

CHAPTER ONE

INTRODUCTION

Background to the Study

Education is central in the survival and growth of human being as individual and as society, each with its own ways and means of educating and socialising its members, as dictated by the societal culture. Consequently, as a result of development in ICT, diverse ideas and cultures interact and interwoven, as such, new knowledge, ideas, cultures and values, are transferred from one place to another. Recent development in Information and Communications Technology (ICT) has resulted in tremendous progress in the area of communication and information dissemination, which contributed in making the world more interactive. This made transactions to emerge between people who may never meet. Also, the ICT is inexpensive and accessible easily throughout the globe. Information and communication technologies (ICTs) have become important tools for educational support. Using computers and the Internet is becoming more and more important in teaching and learning processes. Likewise, with the advent of mobile phones especially smart phones, it is becoming easier to reach students and even utilize the capabilities of technology.

Fehintola and Audu (2012), outlined that as the pace of technological development continues to grow, children in our schools today will live in a world where ICT will be increasingly embedded in their daily lives. ICT has become one of the basic building blocks of a modern society within a short time. Many countries now regard understanding ICT and mastering its basic concepts as part of the core of education (UNESCO, 2002). In Nigeria, the government has established equipped ICT Ministry since 2006 to stress the importance of ICT in promoting economic growth and development of the well-being of the Secondary and tertiary institution students in Nigeria. The term Information Communication Technologies (ICT) as used in this research refers to the hardware, software, networks and media for the collection, storage, processing, transmission and presentation of information (voice, data, text,

images), as well as related services . There is no doubt that the uses and functions of ICT go far beyond those of computers and the Internet or even telephony devices. Information and communication technologies (ICTs) are broadly defined as technologies used to convey, manipulate and store data by electronic means. This can include e-mail, SMS text messaging, video chat (e.g., Skype), and online social media (e.g., Facebook). It also includes all the different computing devices (e.g., laptop computers and smart phones) that carry out a wide range of communication and information functions. All these electronic tools constitute the “Information and communication technologies” (ICTs) and are used to convey, manipulate and store information (Oluwayomi, 2012). The way, by which secondary schools students usually glue themselves to ICT, by means of different kinds of devices, and for a considerable proportion of their time, keeps increasing daily despite the high rate in affordability of these devices in the country in recent times. Accordingly, the worry here is about what the students are doing on these devices. Recent findings has revealed huge patronage of these ICT devices among youths and young adolescent. These adolescents are becoming more and more overwhelmed by the programmes available on these ICT gadget, which in turn facilitate or erode their learning inclination and either improve or retard their educational development.

There is a widespread belief that ICT increases the quality of education, and transforms teaching and learning processes from being highly teacher-dominated to student-centered, and this transformation will result in increased learning for students, creating and allowing for opportunities for learners to develop their creativity, problem-solving abilities, informational reasoning skills and communication skills (Khan, 2015). ICTs are generally accepted as a modern tool that enables the teachers to modify the teaching methods to increase students’ learning and achievements. From general perspective, ICT covers any product that store, retrieve, manipulate, transmit or receive information electronically in a digital format. It

consists of hardware, software, social networks, media, processing, and presentation of information (Mbaeze, Ukwandu, & Anudu, 2010).

Schools have the responsibility of preparing learners for their current and future lives in the information society. Teachers, in particular, have a vital role to play in ensuring that students are placed in environments that will facilitate their acquisition of skills to do with effective searching, organizing, and using of information from different sources. Such a role includes proper integration of technology so as to close the “digital divide” existing between users that have access to technology and those that do not. Digital divide manifests itself among Information and Communication Technology (ICT) users in many ways depending on their levels of ICT literacy. In this case, ICT refers to the means of accessing, retrieving, displaying and storing information through internet, wireless networks, cell phones, and other communication media. Technology integration is defined as the art and craft of using technologies in classrooms to effectively accomplish teaching and learning tasks. To ensure this is possible, students need to be supported in various ways including making them ICT literate and supplying them with necessary technological resources (including radio, television, mobile phones, interactive whiteboards, tablets, computer and internet). Doing so is likely to improve students’ academic performance.

Statement of the Problem

The use of information and communication technology (ICT), in secondary schools today has enhance the teaching and learning process. However it has been observed by the researcher that majority of the public schools within Oredo Local Government Areas are not conversant with the use of these ICT facilities. The researcher made a visit to some public schools within this region and found out that most of these school do not implement the use of Information and Communication technology (ICT) in their learning process.

The researcher also found out that some schools where these ICT facilities are available they are not being granted access to the students. Some of these ICT facilities are locked up either in the staff room or in the principals' office despite the fact that Nigeria government sees the need for computer education by including it into secondary school educational curriculum, most secondary schools may still find it very difficult to access and utilized ICTs targets in their various schools for its proper teaching. Despite the enormous advocacy of ICT aided teaching and learning facilities, most teachers have not been fully exposed to the use of these ICT facilities and do not utilize them in their teaching process as well. The researcher has also observed that most subject teacher especially those who take computer related subjects do not make use of computers gadgets and other ICT facilities during the course of teaching in the classroom. Hence the students are not able to relate superbly with some of the concepts that they are being taught. Another challenge faced by both the teacher and students is the unavailability of these ICT facilities. These issues surrounding ICT has prompted the researcher to embark on this study so as to investigate ICT facilities on teaching and learning process in junior secondary school in Oredo Local Government Area of Edo State.

Purpose of the Study

The main purpose of this study is to examine ICT facilities on teaching and learning process in junior secondary school in Oredo Local Government Area of Edo State. Specifically the study seeks to determine;

1. the level of availability of ICT facilities on teaching and learning process in junior secondary schools in Oredo Local Government Area.
2. the level of functionality of ICT facilities on teaching and learning process in junior secondary schools in Oredo Local Government Area
3. the level of usability of ICT facilities on teaching and learning in junior secondary school in Oredo Local Government Area

4. the level of adequacy of ICT facilities on teaching and learning in junior secondary school in Oredo Local Government Area

Research questions

The following research questions were raised to guide the study.

1. What is the level of availability of ICT in teaching and learning process in junior secondary schools in Oredo Local Government Area?
2. What is the level of functionality of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area?
3. What is the level of utilization of ICT facilities in teaching and learning in junior secondary school in Oredo Local Government Area?
4. What is the level of adequacy of ICT facilities in teaching and learning in junior secondary school in Oredo Local Government Area?

Research Hypotheses

The following formulated research hypotheses will be tested at 0.05 level of significance.

1. There is no significant difference between the mean responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school.
2. There is no significant difference between the mean responses of students and teachers on the functionality of ICT facilities in teaching and learning process in secondary school.
3. There is no significant difference between the mean responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school.
4. There is no significant difference between the mean responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school.

Significance of the Study

The findings of the study would be of benefit to students, teachers, curriculum planners, researchers, government, psychologists and the public.

The findings of this study would be beneficial to students as it will provided them with useful skill in information communication technology (ICT) and how they can utilize the available ICT facilities so as to improve their academic achievement and also make their academic work easier through the use of modern technologies. The study would be of importance to teachers by offering them empirical data on the situation of ICTs in secondary schools. The study would also provide the teachers a body of knowledge on the use of ICT tools in teaching students. The parents would use the findings of this study to understand the benefit of ICT to the development of their children and how it contribute to the teaching and learning process of their children. It would also enlighten them on the ways they can assist their children in providing them with newer gadgets that will aid and boost their learning activities.

The findings of this study would be beneficial to future researchers, as it would serve as a pointer from which other studies could be carried out to determine other benefits, contributions or challenges facing the use of ICT in teaching and learning in secondary schools in Edo state. More so, the study would be significant to other agents of education, which includes the government, counsellors and other stakeholders, considering the fact that most teachers have not been fully open to the use of ICT in their teaching activities. The study would therefore serve as an appeal to government and school administrators for them to develop provide schools with essentials ICT facilities that help in improving the teaching and learning process of the school and also transform the student's proficiency in ICT.

Scope of the Study

The study generally examine ICT facilities on teaching and learning in junior secondary school in Oredo Local Government Area of Edo State. Specifically, the study covers the extent to which availability of ICT facilities, functionality of ICT facilities, adequacy of ICT facilities and teachers' utilization of ICT facilities affects teaching and learning process in junior secondary school in Edo State. Geographically, the study covers all the junior secondary schools in Oredo Local Government Area of Edo State.

Operational Definition of Terms

ICT: Information and communication technology is an extensional term for information telecommunications and computers as well as necessary software to transmit store and access information.

Learning: This is the process of acquiring new understanding, knowledge, behaviours, skills, values attitude and preferences through the use of information and communication technologies.

Teaching: This is the mode of education through the use of technology to support, enhance and optimize the delivery of lessons. It involves the sharing of knowledge and experience which is usually organized and done ICT.

Teaching and Learning: This refers to the use of technology devices in the process of learning. It is a combine process where a teacher establishes a particular learning objectives or formulate strategies and plan to access the outcome of the instruction with the use of ICT.

CHAPTER TWO

LITERATURE REVIEW

This chapter reviews relevant literature and it is organised under the following subheading: Conceptual framework, theoretical framework, empirical review and summary of literature review.

Conceptual Framework

The conceptual framework of this study relates the connection between the variables such as availability of ICT facilities, Functionality of ICT facilities, Adequacy of ICT facilities, Utilization of ICT facilities and how they influence the teaching and learning process in junior secondary schools in Oredo Local Government Area of Edo State.

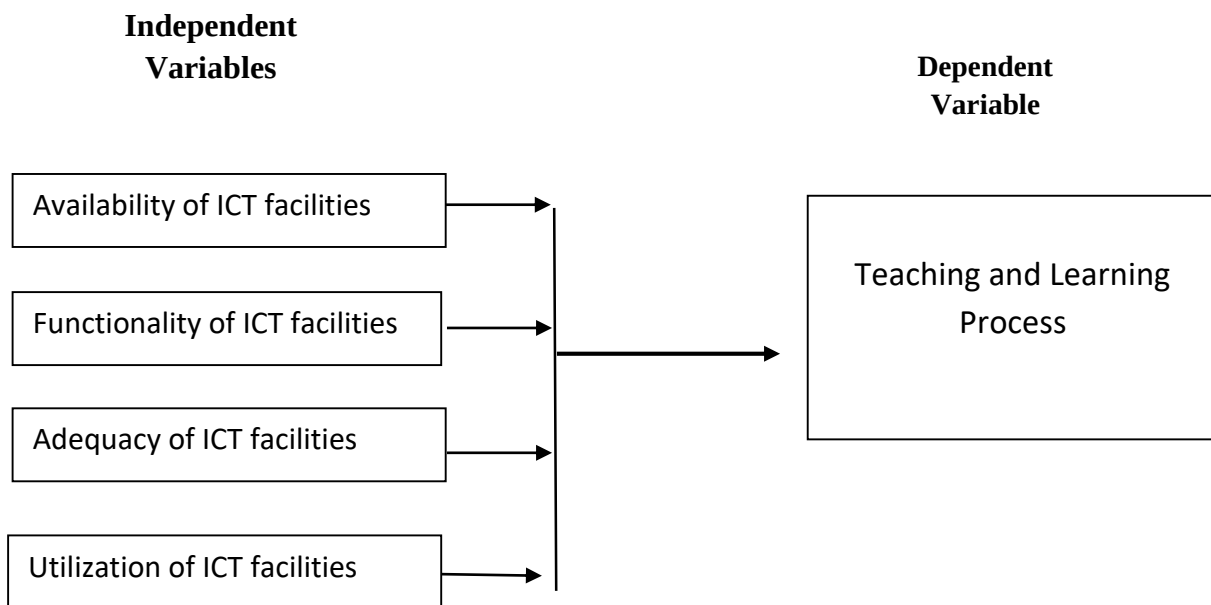


Figure 1: Conceptual Model of the Study

Source: Developed by the Researcher (2023)

Concept of ICT

ICT is an augmented term for information and communication technology (ICT) which accentuates on the role of integrated communications and the integration of telecommunications (telephone lines and wireless signals), computers and other necessary enterprise software. Information and Communication Technology (ICT) is the scientific disciplines and the management technologies used in the handling of information, processing and application related to computers. It is also concerned with the interactions with man and machines. Information Technology according to Marshall, (2014) is the coming together of computing and telecommunications for the purpose of handling information. ICT is also defined as the term used to describe the tools and processes to access, retrieve, store, organize, manipulate, produce, present and exchange information by electronic and other automated means. These include hardware, software and telecommunications in the forms of personal computers, scanners, digital cameras, handhelds/PDAs, phones, faxes, modems, CD and DVD players and recorders, digitalized video, radio and TV and programs like database systems and multimedia applications (Adebayo & Adesope, 2017).

Today, there are lots of every day devices that are basically specialized computers even though we do not always think of them as computers. Such includes tablet computers which uses touch sensitive screen for typing and navigation. Since they do not require keyboard or mouse, they are even more portable than laptops. The example of a tablet computer is an iPad. Many mobile phones can do a lot of things a computer can do, such as browsing the internet, playing games etc. These phones are often called "Smartphones". Technology on the other hand is described as the application of information in the design, production and utilization of goods and services and in the organization of human activities. Information communication technologies (ICTs) are information handling tools that are used to produce, store, and process, distribute and exchange information. These different tools are now able to work together, and

combine to form networked world- which reaches into every corner of the globe (UNDP Evaluation Office, 2011). It is an increasingly powerful tool for participating in global markets, promoting political accountability; improving the delivery of basic services; and enhancing local development opportunities.

According to Ogunsola (2015) ICT “is an electronic based system of information transmission, reception, processing and retrieval, which has drastically changed the way we think, the way we live and the environment in which we live”. It can be used to access global knowledge and communication with other people (Ogunsola, 2015). Students who use ICTs gain deeper understanding of complex topics and concepts and are more likely to recall information and use it to solve problems outside the classroom. In addition, through ICT, students extend and deepen their knowledge, investigation, and inquiry according to their needs and interest when access to information is available on multiple levels. ICT is a revolution involving the use of computers, the internet and other telecommunications technology in all aspects of human endeavour. The author suggested that ICT is a matter of simply sharing and easily accessing data. It is known by people all over the world as the super highway through which creation is transmitted and exchanged.

Ozaji in Jimoh (2017) defined ICT as the handling and processing of information (text, photographs, graphs, instructions, etc.) for use, using electronic and communications devices such as computers, cameras, telephones. They further explain ICT as an electronic or computerized tool, supported by human and interactive resources that can be used for a wide range of teaching, learning and personal use. Therefore, ICT could be interpreted from these definitions as the processing and sharing of information using all kinds of electronic devices, umbrella which includes all technologies for manipulating and communicating information. The Nigerian education sector has developments that suggest some degree of ICT adoption at the Nigerian schools. The Federal Government of Nigeria acknowledges the prominent role of

ICTs in the modern world in the National Education Policy (Federal Republic of Nigeria, 2010), and has integrated ICTs into Nigeria's education system. To realize this objective, the document states that the government will provide basic infrastructure and preparation at primary school.

In recent times, there has been an extraordinary advocacy both nationally and internationally for the use of ICT in instructional and learning process Okoro and Ekpo, (2016). At present, ICT has become central in educational development throughout the globe, therefore, the ability of any society to incorporate ICT and pursue its proper utilization by the citizenry will largely determine the success and growth of that society or otherwise. In recent times, the use of highly sophisticated means of transportation and information and communications technology has reduced the world to a global village; the use of fax machine, satellite and cable T.V as well as the internet has swept away the national cultural boundaries (Abdul-raheem, 2012). The uses of ICT is making major differences in the learning of students and teaching approaches. Schools in the Western World invested a lot for ICT infrastructures over the last 20 years, and students use computers more often and for a much larger range of applications. Several studies reveal that students using ICT facilities mostly show higher learning gains than those who do not use.

ICT in Teaching and Learning

The educational field has been inclined by ICT, which has explicitly influenced instructional process and research. Yusuf, (2015) believe that ICT has the strength to speed up, improve and extend aptitude reforms as it has the capacity to boost teaching by inspiring and engaging learners, and help schools reform by assisting schools in understanding financial and functional practices. Ashley (2016) reiterates that technology helps educators in preparing students for the real world setting and stresses that as our countries turn out to be progressively more technology dependent, it becomes significantly more essential that to be good citizens,

students must figure out how to be well informed about ICT. The utilization of ICT in teaching is a pertinent and practical method for providing education to learners that will enrich them with the required abilities with regards to the world of work. It offers a totally new and advanced learning environment for learners; consequently they acquire various aptitude sets in order to be fruitful and successful. Critical thinking, research and appraisal aptitudes are developing significantly as learners have expanding dimensions of information from a number of sources to deal with. The incorporation of ICT in instructional process is believed as a medium in which a number of methodologies and pedagogical theories might be implemented; however, ICT as a teaching aid is more difficult and multifaceted as it needs positive attitude from the educators (Salehi & Salehi, 2012). ICT in schools gives a chance to instructors to change their practices by furnishing them with enhanced educational content and more powerful educating and learning techniques. ICT enhances the instructional process through the arrangement of interactive instructive materials that increase learner inspiration and encourage easy attainment of fundamental aptitudes.

Utilization of different multimedia tools such as Television, recordings, videos and computers applications provides more challenging and attractive learning atmosphere for learners of any age. Furthermore, it enlarges the flexibility of communicating education with the aim that learners can get information on every occasion and from anyplace. It may affect the methodologies through which the learners are educated and how they learn, as the instructional processes are learner driven and they will therefore be prepared for effective learning and the quality of learning will be improved as well (Moore & Kearsley, 2013).

Another benefit of introducing ICT in schools is that the learners who do not have accessibility at homes may have the opportunity to utilize them in schools. It can be utilized as a learning device to give instructions to enhance the students learning and retention. This technology motivates and conveys dynamism to the classroom and reduces time in learning.

ICT can upgrade the nature of instruction by intensifying learner inspiration and instructor training, which are the establishments of higher order thinking aptitudes. Basically, ICT has changed the learning behavior where it has entered the classrooms to be a part of the teaching and learning process. It is considered to be the most effective medium of mass communication, which has altered the instructional process in many ways. Ali-Haolader and Muhammad, (2013) stated that ICT is an instructing device and its potential for enhancing the quality and principles of students' education is noteworthy.

Many scholars have submitted that the modern technologies use in the classroom is indispensable for providing opportunities for students to learn to operate in an information age. It is obvious that traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the workplaces of today's society. Organisations that do not incorporate the use of modern information and communication technologies in institutions cannot seriously claim to prepare their students for life in the twenty-first century. This argument is corroborated with the perception that by teaching ICT skills in secondary school the students are prepared to face future developments based on proper understanding. Likewise, utilization of ICT in learning provides important guidelines for uses of technology that can help students and teachers develop the competencies needed for the twenty-first century. A lot of people have identify ICTs as agents for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information. Teachers could utilize ICT to facilitate learning, critical thinking and peer discussions. Technology-based teaching may not be essential in all classes but generally it is most facilitative as a result of providing relevant examples and demonstrations; changing the orientation of the classroom; preparing students for employment; increasing flexibility of delivery; increasing access; and satisfying public demands for

efficiency. Therefore, the whole purpose of using ICTs in teaching is to give better value to students, and this better value can as well impact the student's performance.

Availability of ICT facilities in Teaching and Learning

In a school setting, ICT facilities are those computer related facilities which makes the teaching and learning process easier for both the teacher and the students. There are various types of ICT facilities can be used in the teaching learning process in schools. The various ICT facilities used in the teaching and learning process in technical colleges according to Babajide and Bolaji (2013), include; radio, television, computers, overhead projectors, optical fibres, fax machines, CD-Rom, internet, electronic notice board, slides, digital multimedia, video/VCD machine and so on. It appears some of these facilities are not sufficiently provided for teaching and learning process in the technical colleges. This might account for why teachers are not making use of them in their teaching.

According to Ajayi (2008) the use of these facilities involves various methods which include systematized feedback system, computer-based operation/network, video conferencing and audio conferencing; internet/worldwide websites and computer assisted instruction. It should be stressed that the effective use of the various methods of ICT in teaching and learning depends on the availability of these facilities and teachers competences in using them. There are developments in the Nigerian education sector which indicate some level of ICT application in technical colleges teaching and learning processes.

However. It is most common that these facilities are not sufficiently provided for teaching – learning process in many secondary schools in developing countries. Fakeye (2010) in Nigeria points out that, most of schools do not have computers, hence are not connected to the internet. He has also added that, those who have computers do not use them for teaching but solely for administrative purposes. In another study Adomi and Kpangban (2010) indicated that lack of adequate search skills and of access points in the schools were reported as forces

inhibiting the use of internet by secondary school teachers. The study to explore factors that influence classroom use of ICT in Sub-Saharan Africa, was noted that, introducing technology into schools is largely dependent upon the availability and accessibility of ICT resources. It was observed that schools are increasingly being equipped with computers for teaching, learning and administrative purposes; connectivity is improving and students enthusiastic about using computers for learning despite lack of equipment available. They are also noted that, there are two main reasons why teachers use ICT. First, teachers feel that their own use of computers benefits the learners, and second, teachers feel learners benefit from using the computers themselves. The implementing of technological solutions need to ensure that they are context-specific, and adapted to local needs and conditions. It is also imperative that ICT programs are sustainable or effective by ensuring that the technologies embedded within them meet the demands of users in appropriate ways. It is essential that potential users have a sound understanding of how to use new ICTs beneficially, and a cultural view of the relationship between learning and technology (Leach, Ahmed, Makalima, & Power, 2015).

School Location and the Use of ICT

Poor ICT policy/project implementation strategy is a major obstacle in the development of ICT in rural places (Ajayi, 2013). Although efforts have been made to ensure that ICTs are available and used in Nigerian secondary schools, the level of uptake is still low. It's been discovered that insufficient number of computers and peripheral devices inhibit deployment of ICT by teachers in rural places while the number of computer units in urban schools is fairly okay. Electricity failure in rural schools has been a persistent problem militating against ICT application and use in Nigeria. Funding has been reported as one of the factors which influence provision and use of ICT services (Adomi, 2006). The cost of computers is too high for many to afford especially for secondary schools in the rural areas. Monthly Internet rates are exorbitant and the charges for satellite television are unaffordable for most people in Africa. It

is well understood that poverty, among other problems is ravaging the rural dwellers in Africa, a situation in which Nigeria is no exceptions. In rural communities, teaching aids and basic equipment available for educational tasks are minimal (Adeyemi & Olaleye, 2010).

The only way the Nigerian Federal Government's 1988 policy which introduced computer education to the high schools was implemented was the distribution of computers to federal government high schools, mostly situated in cities and towns which were never used for computer education of the students in the villages and small towns. On a general basis, relatively few teachers are knowledgeable about the use of ICT tools to facilitate effective learning. The consequences of this problem are more pronounced in the rural areas worsened by the migration of able bodied people to the cities. Moreover, over the years, the educational sector has suffered neglect from successive governments with emphasis laid on budgetary allocation for recruitment and remunerations of staff at the expense of training and retraining. Teaching as a profession in Nigeria is considered to be for and by poor people, therefore the few ICT professionals that are available prefer to work in companies and industries where they can earn better salaries (Adomi and Kpangban, 2010). Rural areas are not considered as attractive teaching posts hence, teacher are limited and instruction is irregular.

Rural communities have been associated with uneven educational opportunity and development, especially related to change brought about by technological advancements. For rural schools, technology may provide students with options, experiences, and resources which promote attainment of these abilities on par with their urban and suburban peers. Technology can be used to promote critical thinking and support student expression of their own perspectives and voice. Encouraging students to explore identity in a conscious manner of their rural contexts may increase development of identity and voice. Secondary schools in rural areas face unique financial barriers which present large challenges to satisfy their students' most basic needs. Often, poverty is more prevalent in rural areas than urban areas. According

to the 2010 Census, poverty rates were much higher in rural areas (up to 57% of the local population) than in cities (up to 37%). Schools considered to be “completely rural” as opposed to “partly rural” feature higher rates of child poverty and students living with grandparents instead of the parents (Holder, 2016). These factors, put rural schools in a disadvantageous position when it comes to securing funding for ICT facilities. Rural schools face higher turnover rates than urban school in terms of availability of ICT facilities which leaves vacancies often filled by underqualified teachers (Tran et al., 2018). A lack of experienced teachers with the use of technology may hinder future implementation. Also students who lack an experienced and qualified mentor are less likely to use technology in an effective manner in their practices (Redding & Walberg, 2012). Logistical issues are also prevalent related to Internet access. Rural areas may struggle to implement technology due to limitations brought upon by slow bandwidth. In many rural areas, school and home access to internet providers remains spotty, leaving schools to find new ways to deliver learning materials. Slower internet speeds may limit teacher access to instructional materials such as images, videos, and document downloads while utilizing ICT facilities. Furthermore, rural schools may be isolated geographically with limited access to ICT facilities such as computers and other resources. However, the small size of rural schools offers benefits for teachers and students. Teachers in rural schools have reported high levels of autonomy and greater work satisfaction. In addition, teacher/student relationships have been found to be typically closer than those in urban schools.

Teachers Utilization of ICT in teaching and Learning

The idea that teaching and learning can successfully take place through the application of electronic communication facilities between teachers and students is one which had generated, sometimes, hope and dismay and at other times, excitement and fear. Hope that many more learners can be reached at a more convenient pace that had erstwhile been the case, dismay that the infrastructures necessary for deploying an effective ICT platform is lacking in

low-income countries like Nigeria (Olakulehin, 2017). However, the use of information and communication technologies in the education process has been divided into two broad categories: ICTs for Education and ICTs in Education. ICTs for education connote the development of information and communications technology specifically for teaching/learning purposes, while the ICTs in Education involves the adoption of general components of information and communication technologies in the teaching learning process. Generally, the educational relevance of computers and other components of information technology cannot be overemphasized. Reference can be made to the period when skinner applied programmed instructions to teaching machines, through Brunner's experiment with computers in instruction, to the current wave of information transmission and exchange via the worldwide web; we have seen different applications of ICTs in enhancing cognitive development. Thomas and Ranga in UNESCO (2004) in their classification divided the application of computers and other communication technologies in education into three broad categories. These are: Pedagogy, Training and Continuing Education. The pedagogical applicability of the ICTs is concerned essentially with the more effective learning and with the support of the various components of ICTs. Almost all subjects ranging from mathematics (the most structured) to music (the least structured) can be learnt with the help of computers.

Olakulehin (2017) emphasized that pedagogic application of ICTs, involves effective learning with the aid of computers and other information technologies, serving the purpose of learning aids, which plays complementary roles in teaching/learning situations, rather than supplements to the teacher/instructor/facilitator. Computer is regarded as add-on rather than a replacing device. The pedagogic uses of the computer necessitate the development, among teachers as well as students, of skills and attitude related to effective use of information and communications technologies. Aside of literacy, ICTs also facilitates learning to programme, learning in subject areas and learning at home on one's own, and these necessitate the use of

new methods like modeling, simulation, use of data bases, guided discovery, closed-word exploration etc. The implications in terms of changes in the teaching strategy, instructional content, role of the teachers and context of the curricula are obvious as well as inevitable. Pedagogy through the application of information and communications technologies has the advantage of heightening the motivation; helping recall previous learning; providing new instructional stimuli; activating the learner's response; providing systematic and steady feedback; facilitating appropriate practice; sequencing learning appropriately; and providing a viable source of information for enhanced learning. Teachers who use this system of instructional strategy would be able to kindle in the hearts of the learners a desirable attitude towards information technology tools in their entire way of life.

Many different types of technology can be used to support and enhance learning. Everything from video content and digital moviemaking to laptop computing and handheld technologies has been used in classrooms. Similarly, new uses of technology such as pod casting are constantly emerging. Various technologies deliver different kinds of content and serve different purposes in the classroom. Word processing and e-mail promote communication skills; database and spreadsheet programmes promote organizational skills; and modelling software promotes the understanding of Science and Mathematics concepts. It is important to consider how these electronic technologies differ and what characteristics make them important as vehicles for education. Students' use of this ICT tool has expanded to Internet, e-mail, chat, programming, graphics, spreadsheet, online shopping, online literature searching, and other educational materials.

Most students use ICT for general purpose, that is, communication, word processing, entertainment, etc. rather than educational purpose. A range of special equipment are available to help students gain access to the curriculum. Some of these equipment are low technology, but a range of high-technology options are also available that will enable students to be

included fully in lessons and to gain access to the ICT-based resources that are increasingly becoming part of teaching and learning. Technologies available in classrooms today ranges from simple tool-based applications (such as word processors), to online repositories of scientific data. Others are primary historical documents, handheld computers, closed-circuit television channels, and two-way distance learning classrooms. Prensky (2015) asserts that even the cell phones that many now carry with them can be used to learn. According to Lei and Zhao (2006) each technology is likely to play a different role in students learning. Rather than trying to describe the impact of all technologies as if they were the same, researchers need to think about what kind of technologies are being used in the classroom and for what purposes. Two general distinctions could then be observed from the literature. Students can learn from computers where technology are used essentially as tutors and serve to increase student's basic skills and knowledge. Moreover, they can learn with computers where technology is used as tool that can be applied to a variety of goals in the learning process and can serve as a resource to help develop higher order thinking, creativity and research skills. There are there three main approaches to application of ICT taken by teachers according to (UNESCO, 2004). These are:

Integrated approach: planning the use of ICT within the subject to enhance particular concepts and skills and improve students' attainment. This involves a careful and considered review of the curriculum area, selecting the appropriate ICT resource which will contribute to the aims and objectives of the curriculum and scheme of work, and then integrating that use in relevant lessons.

Enhancement approach: planning the use of an ICT resource which will enhance the existing topic through some aspect of the lessons and tasks. For example, using an electronic whiteboard for presenting theory about a topic. In this approach, the teacher plans to complement the lesson with an innovative presentation method to promote class discussion and the visualisation of problems.

Complementary approach: using an ICT resource to empower the pupils' learning, for example by enabling them to improve their class work by taking notes on the computer, or by sending homework by email to the teacher from home, or by word processing their homework. All three approaches can enhance attainment, but the effects may be different. In the integrated approach, students' learning is enhanced because they are confronted with challenges to their existing knowledge and given deeper insights into the subject being studied. The enhancement approach could improve students' learning through presenting knowledge in new ways, promoting debates among students, and encouraging them to formulate their own explanations. The complementary approach draws on the approach that suggests that learning can be enhanced by reducing the mundane and repetitive aspects of tasks such as writing essays and homework by hand, freeing the learner to focus on more challenging and subject-focused tasks. These different types of use require the teacher to have an extensive knowledge of ICT and to be able to fit its use either into their existing pedagogy or to extend their pedagogical knowledge so they can accommodate ICT effectively in their teaching

Constraint to the Application of ICT in Teaching and Learning

The use of ICT in the teaching and learning process has increased the learning activities of students tremendously. However, Teachers being unfriendly in the use of ICT facilities and poor handling of computer in delivery of instruction are serious problem. Such problems could discourage students from studying with computer related equipment. Eze (2011) stated that the potentials of an educational system are directly related to the qualification of the teachers. FGN (2004) further asserted that the poor quality of teachers is a strong reason, enough to ruin any well planned and meaningful educational system, since no system of education can rise above the quality of its teachers. Negative impact caused by lack of knowledge and competence on the selection and utilization of instructional methods with ICT facilities or techniques were reported by Saura and Dairo (2017). They called for choice of instructional methods that will

bring about efficient skill development. Moreover, searching for materials online can be sometimes time- consuming and frustrating. Many learners find it difficult to read papers on a computer screen. Also, it is easy to become bombarded with too much information with little control over the quality and accuracy of the contents. Therefore, a certain technical expertise is required from both teachers and students. More importantly, little is known about how to make use of Internet- based materials or how to design tasks that allow the learners to explore these materials and yield expected learning outcomes. Another major constraint associated with ICT application are high student or computer ratios, computer breakdowns, and slow or inconsistent Internet connectivity. There is also lack of professional development programs for teachers to upgrade their skills on emerging technologies. There appears to be a gap between policy of the Ministry of Education on ICT integration and actual application process (Ebenezer & Francis, 2018).

Archibong and Effiom (2019) observed teacher while using computer faces lack of teaching aids while explaining concepts to the class, limited space on the screen/slides to explain or elaborate a concept. More has to be said in few words that may not be easily comprehended by the students. He also maintained that village students who do not have knowledge of computer were not actively participating during the teaching. It makes it difficult for the teacher to explain concepts and check if the students are learning or not. Teaching and learning with ICT in schools since its initiation has faced a lot of difficulties at the level of infrastructures, curriculum, teachers, content as well as teaching and learning method. According to the authors, some of these difficulties include; integrating and using different ICT tools in a single lesson, absence of access to the necessary technology at the homes of students, and infrastructure. They explained further that insufficient infrastructure is one of the serious problem the teaching and learning of ICT faces by teachers, for example the teaching of some programmes and manipulation of some application software is difficult because of lack of

enough computers for practical lessons and didactic materials which can assist students out of school to learn ICT; also lack of multimedia centers to assist students and teachers to carry out research in schools and low maintenance rate of the few equipment available also prevent teachers/students to develop technological and manipulating skills. Most secondary schools in Nigeria do not have dedicated laboratory for ICT training. Classrooms are equally not equipped for ICT usage. Thus, teacher trainers and trainee teachers do not have access to ICT within their schools. The few available ones are used mostly for administrative purposes (Yusuf, 2005). Comparatively few teachers have the skills to make pedagogical use of ICT for teaching across the curriculum. This could be due to inadequate ICT training skills, lack of time and negative attitude by teachers towards ICT application.

Theoretical Framework

Social Constructivism Theory (Vygotsky, 1968)

The theoretical framework of this study is based on the social constructivism theory, developed by Lev Vygotsky, (1968). This theory was developed from the constructivist theory which was first propounded by Jean Piaget in 1896 also known as the father of the constructivist view learning. Vygotsky propounded the social constructivist theory, He believed that children learn through social interaction and by learning to solve problems with others. He called this process scaffolding. Thanasoulas (2008) stated that learning is a process that occurs through social interactions, and students generate new knowledge by building onto what they already know: The student selects information, constructs hypotheses, and makes decisions, with the aim of integrating new experiences into his existing mental constructs. It is cognitive structures that provide meaning and organization to experiences and allow learners to transcend the boundaries of the information given. For him, learner independence, fostered through encouraging students to discover new principles of their own accord lies at the heart of effective education.

Constructivism is a view of learning based on the belief that knowledge is not a thing that can be simply given by the teacher at the front of the room to students in their desks. Rather, knowledge is constructed by learners through an active, mental process of development; learners are the builders and creators of meaning and knowledge (Gray, 1995). Constructivist Theory advocates student-centred, discovery learning where students use information they already know to acquire more knowledge. He also argues that students learn through participation in project-based learning where they make connections between different ideas and areas of knowledge facilitated by the teacher through coaching rather than using lectures or step-by-step guidance.

In the context of this study the use of ICT by the teachers should help students to construct the knowledge and reflect the information on their academic performance in different subjects. The teacher should know and use the learning potential of students to build up his/her teaching. The theory also holds that learning can happen most effectively when people are active in making tangible objects in the real world. In this sense, the constructionist learning theory is connected with experiential learning. In this study the teachers are supposed to use the relevant teaching and learning resources like ICT resources to achieve academic performance of the students. Seymour (1980) emphasised the way in which knowledge is structured using computers and how the students' own perception of their prior experiences leads to the knowledge structure. In the context of this study, the theory clarified the duty of teachers on checking on the prior knowledge of their students and attitudes they held towards ICT which may influence their performance. Furthermore, it helped investigate the infrastructure of ICT in secondary schools in Langata and how teachers and students are making use of them in teaching and learning process. The Constructionist Theory also focuses on the view of learning as a reconstruction rather than as a transmission of knowledge, hence students should have the experience of manipulative materials because learning is most

effective when part of an activity the learner experiences as constructing a meaningful product. In this study, teachers should use ICT as teaching aids to assess students' ability and understanding which can be reflected on their performance.

According to Papert Seymour (1980), there are three roles for teachers who use the Constructivist Learning Theory in their class: Modelling, Coaching, and Scaffolding to provide sufficient support to promote learning when new concepts are introduced. Hence, the second strength of the theory advocates the learning environment that is democratic; the teacher is not seen as an authority figure as much as a learning guide and the activities are interactive and student centred instead of being lesson-centred. In this research, this helped investigate the teachers' skills on ICT, the influence of ICT on students' performance that can be clearly seen through the ability of students performing tasks on their own without the help of teachers and the relevant and level of ICT infrastructure in secondary schools. The Constructivist theory calls for the teacher to discard standardised curriculum in favour of a more personalized course of study based on what the student already knows. This could lead some students to fall behind others in performing their tasks and this can also affect the performance of the slow learners. The second weakness of the theory is that it can actually lead students to be confused and frustrated because they may not have the ability to form relationships and abstracts between the knowledge they already have and the knowledge they are learning in the classroom.

Empirical Review

Availability of ICT facilities

Ajeigbe, Ogunsakin and Shogbesan (2018) carried out a study titled Assessment of Availability and Utilization of ICT Facilities for Effective Teaching of Computer Studies in Secondary Schools in Osun State, Nigeria. The study determined the level of availability of ICT facilities in secondary schools in Osun State. It also assessed the extent of utilization of ICT facilities in the teaching and constraints to its effective usage. A descriptive survey

research was adopted for the study. The population consisted of secondary schools in Ife Central LGA of Osun State. The sample comprised 60 computer teachers selected from 20 schools (public and private) selected randomly for the study. The instrument used in the study was a titled Questionnaire on availability and Utilization of ICT Facilities in schools (QUAIF) was used to collect data. The QUAIF was used to collect information on the availability and utilization of ICT facilities in the teaching of computer studies. The internal consistency reliability of the instrument was ascertained using Cronbach Alpha with a 0.87 coefficient. The data collected were analyzed using frequency counts, percentage while the independent t-test was further used to explore and confirm the research hypothesis. The findings of the study indicated that the level of availability of ICT facilities used for teaching Computer studies in schools is mostly above average (>50%). It also showed that usage of ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA is “High” as 22 (42.3%) and 9 (17.3%) of the Computer studies teachers have “High” and “Very High” extent of usage respectively. The result further showed that “Reluctant to adapt to the use of ICT facilities in Teaching-learning of computer studies” and “lack of adequate funding to purchase ICT facilities for teaching of Computer studies” are major constraint. Finally, the result showed that there was a significant difference in the extent to which teachers use ICT facilities in the teaching of computer studies in public and private secondary schools ($t_{50} = 2.736$; $p > 0.05$). Based on the findings of the study it was recommended among others that there was the need to provide ICT facilities in schools for effective teaching of computer studies in secondary schools.

Mandefro (2017) carried out an assessment of the availability and utilization of ICT Facility for teaching and learning purpose in selected Secondary schools of Sidama Zone. The purpose of the study was to assess the level of availability and extent of utilization of ICT facilities for teaching and learning purpose in selected secondary schools of Sidama zone.

Descriptive survey research design was used where both quantitative and qualitative methodologies were employed. The study was conducted in 5 selected secondary schools, which encompassed of 241 teachers, 5 principals and 10 deputy principals. The teachers were selected by simple random sampling technique, while all principals and IT subject teachers participated in the interviews were selected by purposive sampling technique. The instrument used to collect data for the study was a closed and open ended questionnaire, semi structured interview, observation and document analysis. The data collected were analyzed by SPSS of computer program to compute frequency counts, percentages and t-test. The findings of the study revealed that the level of availability and extent of utilization of different ICT facilities for teaching purpose in secondary schools of the zone was very low. There were no differences in perception among teachers with different background, subject and grade levels to use ICT facilities for teaching purpose. Major challenges faced by schools which have contributed to limited provision and utilization of ICT facilities were; shortage of computers & absence of internet access, lack of finance, absence of training offered to teachers, lack computer laboratory rooms, absence of school based ICT policy, absence of qualified IT teachers and technical assistant. From the findings of the study it was recommended that, the schools administrative bodies, woreda, zone and regional government should supply necessary ICT facilities to schools. They should also provide technical support and training opportunities for principals, & teachers through workshop, in-service training.

Wang (2017) carried out a study titled Examining the Digital Divide between Rural and Urban Schools: Technology Availability, Teachers' Integration Level and Students' Perception. The study aimed at exploring the gap regarding technology integration between urban and rural schools based on the Will Skill Tool model. This study was guided by three main questions. The research design adopted in this study was a descriptive research design. The population of the study was made up of 275 teachers and 293 students as participants in

southern Taiwan. Half of the participants came from regular urban schools and the other half were from disadvantaged rural schools. T-tests and Chi-Square tests were done to examine differences. The findings of the study showed that there was a significant difference in technology availability between rural and urban schools, including the number of interactive whiteboards, desktops in labs, notebooks, netbooks, and tablet computers. There was also a difference in teacher overall high-tech integration level between rural and urban schools. Urban teachers reached the level of “familiarity and confidence” but rural teachers only stayed at the level of “understanding and application of the process.” Teachers’ experience, purpose and difficulty in technology integration between rural and urban schools were also slightly different. In addition, there was a difference in students’ experience and preference in using technology to learn, especially using interactive whiteboards in learning. Based on the findings of the study it was recommended that the government should ensure that more ICT facilities are provided for school in rural areas and also ensure that these facilities are properly utilized.

Wordu, (2020). Digital Divide among Teachers in Urban and Rural Secondary Schools in Rivers State, Nigeria. The purpose of the study was to find out the extent to which digital divide is influenced by ICT literacy/skills, availability of physical infrastructure and provision of institutional support among teachers in urban and rural schools in Rivers State. The study adopted a survey design and purposive sampling technique was used to collect the data. The questionnaire was used as the instrument in this study to send and collect data from 402 urban school teachers and 319 rural school teachers through the education secretary of the areas. Mean and standard deviation were used to answer the research questions, while z- test was employed to test the hypotheses at 5% alpha level. The findings of the study revealed that the factors; ICT literacy/ skills, availability of physical infrastructure and administrative/social supports provided, all and severally influenced the digital divide among urban and rural school

teachers. These factors contributed to the observed digital divide. Based on these findings some recommendations were proffered.

Functionality of ICT facilities

Olojo, (2021) carried out an Investigation on the Availability and Functionality of ICT Facilities in Ondo State Secondary Schools for Effective Teaching and Learning of Science Subjects. The study evaluated the availability, functionality, and utilization of Information and Communication Technology (ICT) facilities in secondary schools in Ondo State, Nigeria, in order to achieve quality learning outcomes. It also looked on teachers' abilities to use ICT facilities to enhance scientific teaching and learning. The data was collected and analysed using a survey research methodology and a quantitative technique. The sample for the study was chosen using a multistage selection process that included simple random and selective sampling procedures. One hundred and fifty copies of the questionnaire was distributed, with 149 (99.33%) of them being returned. Three research questions and two research hypotheses guided the investigation. The hypotheses were tested using the Pearson Product Moment Correlation statistic at a significance threshold of 0.05 using SPSS version 20, and the research questions were evaluated using frequency counts and percentages. The finding of the study showed that scientific teachers in Ondo State have employed ICT to teach and study science topics, however the facilities in these schools are poor. The survey also discovered that many of these schools' ICT facilities were not being used to their full potential because they were not functional and in poor condition. The study also discovered that science teachers in the investigated area lack the necessary skills to use ICT services. As a result, the researcher recommended that governments at all levels supply ICT facilities to all schools in Ondo State, ensuring that ICT is properly incorporated into all teaching and learning processes. It was also suggested that teachers be encouraged to participate in both pre-service and in-service training on a regular basis. Furthermore, ICT professionals at the state's secondary schools should

develop a maintenance culture so that damaged ICT equipment can be repaired before it becomes completely useless.

Yusuf and Josta (2019) carried out a study titled ICT integration in teaching and learning: perceptions and practices of secondary school students in Tanzania. The study examined perceptions and practices of students regarding the use of Information and Communication Technology (ICT) in teaching and learning at a public secondary school in Ilala district in Tanzania. Specifically, the study focused on assessing secondary school students' ICT related knowledge and skills in Ilala district, finding out how secondary school students in Ilala district use ICT facilities in learning, and gathering opinions and views of secondary school students in Ilala district on ICT integration in teaching and learning. The study used a combination of qualitative and quantitative approaches under a case study design to gather data through focus group discussion (FGD) and questionnaire survey methods from students at the respective school. The study involved twenty five (25) students selected through simple random sampling, who were provided with a questionnaire to respond to, and ten (10) FGD participants purposively selected. The study used thematic and descriptive techniques to process qualitative and quantitative data respectively. The study findings have revealed positive students' perception towards ICT integration in teaching and learning. The study recommended based on its findings, that the secondary school administration should change unfriendly rules, which limit students from using personal ICT facilities in teaching and learning. ICT user education should be provided to public schools in response to the negative mind set on students' use of ICT for learning.

Oviawe and Oshio (2011), carried out a study titled Impact of Information and Communication Technology on Teaching and Learning Ability of Education Students in Universities in Edo State, Nigeria. The study investigated the availability and utilization of Information and Communication Technology (ICT) facilities by Teacher Educators for

effective teaching and learning in Nigerian Universities, using descriptive survey research design. The study population consisted of all (128) Teacher Educators from the two public universities in Edo State of Nigeria. Out of 128 Teacher Educators, 100 were selected using random sampling technique. The instrument used for data collection was a questionnaire. The data collected were analyzed using simple percentage and chi-square. The findings revealed that ICT facilities which serve as a major contributor to effective teaching and learning in teacher education programmes were not available. The study recommends among others strategies for its (ICT) maximum utilization; and that ICT facilities should be made available for effective teaching and learning of teacher education programmes.

Eslamian and Khademi (2017) carried out an investigation on the Effect of Information and Communication Technologies on Academic Achievement of High School Students in Neyriz. The main purpose of the study was to determine the effects of information and communication technology (ICT) on high school students' academic achievement. The main hypothesis were postulated and tested in the study they include: ICTs has no statistically significant effect on students' achievement. The research was conducted in public high schools in the city of Neyriz, Iran. A total of 346 participants were employed for the study. The self-administrated survey questionnaire based on 5-point Likert scale was used to collect the data. The data were analyzed using descriptive and inferential statistics. The results of this study show that information technology communication has a significant effect on student achievement. Based on the results of the study it was recommended that to highlight significant effects of ICT on students' academic performance and issues related to further improvement in teacher education programs. Therefore there should be available ICT facilities given to students in classroom so as to aid their achievement.

Hillary, Adaobi, and Asele (2021) carried out an investigation on Perceived impact of information and communication technology (ICT) on academic performance of students in

senior secondary schools in Rivers State, Nigeria. The study investigated the perceived impact of information and communication technology on academic performance of students in senior secondary schools in Rivers State, Nigeria. Three research questions and three hypotheses guided the study. Descriptive survey research design was adopted. Population of the study was 31,996 year two students of the 268 public senior secondary schools in Rivers State. Sample size was 395 which was determined using Taro Yamene's formula. Sampling technique used was multistage. The instrument used for data collection was a questionnaire. The questionnaire had three sections A, B, and C, each with items of a Likert four points scale type of Very High Extent, High Extent, Low Extent and Very Low Extent. Mean and standard deviation were used to answer the research questions while z-test statistics were used to test the hypotheses at 0.05 level of significance. Results showed that students utilizes ICTs infrastructure for learning in senior secondary schools in Rivers State to a high extent, and ICT has positive impact on students' academic performance in senior secondary schools in Rivers State. It was recommended that schools should be equipped with more ICTs infrastructure to enhance students' access to quality study materials, and that students should utilize e-learning platforms using their android phones to gain knowledge that would improve their performances academically.

Utilization of ICT facilities

Adepoju (2020) investigated on the Perceived Impact of Utilisation of ICT Facilities on Academic Performance of Undergraduates in Universities in Southwest, Nigeria. The study examined the availability, accessibility and utilisation of ICT facilities on academic performance of undergraduates in Universities in Southwest Nigeria. The research design for this work was descriptive of survey type. The population comprised of all the undergraduates in the universities in Southwest Nigeria. 500 undergraduates were sampled from the four universities selected in Southwest Nigeria. The instrument used in data collection was a

Questionnaire. The data collected were analysed using descriptive and inferential statistics such as frequency counts and simple percentages, mean and standard deviation while the hypothesis were tested using Pearson Product Moment Correlation, t-test, chi-square statistics at 0.05 level of significance. The findings of the study showed that the level of availability of ICT resources for academic purpose in southwest, Nigeria was moderate. The finding also shown that the level of students' accessibility to ICT resources for academic purpose was moderate and that there is no significant relationship between the use of ICT and academic performance of university undergraduates in Southwest, Nigeria. Based on the findings of the study it was recommended that adequate fund should be released to the Universities in Southwest, Nigeria in order to acquire the needed ICT facilities for effective teaching and learning.

Eguavoen (2016) investigated on ICT Utilization as Correlates of Academic Performance among Students with Visual Impairment in Lagos State, Nigeria. The study examined the relationship of information and communication technology (ICT) utilisation on academic performance of students with visual impairment in Lagos State. The objectives of the study were to identify ICT tools, level of ICT utilisation as well as their relationship to academic performance among students with visual impairment. The research design adopted in the study was a descriptive research design. The population of the study consisted of 28 students with visual impairment which were selected using purposive sampling technique from two special schools located within Lagos state. A structured questionnaire was used to elicit information from the respondents and data obtained were analysed using descriptive statistics and Pearson product moment correlation statistics. The findings of the study indicated that there was significant relationship between information and communication technology utilisation and academic performance of students with visual impairment in Lagos state ($r = .536$, $P < .05$). Based on the findings of the study, it was recommended that schools should

adopt appropriate ICT tools that will enhance academic performance of students with visual impairment and to include ICT training skills in the curriculum of special schools.

Yushua and Audu (2020) carried out an Investigation into the Utilization of ICT Facilities for Teaching Purposes among University Lecturers: Influence of Gender, Age, Qualification and Years of Teaching Experience. This study investigates lecturers' level of utilization of ICT facilities for teaching purposes in Nigerian universities. A descriptive survey design was adopted for the study. And a questionnaire with a reliability of 0.907 was used for data collection. Data was collected at the Abubakar Tafawa Balewa University, Bauchi from a sample of 433 lecturers out of a population of 928. The findings of the study showed that lecturers have the knowledge of using ICT facilities in teaching, however, they rarely use them in teaching. It was also found that lecturers' age and years of teaching experiences were significant factors influencing the level of ICT utilization in teaching. However, no significant difference was found due to gender and educational qualification. It was recommended among others that there should be regular sensitization programmes on the importance of using ICT facilities as it promotes students' learning and enhance their academic achievement.

Usman, Mikailu and Nasiru (2019) carried out an investigation on the Effectiveness of the Use of ICT Tools on Students Learning in Senior Secondary Schools in Sokoto South Local Government, Sokoto State, Nigeria. This study examined the effect of Information and Communication Technology (ICT) tools on student learning in senior secondary schools in Sokoto South Local Government Area of Sokoto State, Nigeria. The research was conducted using descriptive survey design; the population of the study comprised Senior Secondary Schools in Sokoto South Local Government Area with sample size of 300. Two research questions were posed and two hypotheses formulated and tested using the impact of Information and Communication Technology (ICT) on Students learning questionnaire administered on 60 teachers and 240 students. Data generated for the study were analysed using

t-test and ANOVA. Analysis of the data revealed that Information Communication Technology (ICT) has tremendous impact on student learning in secondary schools. It was recommended that the use of ICT as instructional media bridged the gap between teachers. It was also recommended that that availability, accessibility and user-ability of ICT resources significantly affect students learning in senior secondary schools in Sokoto south and based on this assertion the study recommends that there is need for secondary school to invest more in computers and related technology.

Adeyeba (2016) carried out a study on the Influence of Information and Communication Technology (ICT) on Effective Teaching and Learning of Agricultural Science in Nigerian Secondary Schools. The study investigated ICT on effective teaching and learning of Agricultural Science in Nigerian Secondary Schools. A descriptive research design was adopted and a sample size of 50 students and 10 teachers were randomly selected from 10 public and private secondary schools in Ibadan North-East Local Government Area of Oyo State. Data generated through self-structured questionnaire was analysed using percentage, mean, standard deviation and ANOVA. The findings showed that the application of ICT in teaching and learning of Agricultural science makes the subject simpler, understandable and arouse for students in Nigerian secondary school. Finding also revealed that students do not have adequate access to ICT facilities in public secondary schools. Furthermore, the finding deduced that majority of the private secondary schools were using computer technology effectively. ICT contribute significantly to effective teaching ($\text{Cal.Fstat.}(df=2,8)=37.626 > \text{tab.F-stat}=4.459; p(0.0001)<0.05$) and learning ($\text{Cal.Fstat.}(df=2,9)=23.069 > \text{tab.F-stat}=4.256; p(0.0003)<0.05$) of agricultural science in Nigerian Secondary Schools. The study therefore recommended that more ICT tools should be provided to each secondary schools in Nigeria, motivation and rewarding teachers to use ICT, integrating the ICT strategy into the

secondary school overall teaching strategies, and transformation of positive attitudes towards ICT into efficient widespread practice.

Adequacy of ICT facilities

Ademiluyi (2019) investigated on Adequacy and Utilization of ICT Resources for Teaching Business Subjects in Senior Secondary Schools in Osun State, Nigeria. This study sought to determine the adequacy and utilization of ICT facilities for teaching and learning business subjects in public senior secondary schools in Osun State of Nigeria. Mixed method research design involving the distribution of questionnaires and the conduct of follow-up interviews was used for the study. The population consisted of business educators teaching in public secondary schools. No sample was drawn; the entire population was studied. The finding from the study showed that ICT facilities are barely available, grossly inadequate and largely unutilized in teaching business subjects in Osun State public secondary schools in spite of the much-heralded introduction of "Opon Imo" computer tablets supposedly made available to all senior secondary school students in the state. The study opined that government and other education stakeholders should provide functional ICT facilities and personnel in public secondary schools.

Fatoki, Iornyagh and Ochedikwu (2021) did an Assessment on Availability and Adequacy of Information and Communication Technology (ICT) Facilities in Teaching and Learning of Physics among Technical Schools in Benue State, Nigeria. The study sought to assess the availability and adequacy of ICT facilities in teaching and learning of Physics among Technical Schools in Benue state, Nigeria. The study adopted survey research design. The population of the study consisted of all the Physics teachers and 9684 Part two (II) students. The instrument for data collection was ICT Availability and Adequacy Checklist. The instrument was validated by experts. The data obtained were analyzed using descriptive statistics of mean and standard deviation to answer the research questions asked. The finding

of the study revealed that ICT facilities are available for teaching/learning of Physics among Technical Schools in the study area. The study also revealed that the available ICT facilities were not adequate for teaching and learning of Physics in Benue State. Based on the findings of the study it was recommended that Physics teachers should ensure that the available of ICT gadgets/facilities are utilized in teaching the students.

Obi and Iwuji (2023) carried out a study titled Availability and Utilization of Adequate ICT as Correlates of Effective Learning of Basic Science. The study explores the concept of effective learning, highlighting the importance of metacognitive processes in successful learning with the use of ICT. The study population was made up of 241 students. The study adopted a descriptive research design. The instrument used for the study was an open ended questionnaire which was validated by experts. The finding of the study showed that there was low rate of availability of ICT equipment for effective learning of Basic science. The study also revealed that the available ICT equipment were not adequate. However they were effectively utilized. From the findings of the study it was recommended that schools, through the ministry of education, should seek technical partnership and collaborative funding with international and national organizations to provide and maintain more ICT facilities such as computers (hardware and software consoles), internet facilities, laptops, projectors, interactive boards, and printing accessories in secondary schools, and ensure these facilities are gainfully utilized by setting up monitoring teams to pay unscheduled visits to schools.

Wuraola, Olanrewaju, and Chika (2015) carried out a study on The Impact of Information and Communication Technology on Teaching and Learning of Economics in Secondary Schools, Lagos State, Nigeria. The study investigated the impact of information and communication technology (ICT) as a medium of instruction on teaching and learning of economics in secondary schools in Lagos State, Nigeria. These were with a view to improving the quality of classroom teaching and learning of economics. Descriptive

survey design was adopted for the study. The data for the study were collected with the aid of structured questionnaire, through stratified random sampling, from a sample of 200 economics teachers of senior secondary schools in Lagos State, Nigeria. Pearson product moment correlation coefficient statistic was used to analyse the data. The results revealed that the use of ICT as a medium of instruction in the classroom by economics teachers have significant impact on the learning outcome in economics by the students. Furthermore, ICT as a medium of instruction in teaching and learning of economics significantly facilitates effective teaching of economics secondary schools. Based on the findings of the study it was recommended that Lagos state and indeed the country has to adopt Information and Communication Technology in order to enhance effective classroom teaching and learning of Economics as well as other subjects at all level of secondary education.

Summary of Literature Review

The literature review was discussed under conceptual framework, theoretical framework, and empirical studies of related studies. The conceptual framework was discussed under various sub-headings such as Concept of ICT, ICT in teaching and learning, Availability of ICT facilities for teaching and learning, School location and use of ICT, and Teachers Utilization of ICT facilities in Teaching and Learning.

The theoretical framework of the study was built on the social constructivism theory, by Lev Vygotsky, (1968). The constructivist views learning as a process that occurs through social interactions, and students generate new knowledge by building onto what they already know: The student selects information, constructs hypotheses, and makes decisions, with the aim of integrating new experiences into his existing mental constructs. It is cognitive structures that provide meaning and organization to experiences and allow learners to transcend the boundaries of the information given.

The empirical review of the study was done by examining other studies that are related to the present study. Aspects of focus in the review were the context of the study, method of study, method of data collection and analysis, findings of the study and recommendations. From the reach of studies reviewed in the empirical review it was observed that there have been recent studies carried out to investigate the impact of ICT in teaching and learning in secondary schools yet none amongst the literature directly considers carrying out an investigation on ICT facilities on teaching and learning in secondary school in Oredo Local Government Area of Edo State and this is the gap this study filled.

CHAPTER THREE

METHODOLOGY

This chapter discusses the methods and procedures that was used to obtain and analyze the data for this research work. These have been discussed under the following headings: research design; population of the study; sample and sampling technique; research instrument; validity of the instrument; reliability of instrument; method of data collection and method of data analysis.

Research Design

A descriptive survey design was used for this research work. The descriptive research design is one in which a group of people or items is studied by collecting and analyzing data from only a few people or items considered to be representative of the entire group. (Nworgu (2006). The design is appropriate for this work in helping to examine ICT facilities on teaching and learning process in secondary schools in Oredo Local Government Area of Edo State.

Population of the Study

A total population of one thousand five hundred and twenty three (1523) respondents. This was made up of (1,243) students and (280) teachers drawn from five (5) public junior secondary schools in Oredo Local Government Area represented the population of the study. This population was drawn from all (14) public secondary school in Oredo Local Government Area (Post Primary Education Board, 2022).

Sample and Sampling Techniques

The sample of this study comprises 152 respondents. This was done by selecting 124 students and 28 teachers from public junior secondary school representing 10% of the total population as the sample of the study. This was done using the simple random sampling technique to ensure an equal representation of the variables for this study.

Research Instrument

A structured questionnaire designed by the researcher was used for this study. The questionnaire consists of two sections, A and B. Section A seeks demographic information on the respondents' characteristics. Section B contains items that seek each respondent's view on ICT facilities on teaching and learning process in junior secondary school. It is a five-point Likert scale with response format of VHE= Very High Extent (5); HE = High Extent (4); M= Moderate (3); LE= Low Extent (2) and VLE = Very Low Extent (1).

Validity of the Instrument

The research instrument was validated by the researcher's supervisor and three other experts, one in measurement and Evaluation and two others in guidance and counselling in the Department of Education, Benson Idahosa University, Benin City. Their suggestions was included in the final draft that was approved by the supervisor, having satisfied the requirement of face content validity.

Reliability of the Study

The reliability of the study was determined by using the Cronbach Alpha method. This was done by administering the questionnaire on thirty (30) junior secondary school students that are not part of the sample. Data collected were analysed to yield coefficient value.

Method of Data Collection

Copies of the questionnaire was administered on the respondents. This was done by the researcher and two other trained Research Assistants after obtaining permission from the school authorities. The instrument was administered on respondents and retrieved on the spot after completion to avoid misplacement.

Method of Data Analysis

The data collected through the instrument was analyzed using the Mean ($\bar{X}$) and Standard Deviations (SD) and t-test statistics for the hypothesis. The Standard Deviation was used to determine the extent to which the responses were clustered to or deviated from the mean responses. With regard to the decision rule, any calculated mean equal or greater than 3.00 is regarded as high extent, while any mean lesser than 3.00 is regarded as low extent. The probability value (p) was used in taking the decisions regarding the hypothesis. If the p -value is less than or equal to 0.05 the null hypothesis was rejected, and if otherwise, the null hypothesis was retained.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

This chapter deals with the data presentation and analysis of data. It was discussed under the following sub-headings: data analysis, a summary of findings, and discussion of findings.

Data Analysis

Analysis of Research Questions

Research question one: What is the level of availability of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area?

Table 1: Showing mean responses of respondents on the level of availability of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area

n=152

S/N	Availability of ICT Facilities	$\bar{x}$	SD	Remark
1	Computers	4.35	1.78	VHE
2	Projector	3.10	1.68	HE
3	Fax Machine	0.71	0.32	NA
4	Public Address system	2.93	1.74	LE
5	Software Applications	3.18	1.67	LE
6	Internet Services	4.28	1.15	VHE
7	Television Set	3.24	1.21	LE
8	Flash Drive	4.17	1.20	VHE
9	Scanners and Printers	4.18	2.54	VHE
10	Computer Laboratory	3.45	1.60	LE
Aggregate Mean		3.55	1.48	High

VHE=Very High Extent, HE=High Extent, M=Moderate, LE=Low Extent, VLE=Very Low Extent and NA=Not Available.

Results of the data presented in table 1 showed the mean rating of responses from respondents on the level of availability of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area. The information in the table showed 10 items which had mean ratings that ranged from 0.71 to 4.35 while the corresponding standard deviation values ranged from 0.32 to 2.54. The mean values indicated that majority of the respondents

had high level of availability of ICT facilities such as computers, projector, internet services, flash drive, scanners and printers, however there was low level of availability of public address system, software application, television set, computer laboratory and fax machine. The table also showed an aggregate mean values of 3.55 which implies that there is high level of availability of ICT facilities in teaching and learning in junior secondary schools in Oredo Local Government Area.

Research question Two: What is the level of functionality of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area?

Table 2: Showing mean responses of respondents on the level of functionality of ICT in teaching and learning process in junior secondary schools in Oredo Local Government Area

n=152

S/N	Functionality of ICT Facilities	$\bar{x}$	SD	Remark
1	Computers	2.41	1.17	LE
2	Projector	2.12	1.23	VLE
3	Fax Machine	0.43	0.18	VLE
4	Public Address system	2.26	1.37	LE
5	Software Applications	2.33	1.28	LE
6	Internet Services	2.10	1.10	VLE
7	Television Set	2.59	1.17	LE
8	Flash Drive	3.78	1.24	VHE
9	Scanners and Printers	3.13	1.22	VHE
10	Computer Laboratory	3.56	1.45	VHE
Aggregate Mean		2.47	1.14	Low

VHE=Very High Extent, HE=High Extent, M=Moderate, LE=Low Extent, and VLE=Very Low Extent.

Results of the data presented in table 2 showed the mean rating of responses from respondents on the level of functionality of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area. The information in the table showed 10 items which had mean ratings that ranged from 0.43 to 3.78 while the corresponding standard deviation values ranged from 0.18 to 1.45. The mean values indicated that majority of the respondents had low level of functionality of ICT facilities such as computers, projector, fax

machine, public address system, internet services, and television set flash drive, however there was high level of functionality of ICT facilities such as flash drive, computer laboratory, scanners and Printers. The table also showed an aggregate mean values of all items in the table to be 3.07 which implies that there is low level of functionality of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area.

Research Question Three: What is the level of utilization of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area?

Table 3: Showing mean responses of respondents on the level of utilization of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area

n=152				
S/N	Utilization of ICT Facilities	$\bar{x}$	SD	Remark
1	Computers	3.49	1.22	VHE
2	Projector	3.10	1.29	VHE
3	Fax Machine	0.52	0.21	VLE
4	Public Address system	3.44	1.12	VHE
5	Software Applications	2.98	1.11	LE
6	Internet Services	3.38	1.31	VHE
7	Television Set	2.89	1.36	LE
8	Flash Drive	3.21	1.78	VHE
9	Scanners and Printers	3.43	1.41	VHE
10	Computer Laboratory	3.64	1.27	VHE
Aggregate Mean		3.00	1.20	High

VHE=Very High Extent, HE=High Extent, M=Moderate, LE=Low Extent, and VLE=Very Low Extent.

Results of the data presented in table 3 showed the mean rating of responses from respondents on the level of utilization of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area. The information in the table showed 10 items which had mean ratings that ranged from 0.52 to 3.64 while the corresponding standard deviation values ranged from 0.21 to 1.78. The mean values indicated that majority of the respondents had high level of utilization of ICT facilities such as computers, projector, public address system, internet services, flash drive, computer laboratory, scanners and printers however there

was low level of utilization of ICT facilities such as television set, software application and fax machine. The table also showed an aggregate mean values of all items in the table to be 3.00 which implies that there is high level of utilization of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area.

Research Question Four: What is the level of adequacy of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area?

Table 4: Showing mean responses of respondents on the level of adequacy of ICT in teaching and learning process in junior secondary schools in Oredo Local Government Area

n=152				
S/N	Adequacy of ICT Facilities	$\bar{x}$	SD	Remark
1	Computers	2.31	1.30	LE
2	Projector	2.23	1.14	VLE
3	Fax Machine	0.41	0.19	VLE
4	Public Address system	2.33	1.26	LE
5	Software Applications	2.45	1.21	LE
6	Internet Services	2.48	1.13	VLE
7	Television Set	2.64	1.27	LE
8	Flash Drive	3.56	1.44	VHE
9	Scanners and Printers	3.22	1.13	VHE
10	Computer Laboratory	3.18	1.25	VHE
Aggregate Mean		2.48	1.13	Low

VHE=Very High Extent, HE=High Extent, M=Moderate, LE=Low Extent, and VLE=Very Low Extent.

Results of the data presented in table 4 showed the mean rating of responses from respondents on the level of adequacy of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area. The information in the table showed 10 items which had mean ratings that ranged from 0.41 to 3.64 while the corresponding standard deviation values ranged from 0.19 to 1.44. The mean values indicated that majority of the respondents had low level of adequacy of ICT facilities such as computers, projector, fax machine, public address system, internet services, and television set flash drive, however there was high level of adequacy of ICT facilities such as flash drive, computer laboratory, scanners and Printers.

The table also showed an aggregate mean values of all items in the table to be 3.07 which implies that there is low level of adequacy of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area.

Testing of Hypotheses

The following hypotheses were tested at 0.05 alpha level of significance as shown in tables.

Hypothesis One: There is no significant difference between the mean responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school.

Table 5: Summary showing t-test on the mean difference between responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school.

							N=152
	Variable	$\bar{x}$	SD	df	t-value	Sig. (2-tailed)	Decision
Students	Availability of ICT facilities in teaching and learning	27.36	5.37	149	-2.645	0.009	Reject H_0
Teachers		29.41	6.24				
$F=3.844$ Mean Diff = 2.049							

The information in table 5 showed the mean difference between in the responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school. The table showed that the mean score of students was 27.36 with a standard deviation of 5.37 while that of teachers was 29.41 with a standard deviation of 6.24. The table also showed that the t-value (-2.645) is significant with a p-value of (0.009) which is lower than the alpha level of (0.05). This implies that there is a significant difference in the responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school in Oredo Local Government Areas. Therefore, the null hypothesis which

states that there is no significant difference between the mean responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school was rejected. It is therefore concluded that there is a significant difference between the mean responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school in Oredo Local government Area.

Hypothesis Two: There is no significant difference between the mean responses of students and teachers on the functionality of ICT facilities in teaching and learning process in secondary school.

Table 6: Summary showing t-test on the mean difference between responses of students and teachers on the functionality of ICT facilities in teaching and learning process in secondary school.

N=152

	Variable	$\bar{x}$	SD	df	t-value	Sig. (2-tailed)	Decision
Students	Functionality of ICT facilities in teaching and learning	17.08	4.71	149	-5.971	0.000	Reject H_0
Teachers		20.16	3.68				

$F=7.082$ $Mean\ Diff = 3.082$

The information in table 6 showed the mean difference between in the responses of students and teachers on the functionality of ICT facilities in teaching and learning process in secondary school. The table showed that the mean score of students was 17.08 with a standard deviation of 4.71 while that of teachers was 20.16 with a standard deviation of 3.68. The table also showed that the t-value (-5.971) is significant with a p-value of (0.000) which is lower than the alpha level of (0.05). This implies that there is a significant difference in the responses of students and teachers on the functionality of ICT facilities in teaching and learning process in secondary school in Oredo Local Government Areas. Therefore, the null hypothesis which states that there is no significant difference between the mean responses of students and

teachers on the functionality of ICT facilities in teaching and learning process in secondary school was rejected. It is therefore concluded that there is a significant difference between the mean responses of students and teachers on the functionality of ICT facilities in teaching and learning process in secondary school in Oredo Local government Area.

Hypothesis Three: There is no significant difference between the mean responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school.

Table 7: Summary showing t-test on the mean difference between responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school.

N=152							
	Variable	$\bar{x}$	SD	df	t-value	Sig. (2-tailed)	Decision
Students	Utilization of ICT facilities in teaching and learning	17.68	4.68	149	0.685	0.494	Do not Reject H_0
Teachers		18.04	3.98				
$F=2.962$ Mean Diff = 0.361							

The information in table 7 showed the mean difference between in the responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school. The table showed that the mean score of students was 17.68 with a standard deviation of 4.68 while that of teachers was 18.04 with a standard deviation of 3.98. The table also showed that the t-value (0.685) is not significant with a p-value of (0.494) which is higher than the alpha level of (0.05). This implies that there is no significant difference in the responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school in Oredo Local Government Areas. Therefore, the null hypothesis which states that there is no significant difference between the mean responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school

was accepted. It is therefore concluded that there is no significant difference between the mean responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school in Oredo Local government Area.

Hypothesis Four: There is no significant difference between the mean responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school.

Table 8: Summary showing t-test on the mean difference between responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school.

N=152							
	Variable	$\bar{x}$	SD	df	t-value	Sig. (2-tailed)	Decision
Students	Adequacy of ICT facilities in teaching and learning	25.75	6.73	122	0.536	0.592	Do not Reject H_0
Teachers		26.58	7.47				
$F = 4.177$ Mean Diff = 0.825							

The information in table 8 showed the mean difference between in the responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school. The table showed that the mean score of students was 25.75 with a standard deviation of 6.73 while that of teachers was 26.58 with a standard deviation of 7.47. The table also showed that the t-value (0.536) is not significant with a p-value of (0.592) which is higher than the alpha level of (0.05). This implies that there is no significant difference in the responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school in Oredo Local Government Areas. Therefore, the null hypothesis which states that there is no significant difference between the mean responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school was accepted. It is therefore concluded that there is no significant difference between the mean

responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school in Oredo Local government Area.

Discussion of Findings

The first finding of this study revealed that there was high level of availability of ICT in learning process in junior secondary schools in Oredo Local Government Area. The finding is in agreement with the finding of Ajeigbe, Ogunsakin and Shogbesan (2018) who carried out a study titled Assessment of Availability and Utilization of ICT Facilities for Effective Teaching of Computer Studies in Secondary Schools in Osun State, Nigeria. The study determined the level of availability of ICT facilities in secondary schools in Osun State. It also assessed the extent of utilization of ICT facilities in the teaching and constraints to its effective usage. The findings of the study indicated that the level of availability of ICT facilities used for teaching Computer studies in schools is mostly above average (>50%). It also showed that usage of ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA is “High” as 22 (42.3%) and 9 (17.3%) of the Computer studies teachers have “High” and “Very High” extent of usage respectively. The finding is however in contrast with the finding of Mandefro (2017) who carried out an assessment of the availability and utilization of ICT Facility for teaching and learning purpose in selected Secondary schools of Sidama Zone. The findings of the study revealed that the level of availability and extent of utilization of different ICT facilities for teaching purpose in secondary schools of the zone was very low. There were no differences in perception among teachers with different background, subject and grade levels to use ICT facilities for teaching purpose.

The second finding of the study showed that there was low level of functionality of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area. This finding agrees with the finding of Olojo, (2021) who carried out an

Investigation of the Availability and Functionality of ICT Facilities in Ondo State Secondary Schools for Effective Teaching and Learning of Science Subjects. The study evaluated the availability, functionality, and utilization of Information and Communication Technology (ICT) facilities in secondary schools in Ondo State, Nigeria, in order to achieve quality learning outcomes. It also looked on teachers' abilities to use ICT facilities to enhance scientific teaching and learning. The finding of the study showed that scientific teachers in Ondo State have employed ICT to teach and study science topics, however the facilities in these schools are poor. The study also discovered that many of these schools' ICT facilities were not being used to their full potential because they were not functional and in poor condition. The finding of the study is also in agreement with the finding of Yusuf and Josta (2019) who carried out a study titled ICT integration in teaching and learning: perceptions and practices of secondary school students in Tanzania. The study examined perceptions and practices of students regarding the use of Information and Communication Technology (ICT) in teaching and learning at a public secondary school in Ilala district in Tanzania. The study findings have revealed positive students' perception towards ICT integration in teaching and learning. However there were poor ICT facilities for effective learning process.

The third finding of the study revealed that there was high level of utilization of ICT facilities in teaching and learning in junior secondary school in Oredo Local Government Area. This finding corroborates the finding of Adepoju (2020) who investigated on the Perceived Impact of Utilisation of ICT Facilities on Academic Performance of Undergraduates in Universities in Southwest, Nigeria. The study examined the availability, accessibility and utilisation of ICT facilities on academic performance of undergraduates in Universities in Southwest Nigeria. The findings of the study showed that the level of availability of ICT resources for academic purpose in southwest, Nigeria was moderate. The finding also shown that the level of students' accessibility to ICT resources for academic purpose was moderate

and that there is no significant relationship between the use of ICT and academic performance of university undergraduates in Southwest, Nigeria. Based on the findings of the study it was recommended that adequate fund should be released to the Universities in Southwest, Nigeria in order to acquire the needed ICT facilities for effective teaching and learning. The finding of Eguavoen (2016) who investigated on ICT Utilization as Correlates of Academic Performance among Students with Visual Impairment in Lagos State, Nigeria. The study examined the relationship of information and communication technology (ICT) utilisation on academic performance of students with visual impairment in Lagos State. The findings of the study indicated that there was high level of utilization of ICT among students with visual impairment. The study also showed a significant relationship between information and communication technology utilization and academic performance of students with visual impairment in Lagos state ($r = .536, p < .05$).

The fourth finding of the study showed that there was low level of adequacy of ICT facilities in teaching and learning in junior secondary school in Oredo Local Government Area. This finding is in agreement with the finding of Ademiluyi (2019) who investigated on Adequacy and Utilization of ICT Resources for Teaching Business Subjects in Senior Secondary Schools in Osun State, Nigeria. The study sought to determine the adequacy and utilization of ICT facilities for teaching and learning business subjects in public senior secondary schools in Osun State of Nigeria. The finding from the study showed that ICT facilities are barely available, grossly inadequate and largely unutilized in teaching business subjects in Osun State public secondary schools in spite of the much-heralded introduction of "Opon Imo" computer tablets supposedly made available to all senior secondary school students in the state. The finding also corroborates the finding of Fatoki, Iornyagh and Ochedikwu (2021) who did an Assessment of Availability and Adequacy of Information and Communication Technology (ICT) Facilities in Teaching and Learning of Physics among

Technical Schools in Benue State, Nigeria. The study sought to assess the availability and adequacy of ICT facilities in teaching and learning of Physics among Technical Schools in Benue state, Nigeria. The finding of the study revealed that ICT facilities are available for teaching/learning of Physics among Technical Schools in the study area. The study also revealed that the available ICT facilities were not adequate for teaching and learning of Physics in Benue State.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The study examined ICT facilities on teaching and learning process in junior secondary school in Oredo Local. The study sought to determine the level of availability, functionality, utilization and adequacy of ICT facilities on teaching and learning in junior secondary school in Oredo Local Government Area. Four research questions and their corresponding hypotheses were raised to guide the study. These include:

1. What is the level of availability of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area?
2. What is the level of functionality of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area?
3. What is the level of utilization of ICT facilities in teaching and learning in junior secondary school in Oredo Local Government Area?
4. What is the level of adequacy of ICT facilities in teaching and learning in junior secondary school in Oredo Local Government Area?

Hypotheses includes;

1. There is no significant difference between the mean responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school.
2. There is no significant difference between the mean responses of students and teachers on the functionality of ICT facilities in teaching and learning process in secondary school.
3. There is no significant difference between the mean responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school.

4. There is no significant difference between the mean responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school.

The design of the study was a descriptive research design and the population of the study comprised of 1,243 students and 280 teaching making a total population of 1,523 respondents drawn from public secondary school in Oredo Local Government Area of Edo state. The simple random sampling technique was adopted in selecting 152 participants from the secondary school in Oredo Local Government Area of Edo state representing 10% of the population. The research instrument used for this study was a self-structured questionnaire. The data collected were analysed using the descriptive statistics of mean, standard deviation, and t-test. The results obtained showed that:

1. There was high level of availability of ICT in teaching and learning process in junior secondary schools in Oredo Local Government Area.
2. There was low level of functionality of ICT facilities in teaching and learning process in junior secondary schools in Oredo Local Government Area.
3. There was high level of utilization of ICT facilities in teaching and learning in junior secondary school in Oredo Local Government Area.
4. There was low level of adequacy of ICT facilities in teaching and learning in junior secondary school in Oredo Local Government Area.
5. There was a significant difference between the mean responses of students and teachers on the availability of ICT facilities in teaching and learning process in secondary school.
6. There was a significant difference between the mean responses of students and teachers on the functionality of ICT facilities in teaching and learning process in secondary school.

7. There was no significant difference between the mean responses of students and teachers on the utilization of ICT facilities in teaching and learning process in secondary school.
8. There was no significant difference between the mean responses of students and teachers on the adequacy of ICT facilities in teaching and learning process in secondary school.

Educational Implications

From the findings of the study, it is evident that although there is high level of availability of ICT facilities in secondary, these facilities are either not adequate or nonfunctional. This implies that little or no effort has being made in enhancing the adequacy and functionality of ICT facilities in public secondary schools. This may lead to a setback in students' academic achievement as ICT facilities contributes a vast range of educational resources, offering a myriad of benefits that enhance the educational experience for both students and educators and also exposes them to a variety of perspectives. Furthermore, the interactive nature of ICT tools would revolutionized the teaching process through the utilization of Educational software, multimedia presentations, and virtual simulations to make lessons more dynamic and engaging. Therefore, school administrators and the government must make every effort to make sure that public schools have adequate and functional ICT facilities in order to improve teaching and learning experience.

Conclusion

Based on the findings of the study, it could be concluded that majority of the secondary school in Oredo Local Government are equipped with ICT facilities and these facilities are efficiently utilized by teachers. However there is low level of functionality and adequacy of these facilities. This shows that majority of the available ICT facilities in these secondary school are not in better working conditions even though they are available. This can be linked

to the fact that the majority of principals and school administrators in public secondary schools where these facilities are available do not permit their effective use; instead, they lock them up in the principal's office with the intention of keeping students from abusing them until they wear out and become nonfunctional. Thus, it is of utmost necessity that both the government, school administrator and principals ensure proper integration of these facilities as the importance of ICT facilities in learning and teaching cannot be overstated. Effective utilization of these facilities will lead to an increase in technological advancements and also empower students to become lifelong learners, offering them access to a wealth of information, interactive learning experiences, and global collaborative opportunities.

Recommendations

Based on the findings of the study, the following recommendations are made;

1. Governments, the owner of public secondary schools should fund education adequately thereby making ICT facilities more adequate and functional for effective utilization.
2. School administrators and Educational stakeholder should be sensitized on proper management of ICT facilities in order to enhance their life span and improve educational service delivery through quality teaching and learning.
3. Secondary schools teachers should see the need to integrate ICT facilities into classroom activities and also improved the capacity and level of adoption of ICT facilities in teaching and learning processes.
4. All members of staff should be trained and retrained continuously on the ICT skills acquisition and specialization.
5. Teachers should learn to adopt the use of ICT facilities to support traditional teaching and learning method instead of wholly depending on traditional method in this 21st century.

Suggestion for Further Research

This study is limited to secondary schools in Oredo local government area, therefore further studies should be conducted in other local government area either with or outside Edo state in order to validate the findings from the study. Further studies should also be carried out adopting a different scope and methodology applied in this study in order to determine the effectiveness of ICT facilities in teaching and learning in secondary schools in Nigeria.

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APPENDIX A
INTRODUCTORY LETTER

Department of Education,
Faculty of art and Education,
School of Postgraduate Studies,
Benson Idahosa University,
10th January, 2023.

Dear Respondent,

**A SURVEY OF ICT FACILITIES ON TEACHING AND LEARNING PROCESS IN
JUNIOR SECONDARY SCHOOL IN OREDO LOCAL GOVERNMENT AREA OF
EDO STATE**

I am a Post-graduate student in the above named department. As part of the requirements for the program, I am conducting a survey of ICT facilities in Teaching and Learning Process in Junior Secondary School in Oredo Local Government Area of Edo State. In this regard, you have been duly selected as a member of the sample. I also wish to assure you that your answers will be treated in strict confidence and used for the stated academic purpose only.

Thanks.

Yours faithfully,

Okojie Tina Amos
Researcher

APPENDIX B QUESTIONNAIRE

A SURVEY OF ICT FACILITIES ON TEACHING AND LEARNING PROCESS IN JUNIOR SECONDARY SCHOOL IN OREDO LOCAL GOVERNMENT AREA OF EDO STATE

SECTION A:

Please check (✓) the box below

Instruction: please indicate the extent to which you agree with the following, using a scale of “Very High Extent (VHE), High Extent (HE), Moderate (M) Low Extent (LE), Very Low Extent (VLE) and Not Available (NA)”.

SECTION A:

	AVAILABILITY OF ICT FACILITIES IN TEACHING AND LEARNING	VHE	HE	M	LE	VLE	NA
	To what extent are the following ICT materials Available in your school:						
1	Computers						
2	Projector						
3	Fax Machine						
4	Public Address system						
5	Software Applications						
6	Internet Services						
7	Television Set						
8	Flash Drive						
9	Scanners and Printers						
10	Computer Laboratory						

SECTION B:

Instruction: please indicate the extent to which you agree with the following, using a scale of “Very High Extent (VHE), High Extent (HE), Moderate (M) Low Extent (LE), and Very Low Extent (VLE)

	FUNCTIONALITY OF ICT FACILITIES IN TEACHING AND LEARNING	VHE	HE	M	LE	VLE
	To what extent are the following ICT facilities functional in your school?					
11	Computers					
12	Projector					
13	Fax Machine					
14	Public Address system					
15	Software Applications					

16	Internet Services					
17	Television Set					
18	Flash Drive					
19	Scanners and Printers					
20	Computer Laboratory					
	USABILITY OF ICT FACILITIES IN TEACHING	VHE	HE	M	LE	VLE
	To what extent are the following ICT facilities usable in your school					
21	Computers					
22	Projector					
23	Fax Machine					
24	Public Address system					
25	Software Applications					
26	Internet Services					
27	Television Set					
28	Flash Drive					
29	Scanners and Printers					
30	Computer Laboratory					
	ADEQUACY OF ICT FACILITIES IN TEACHING AND LEARNING	VHE	HE	M	LE	VLE
	To what extent is the adequacy of the following ICT facilities in your school					
31	Computers					
32	Projector					
33	Fax Machine					
34	Public Address system					
35	Software Applications					
36	Internet Services					
37	Television Set					
38	Flash Drive					
39	Scanners and Printers					
40	Computer Laboratory					

APPENDIX B RELIABILITY

RELIABILITY

```

/VARIABLES=Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14
Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 Q27 Q28 Q29
Q30 Q31 Q32 Q33 Q34 Q35 Q36 Q37 Q38 Q39 Q40
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=MEANS VARIANCE COV.

```

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	0.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.821		40

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
112.0333	247.657	83.14031	40