Student academic achievement in Geography when taught using Internet-Based Tools

Group	No	Df	Mean ($\bar{X}$)	SD	t-value	Sig.
Male	15		9.900	2.179		
		28			0.327	0.544
Female	15		10.300	3.042		

Table 4.5 shows the results of a t-test comparing male and female academic achievement Geography when taught through internet-based tools. T-valve=0.327, DF=28, p=0.544>0.05, according to the results. This shows a weak evidence against the null hypothesis, hence fail to reject. The results reveal that there is no substantial difference in academic achievement between male and female. The null hypothesis is therefore accepted.

4.3 Discussion of Findings

The results revealed that students who were taught through internet-based tool gain more achievement or recorded higher average score than those who were taught using a conventional teaching method. The results of the experimental group outshine those of the control group. The null hypothesis was rejected since the sample t-test revealed a statistically reliable difference between the mean of the study group and the control group. Form of instruction integrated, flexibility during lessons, mode of interaction with the instructor and leaning tools are factors that could contribute to this. This research also demonstrated that when taught utilizing internet-based tool, there is no significant difference in male and female academic achievement. Furthermore, the outcome was unaffected by gender.

Articles reviewed were all on factors influencing students' use of the internet. Out of the twelve articles, nine of them looked at the functions of the internet of students activities whiles fourteen articles was also based on the technology students use to access the internet.

4.4 Summary of Findings

1. There was a significant difference in academic achievement between students who were taught geography through internet-based tool and those who were taught through conventional methods.
2. From the results revealed that there is no substantial difference in academic achievement between male and female utilizing internet-based tools

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study was carried out to find out the effectiveness of the Internet Based Learning Tools in the teaching of Geography in selected secondary schools in Minna Metropolis, Niger State, Nigeria. According to the findings, internet-based tools has demonstrated effectiveness and efficiency when integrated in teaching and learning of geography. It also show that internet-based tools should be an integral part of teacher's teaching plan. Internet-based tools as a method enhance many vitals aspects of the teaching process such as creativity, motivation and assist the cognitive learning of learners. Efforts in our secondary schools must be channeled to improve its efficiency and effectiveness.

5.2 Recommendations

The following recommendations based on the findings were made:

i. Teachers and students should be provided with adequate training on the usage of internet-based tools in teaching and learning of geography.

ii. Students taught with internet-based tools outshine students taught with conventional method of teaching, installing and integrating internet-based tool as a method of teaching should be encouraged and imbedded by teachers of geography in secondary schools not only in Bosso local government but in Niger State as a whole.

iii. Employment of experience teachers with the knowledge of integrating internet-based tools as a method of teaching should be a major priority of government and educational stakeholder so as to deliver effective teaching and learning in schools

iv. Government should provide more funds to mobilize resources and equipping schools with internet-based tools.

5.3 Limitation of the study

The scope of the research will be limited to an analysis of the achievement test and relevant text (literature). Another limitation of the study was the researcher's inability to cover the entire study population, money, distance and time. In fact time frame allocated to the study does not enhance wider coverage as the researcher has to combine other academic activities and examination with the study

5.4 Suggestions for further studies

i. Similar investigation need to be carried out to cover wider coverage of schools in Niger State

ii. Similar investigation need to be carried out in other states of the Federation.

iii. The impact of internet-based tool on tertiary institution students' geography achievement and retention.

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APPENDIX A

GEOGRAPHY ACADEMIC ACHIEVMENT TEST FOR SENIOR SECONDARY SCHOOL STUDENT (SS II)

INSTRUCTION: Answer all the questions

Dear Respondent,

The purpose of the test is purely for research not to test your school performance. Your honesty response will be a contribution to the improvement of geography programmed in Minna. Read the question carefully. All question is followed by four options (A-D). one option is correct. You are to tick the correct option on your answer sheet.

1. Weather include all of the following element except?

A. Temperature

B. precipitation

C. Humidity

D. All are factors of weather

2. Climate is defined as _____?

A. Pattern of weather over a long period of time

B. The weather report for the day

C. The changing of weather throughout the day

D. None of the above

3. Climate determines?

A. The plants that grow in a particular area

B. The animals that live in the area

C. All of the above

D. None of the above

4. What types of equipment would a meteorologist use to measure weather?

A. Weather stations

B. Weather balloons

C. Satellites

D. All of the above

5. One way to describe weather is:

A. Cloudy

B. Rainy

C. -2 degrees Celsius

D. All of the above

6. Factors that affect climate include:

A. Distance from the equator

B. Height above sea level

C. location of a place

D. All are factors

7. _____ is the atmospheric weather condition of a place for a long time period?

A. Weather

B. Climate

C. Atmosphere

D. Temperature

8. _____ is any form of water droplet that falls from the atmosphere and reaches the Earth's surface?

A. Rainfall

B. Humidity

C. Temperature

D. Cloud

9. All of the following is the types of rainfall except?

A. Frontal Rainfall

B. Orographic rainfall

C. Convectional Rainfall

D. All of the above

10. _____ is the type of rainfall that occurs when moist air is forced to rise over a mountain range?

A. Frontal Rainfall

B. Convectional Rainfall

C. Orographic Rainfall

D. none of the above

11. _____ is the type of rainfall that usually occur when moist air raise over a hot region?

A. Frontal rainfall

B. Orographic rainfall

C. Convectional rainfall

D. Precipitation rainfall

12. Temperature is the degree of hotness and coldness of particular area

A. Yes

B. False

C. None of the above

D. All of the above

13. _____ is the state of the atmosphere at a particular place and time?

A. Weather

B. Climate

C. Humidity

D. Troposphere

14. The _____ is the air that surround the earth?

A. Climate

B. Weather

C. Atmosphere

D. atmospheric pressure

15. Atmospheric pressure is_____?

A. Amount of cloud cover in the atmosphere

B. Amount of water vapor in the atmosphere

C. The force on a surface by the weight of the air above it

D. None of the above

16. Climate is _____?

A. Pattern of weather that change over a long period of time

B. The weather report for the day

C. The changing of weather throughout the day

D. None of the above

17. Climate determines _____

A. The plants that are able to grow

B. The animals that live in the area

C. All of the above

D. None of the above

18. What is climate?

A. The amount of rain in an area

B. The condition of the atmospheric at a certain place and time

C. The temperature of the air

D. The average weather over an extended period of time

19. You hear someone say, the average temperature this week was 79 degree. What does this statement describe?

A. Tide

B. Weather

C. Current

D. Climate

20. _____ is the state of the atmosphere at a particular place and time?

A. Weather

B. Climate

C. Humidity

D. Troposphere

APPENDIX B

ANSWERS TO THE GEOGRAPHY ACADEMIC ACHIEVMENT TEST

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