CHAPTER ONE

INTRODUCTION

Background to the Study

Information communication technology (ICT) is a generic term that refers to technologies which are being used for collecting, storing, editing, and passing on information in various forms (Agbetuyi and Oluwatayo, 2012). A personal computer is the best-known example of the use of ICT in education, but the term multimedia is also frequently used. Multimedia can be interpreted as a combination of data carriers, for example video, CDROM, floppy disc and Internet and software in which the possibility for an interactive approach is offered (Tinio, 2019).

The swift progress in Information and Communication Technologies (ICT) has led to changes that are affecting all aspects of our societies and increasingly becoming important in our daily lives. The impact is in the transformation it has brought in support of the human day-to-day activities. This has had an impact on real human cognition and has affected the way we think and, in some respects, altered the way we think (David, 2013)

Education is one sector that has benefited most from these advancements. Now, time and space are no longer barriers to education. In what is now popularly known as distributed learning, people use a wide range of computing and

communications technology to provide learning opportunities beyond the time and place constraints of the traditional classroom. As a matter of fact, the concept of distance learning has been revolutionized to what is now known as e-learning, blended learning or web-based learning programs (Kwacha, 2007). These technologies have made available different training methods that have hitherto been difficult for human instructors to use.

The role of Information and Communication Technologies (ICTs) in the 21st century education system has been described as vital to keeping abreast with rapidly changing technologies. The development of information and communication technology into the Nigerian educational system has come to stay; its importance has been translated into huge potentials in terms of positive outcomes, although investments in ICTs in Nigerian's education system have not yielded much when compared to similar investments made in communication (Ololube *et al.,* 2007). The field of education has certainly been affected by the penetrating influence of ICT worldwide. ICT has made impact on the quality and quantity of teaching, learning and research in the institutions using it (Kwacha, 2007).

According to Ololube, Ubogu and Ossai (2007), the introduction of ICT usage, integration and diffusion has initiated a new age in educational methodologies, thus has radically changed traditional method of information delivery and usage patterns in the domain as well as offering contemporary learning

experience for both instructors and learners. ICT has the potential to accelerate, enrich and deepen skills, motivate and engage students in learning; helps to relate school experiences to work places, helps to create economic viability for tomorrow's workers, contribute to radical changes in school, strengthens teaching, and provides opportunities for connection between the school and the world (Adegbija *et al.,* 2012).

Based on United Nations, the World Commission on Environment and Development (Brundtland commission 1987). Sustainable development as a situation where current generations should meet their needs without compromising the ability of future generations to meet theirs, Also, Hughes and Johnston (2005) recognized that sustainable development is now as much about social equality for current generations as about efficient resource use-and conservation of natural resources for future use. Through information and communication, technology is associated with various challenges, it is no doubt play a significant role in sustainable development especially in rural community Ilorin.

The potentials and role of ICT as a tool for contributing to development is limitless and well established. It is the belief that ICT supports the neural system if complex society and can benefit various fields of development. There are however various economics policies aimed at ensuring a sustainable economic development in Nigeria vis-a- vis the National Economic Empowerment and Development

Strategies (NEEDS), the Structural Adjustment Programme (SAP) of 1986, etc. The current era of communication liberalization and licensing of GSM operators enhance by ICT innovation contributed significantly to sustainable economic development if properly harness and this rest on the premise that it could help to improve education standard and hence boost interpersonal relationship among others. (Taiwo and Adewumi, 2013) The increasing rate of (ICT) development brings about radical changes in the way we work, think, learn and communicate.

Technology is not the cause of anything either positive or negative, but rather should be thought of as a tool that society can use to shape the environment" (Aworanti, 2013). However, the real challenge is how to best utilize these technologies to achieve our educational objectives. In other words, how can we use technology to serve as a catalyst for positive change and as an accompaniment to enrich the teaching and learning situation rather than making a knowledge of it being an end in itself. When used in this sense, research has shown that the benefits of using ICT in education are immeasurable and incomparable to traditional teaching approaches (Agbetuyi and Olwatayo, 2012).

However, there is a large variation even in the developed countries, where there is minimal infrastructural problem, in the way and manner ICT facilities are being utilized for academic purposes. However, the issue is more serious in the developing countries like Nigeria, due to what is popularly known as "digital

divide". To bridge this digital gap, the Nigerian National policy on education has acknowledged the role of ICT to national development, and therefore encouraged the integration of ICT in all levels of education. For the higher education, there is an encouragement boosted by the National University Commission (NUC) policies in support of Universities ICT development policies. In line with this, the NUC as a matter of deliberate policy initiated the move to get Nigerian Universities to embrace ICT through its Nigerian Universities Management of Information System (NUMIS) project (Raymond, 2006). There are presently at least nine ICT for education initiatives at various stages of development being carried out by the education coordinating agencies of government and the ministry of education (Ekpeyong, Ogbeide and Robinson, 2012).

Despite all these efforts and initiatives, there is a lack of consensus on what the actual problem that is slowing down the use of ICT at the academic institutions is, at least for core academic purposes. As a matter of fact, not much is known about the availability and utilization of ICT facilities in the Nigerian Universities, especially for educational purposes.

Statement of the Problem

The use of Information and Communication Technology (ICT) in Nigeria education is lagging expectation and desire. Hence, the need to draw up and design learning process in the future and the role of ICT to support this process, with a focus on teacher training. There is the need for a powerful role of teacher training in the process of educational innovation and the implementation of ICT. The teacher training institutes such as the Colleges of Education and Faculties of Education in the University provide the teachers of the future with the assumption that teachers are the key figures in arranging learning processes.

With all the laudable benefits of ICT to the field of education, the issue of requires further inquiry because of challenges facing the Nigeria educational system, especially government owned tertiary institutions. There has been a sense of disregard by the government to adequately provide ICT facilities for student use, and this has affected the quality of education in tertiary institutions. There have been various positions by authors as regards the quality of ICT in private owned tertiary institutions and government owned. Taiwo and Adewumi (2013) noted that most private owned institutions utilize e-learning facilities, e-admission, e-registration and e-applications; however, the issue of e-learning is lagging especially in public owned. This has been a major problem, especially during the covid-19 pandemic which led to the shutdown of educational institutions across the world. E-learning

had to be utilized to facilitate adequate learning, but many governments owned tertiary institutions, even in Ekiti State lagged due to lack of adequate ICT facilities.

These institutions, expectedly, anticipate new developments and prepare prospective teachers for their future role. The nature and extent to which ICT is being used in education is a result of synergy between 'top-down' and 'bottom up' processes. Institutes such as Colleges of Education where prospective secondary school teachers are being trained must shift their focus from dealing with present education to that of 'future education'. This invariably will make teachers to be prepared and encouraged for the implementation of ICT in secondary education.

Although it is recognized resources will differ from school to school, opportunities to create effective learning and teaching environments makes it necessary for tutors to not only talk about ICT in the classroom but also to model best practice by demonstrating different ways in which technology can enhance the delivery of ICT.

ICT within the context of ICT teaching which expectedly is to be used to create stimulating and motivating leaning environments and provide a breadth of experiences to trainee teachers. Tutors are therefore expected to provide experiences that clearly demonstrate to trainees how they too can use ICT in the delivery of ICT to the pupils they teach. ICT is being used as an integrated component of the learning

environment, preservice teachers developed new understandings, skills, and dispositions regarding technology integration into teaching and learning. A teacher educator is supposed to continue to develop this capacity in his work, to develop more opportunities for this type of learning within his courses, and to help the teachers in training (preservice teachers) continue to build upon what they have learned (Onuka and Amusan, 2008).

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The role of the ICT oriented educator is, therefore, to enable trainee teachers to have access to the latest technologies and to give the preservice teachers experience of ICT in a variety of contexts. The methods that will be used to deliver ICT through ICT by tutors should enable trainee teachers to integrate ICT within their teaching and provide opportunities for them to use the technologies they will encounter in school.

In view of these problems, this research seeks to examine the role of ICT as a change agent for quality education in tertiary institutions in Ekiti State. The study seeks to compare the state of ICT in government and private owned tertiary in Ekiti State.

Purpose of the Study

The purpose of this study is to examine the role of ICT as a change agent for quality education in tertiary institutions in Ekiti State. The objectives are to:

i. Find out the extent at which ICT can improve quality of education in public and private tertiary institutions in Ekiti State.
ii. Ascertain the availability of ICT facilities in improving quality of education in public and private tertiary institution in Ekiti State.
iii. Determine if the personnel possess adequate knowledge of ICT usage to facilitate quality of education in public and private tertiary institutions in Ekiti State.
iv. Discuss the problems related to ICT usage and improvement of quality of education in public and private tertiary institutions in Ekiti State.

Research Questions

The following research questions were raised for this study:

1. What is the level of availability of ICT facilities in public tertiary institutions in Ekiti State?

2. What is the level of availability of ICT facilities in private tertiary institutions in Ekiti State?
3. To what extent are personnel knowledgeable on ICT usage in facilitating quality education in public and private tertiary institutions in Ekiti State?
4. What is the extent of usage of ICT facilities in improving quality of education in public and private tertiary institution in Ekiti State?
5. What are the problems related to ICT usage and improvement of quality of education in public and private tertiary institutions in Ekiti State?

Research Hypotheses

The following null hypotheses were generated for this study:

Ho1: There is no significant difference between the impact of ICT on the quality of education in public and private tertiary institutions in Ekiti State.

Ho2: There is no significant difference on the availability of ICT facilities to improve quality of education between public and private tertiary institutions in Ekiti State.

Ho3: There is no significant difference on the level of personnel knowledge on ICT usage between public and private tertiary institutions in Ekiti State.

Significance of the Study

The study is significant as its findings provides information on the role of ICT as a change agent for quality education in tertiary institutions.

Thus, the result of this study will enable relevant stakeholders in the educational sector to appreciate the benefits of Information Communication Technology in tertiary education in Nigeria, as the study will provide the extent at which ICT can improve quality of education in tertiary institutions.

The results are of good essence to administrators of public and private tertiary institutions in finding out the impact of ICT on the provision of quality education and find out the problems that could militate against effective ICT usage in tertiary institutions.

The study will be of immense benefits to teachers as it will encourage them to develop adequate skills in ICT to deliver quality teaching services to students as this will facilitate learning and thereby improve quality education in public and private tertiary institutions.

The study will create awareness to tertiary students be beneficial to students as they will understand the impact which ICT could have in facilitating adequate and contemporary learning, and thereby facilitating quality education.

Finally, it will provide relevant materials for students and other researchers undertaking similar research. The study will help researchers with more information on the subject matter.

Delimitation of the Study

The study was delimited to students from tertiary institutions in Ekiti State, Nigeria. The independent variable is ICT facilities and would be viewed under four sub-variables which are level of availability of ICT facilities, personnel knowledge on ICT usage, extent of usage of ICT facilities and problems related to ICT usage while the dependent variable is quality of education.

Definition of Terms

Quality Education: provides all learners with capabilities they require to become economically productive and develop sustainable livelihoods

ICT: refers to all communication technologies, including the internet, wireless networks, computers, software, middleware etc that are applicable to quality education.

Utilization: the action of making practical and effective use of ICT for quality education.

Change Agent: is a factor that promotes and supports a new way of doing something better.

Tertiary institution: is the 3rd level or post-secondary school education in Nigeria.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents a review of literature which provides bases for the study under the following subheadings:

- Concept of Information Communication Technology
- ICT and Education in the 21st century
- Nigerian Tertiary Institutions
- Role of ICT in Nigerian Tertiary Institutions
- Extent of Application of ICT in Nigerian Tertiary Institutions
- Obstacles to ICT Usage in Nigeria Tertiary Institutions
    - Inconsistent electricity supply
    - High cost of ICT services
    - Computer Illiteracy among personnel
    - Fear of change
    - Fear of being made redundant
    - Internet and electronic security
    - Lack of adequate facilities

- Empirical Review
    - ICT and Availability of ICT Facilities in Public and Private Tertiary Institutions
    - ICT and Impact of ICT on the Quality of Education
    - ICT and Level of personnel knowledge of ICT usage

Concept of Information Communication Technology (ICT)

Information Communication Technology (ICT) is an umbrella term that includes all technologies for the communication of information. It encompasses any medium to record information and technology for broadcasting information. According to Anikweze and Kanu (2018), ICT, refers to all forms of technologies that are used to store, share, create or transmit and exchange information. This broad definition of ICT includes these technologies such as radio, television, DVD, telephone (both fixed-line and mobile phones), satellite systems, computer and network hardware and software, as well as the equipment and services associated with these technologies, such as video conferencing and electronic mail. However, the selected definition for the current study focuses on the tools utilized by institutions to enhance teaching and learning which consists of software, networks and media for collection, storage, processing, transmission, and presentation of information (voice, data, text, images). It refers to technologies that provide access to information through telecommunications and focuses on communication technologies. These include the internet, wireless networks, mobile phones and other means of communication. (Anikweze and Kanu, 2018).

Information and Communication Technology is a field that has a wide coverage. It extensively deals with communication technology and how it impacts on other fields of human endeavor. It is the fastest growing academic field of study

and a viable source of livelihood. It is the convergence of telephone and computer networking through a single cabling system with ease of data storage, manipulation, management, and retrieval. It is concerned with database management, computer programming, and software development. Web designing, mobile application development, project management, security, networking analysis, media equipment, computer engineering, computer studies, the internet, intranet, internet protocol (IP), system software, application software, signal technology, base station management etc (Anikweze, 2013).

Information technology inclusion in most high school's curriculum is relatively new. However, it has gain prominence as some institutions have made it a compulsory subject. This is because of the understanding that it cut across every facet of human endeavor most especially the education sector. More so, it is the fastest growing industry in the 21st century (Udemy, 2014). It is commonplace to hear e-learning, e-commerce, e-banking etc. It is, therefore, incumbent on education curriculum developers to place ICT as a hub around which other disciplines revolve at least for the fact that it is a platform on which modern learning takes place. Needless to say, that there is a paradigm shift with respect to popular opinion on how knowledge is acquired and dispensed (Udemy, 2014).

Those who were hitherto conservative in this regard in the past seem to be winning the race ahead of those who merely believe and talk about it but with no

evidence of commitment especially in the education sector. It is expected that in no distance future, textbooks may to a high extent be faced out in schools to be replaced with a soft copy accessible globally. This is not some news to the developed World as they are already far ahead. So been ICT compliant is a necessary tool for any meaningful learning in this dispensation.

ICT and Education in the 21st Century

The use of ICT can improve education quality, expand learning opportunities, and make education accessible. When looking at the integration of ICT to support the achievement of educational objectives, it can be found that after almost a decade of using ICT to stimulate development, it is not yet fully integrated in development activities and awareness raising is still required (Boritz, 2000).

The demand for higher education has accelerated worldwide. Between 1999 and 2015, the number of students enrolled in higher education institutions (HEIs) increased by 65 million, with much of the growth being seen in Africa (UNESCO, 2011). In fact, the global demand for higher education is predicted to expand from less than 100 million students in 2000 to over 250 million in 2025 (UNESCO, 2011). The prevalence of information and communication technology (ICT) and the impact it has made in all aspects of our lives are compelling reasons for tertiary institutions to try to capitalize on 21st century tools and technologies to address 21st century

issues and challenges. This has motivated some tertiary institutions in taking the lead to reshape the landscape of their educational systems as well as teaching and learning practices. Over time, the number of universities embracing new technologies to conduct the business of education is expected to soar. However, many tertiary institutions may require guidance and assistance in their change process to minimize their teething problems, reduce costs, utilize appropriate technology and tools, and engage staff with proper knowledge and skills (Haddad, 2002).

It is because of these advantages that Nigerian educational reforms stressed the use of computer technology in schools during the 32nd ministerial session of the National Council on Education meeting. One major policy in enhancing the deployment of information and communication in Nigeria was the Nigerian National Policy on the adoption of ICT in schools (Obanya, 2004). ICT is the emergence of tools of micro-electronics and telecommunications that are used in the automatic acquisition, analysis, storage, retrieval, manipulation, management, control, movement, display, transmission, reception, and interchange of quantitative and qualitative data, Divided ICT in education into three categories: instruments (TV, DVD, computer), instructional (video and multimedia modules) and dissemination (TV broadcast, CD or Web), but emphasized that the choice of technology and the way it is used is partially determined by what is expected in terms of education, learning and teaching objectives (Wolff and Mackinnon, 2002). It emphasized that

the prominent role of information and communication technology could be seen in advancing knowledge and skills necessary for effective functioning in the modern world. ICTs have become key tools with a revolutionary impact on educational inputs and procedures (Asie-Lumumba, 2008). Today, admission exercises into some public educational institutions are conducted online; hence the place of ICTs in education cannot be underestimated.

Nigerian Tertiary Institutions

Tertiary education is the education given after secondary education in colleges of education, polytechnics, monotechnics, universities and other institutions offering correspondence courses (FRN, 2014). According to the document, the goals of tertiary education encompass the development of relevant high-level manpower, development of intellectual capability of individuals and acquisition of physical and intellectual skills. Others are to promote and encourage scholarship as well as community service. Tertiary educational institutions pursue these goals through teaching, research, generation, and dissemination of knowledge which they achieve through a variety of programmes such as certificate, diploma, undergraduate and postgraduate courses (Anikweze, 2000)

Specifically, university education contributes to the production of high-level manpower in diverse professional callings as dictated by national development

requirements. The goals of university education also focus on inculcation of community spirit in the students through projects and action research. The practice of tertiary education in Nigeria so far has not met the expectations of the above goals and objectives due to several factors such as limited infrastructure, poor funding, poor staffing, poor record keeping and socio-political interferences (Ikekeonwu, 2001). These problems have resulted in low quality outputs, lack of international competitiveness and comparability of outputs. This pitiable and unacceptable condition has necessitated the investigation into how the Nigerian university education system can be restructured to meet the expectations of the stakeholders.

The origin of higher education in Nigeria, according to Oni (2007), is traceable to the establishment of Yaba Higher College, YHC (now Yaba College of Technology) in 1932. YHC was heavily criticized for subjecting its candidates to substandard curricula which were meant to produce subordinate officers to the European expatriates who supervised the programmes and their products. Again, each programme was to last six to seven years, about twice the length of time a person needed to graduate from a first-degree university course and, almost twice the length of time used by their European bosses to graduate (Yusuf, 2005). Unfortunately, the diploma certificates awarded were not accredited to any university in Britain. This necessitated the agitation and clamour for a true higher institution of university status and the setting up of the Commissions of Higher

Education in West Africa in 1943. There was the Elliot Commission which was to report on the organization and facilities of the existing centers of higher education in British West Africa and to make recommendations regarding future university development in that area. Then, there came the Asquith Commission which wrote the minority report out of the Elliot Commission Report. Following political independence in 1960, government noted the nonindigenous status of the existing University College, Ibadan (UCI) and started setting up what can be called indigenous higher educational institutions. This started with the establishment of the University of Nigeria at Nsukka in 1960. In 1962, there came the University of Lagos, Akoka, Ahmadu Bello University, Zaria, and the University of Ife (now Obafemi Awolowo University, Ile – Ife) and others (Amadi, 2011). As of 2020, there were 43 federals, 48 state and 79 private universities in Nigeria making 170 universities (Statista, 2021).

So many factors converge as bottlenecks hindering effective and efficient performance of Nigerian universities. These institutions are mostly faced with developmental challenges of the use of Information Communication Technology (ICT) in terms of e-teaching and e-learning processes. Other factors include inadequate budgetary allocation, inconsistent policies, political interference, localization of academics and student admissions, and inadequate infrastructure),

social factors; technological issues, university internal factors and family issues (Amuche, 2010).

Role of ICT in Nigerian Tertiary Institutions

The main purpose of ICT in education means implementing of ICT equipment and tools in teaching and learning process as a media and methodology. The purpose of ICT in education is generally to familiarize students with the use and workings of computers, and related social and ethical issues. ICT has enabled learning through multiple intelligence as it has introduced learning through simulation games; this enables active learning through all senses (Agbetuyi and Olwatayo, 2012) A renowned Professor Ajayi, G. O. of OAU, Ile Ife, Nigeria, shared the multi-purpose application of ICT as he put it "ICT is now regarded as a Utility such as water and electricity and hence has become a major factor in socio-economic development of every nation. ICT now plays a major role in education, learning and research in general, agriculture, health, commerce and even in poverty alleviation by generating or creating new jobs and investment opportunities…" This declaration and indeed other opinions shared by others point to conclusive evidence that ICT has some real and material applications for countries like Nigeria because countries can leverage ICT to totally transform and modernize their economy (Adomi and Kpangban, 2010).

Tinio (2002) noted that ICTs are powerful enabling tools for educational change and reform. When used appropriately, helps expand access to education, strengthen the relevance of education to the workplace, and raise educational quality by creating an active process connected to real life. In Nigerian educational system, ICT has helped to increase access to and improving the relevance and the quality of education (Aduwa and Iyamu, 2005). It greatly facilitates the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution and widen the range of opportunity for business and the poor. This new communication tends to reduce the sense of isolation, and open access to knowledge. This is enhanced because ICT provides access anytime and anywhere by making possible asynchronous learning. Online course materials, for example, can be accessed 24 hours a day, 7 days a week. ICT based educational delivery like educational programming broadcast over radio and television also dispenses with the need for all learners and the instructor to be in one location (Ajayi, 2003). In addition, certain types of ICTs such as teleconferencing technologies enable instructions to be received simultaneously by multiple, geographically dispersed learners (synchronous learning).

Furthermore, ICT has enhanced access to remote learning resources. Teachers and learners no longer must rely solely on physical media housed in libraries (and

available in limited quantities) for their educational needs. With the internet and world wide web, a wealth of learning materials in almost every subject and in variety of media can now be accessed from anywhere at any time of the day by an unlimited number of people. This is particularly significant for many schools in developing countries and developed countries that have limited outdated library resources. ICTs also facilitate access to resource persons all over the world (Atureta, 2011).

In Nigerian educational system, one interesting thing is that ICTs are also a transformational tool that has promoted the shift to a learner – centered environment. It has assisted in improving the quality of education and training by increasing learners' motivation and engagement, facilitating the acquisition of basic skills. The use of ICT tools such as videos, television and multimedia computer software that combine text, sound and colorful moving images is used to provide challenging and authentic content that engages the students to be more involved. More importantly, networked computers with internet connectivity increases learner's motivation as it combines the media richness and interactivity of other ICTs with the opportunity to connect with real people and to participate in real world events (Ogechukwu, Ubogu and Ossai, 2007). The transmission of basic skills and concepts that forms the foundation of higher order thinking skills and creativity in enhanced by ICT through drill and practice. Most of the early users of computers were for computer-based

learning that focused on mastery of skills and content through reinforcement and repetition.

Haddad and Draxier (2002) also indicated that ICT has contributed to effective learning through expanding access, promoting efficiency, and improving the quality of learning and improving management systems. According to Obeng (2004), ICT is now regarded as a utility such as water and electricity and hence has become a major role in education, learning and research in general, agriculture, and health and even in poverty alleviation by generating or creating new jobs and investment opportunities. David (2005) said that students become more aware about how to learn when using ICT because they must interact with computer. ICT has also changed the relationship between students and lecturers and has made it open and intimate.

The idea of sharing knowledge and the capability of using new resources for learning are enhanced by using ICTs. It has also helped undergraduates in better communication and access to information. This is because there is a national policy supporting ICT in schools. It has also helped students' curiosity and motivation that has in turn forced the lecturers to seek more knowledge. The benefits derived from ICT use in education are summarized as active learning, collaborative learning, creative learning, integrative learning, and evaluative learning. By active learning, ICT-enhanced learning mobilizes tools for examination, calculation, and analysis of

information, thus provides platform for students' enquiry, analysis and construction of new information. ICT-supported learning encourages interaction and cooperation among students, teachers, and experts regardless of where they are (Ogechukwu and Oswagu, 2009). Also, ICT – supported learning promotes manipulation of existing information and creation of real – world products rather than regurgitation of received information. It has also enhanced integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach. By evaluative learning, ICT-enhanced learning is student – directed and diagnostic. Unlike static, text or print-based educational technologies, ICTs allow learners to explore and discover rather than mere listening and remembering (Kwasha, 2007).

Extent of Application of ICT in Nigerian Institutions

In our educational institutions, especially higher institutions, the mode of delivery of knowledge and curriculum are not yet ICT enhanced, though with the development of a National Policy on ICT in Education, Nigeria is predictably a step in the right direction toward improvement for the sector (Atureta, 2011). Factors militating against its full implementation are insufficient numbers of computers, epileptic power supply, problems of internet network failure, lack of ICT knowledge/skills, difficulty in integrating ICT to instruction, scheduling computer

time, insufficient peripheral devices, inadequate software, insufficient teaching time, inadequate access, lack of qualified ICT personnel, cost of equipment, management attitude, there seems to be no clear and definite policy and/or curriculum for all levels of the Nigerian education system and lack of technical assistance among others. Okwudishu (2005) indicated that unavailability of some ICT components in schools' hampers teachers' use of it. The various challenges that have been raised have to be addressed for Nigeria to make effective use of ICT to enhance her educational system.

Ogechukwu & Osuagwu (2009) suggest that "ICT is still in the emerging phase in Nigerian educational system". In their article entitled, 'ICT in Education: Achievements so far in Nigeria', which discusses ICT dimensions, its transforming power; status in Nigerian educational institutions, plus limitations to its infusion, both experts say the country is yet to progress beyond the emerging phase of ICT in education which according to them, is only one of four approaches, the goals of ICT in education embraces. These approaches are emerging, applying, infusing, and transforming. Iloanusi & Osuagwu said 90% of Nigeria's educational institutions fall within the emerging phase, 7% in the applying phase and 3% in the infusing and transforming phase, with a few other sectors of the economy having progressed beyond this phase.

During the covid-19 pandemic, the role of ICT has been very pertinent. This pandemic has halted all global human economic activities and threatened with trembled the existence of man engrossed with fear because of the inexplicable high rate of transmissions and deaths recorded across the globe, Nigeria with her poor health system included. Across the nations, educators are responding valiantly to the unprecedented health crisis and its ramifications for students, educators, and communities. Leaders and staff are charting new course for this unique time. Educators' efforts to navigate through this challenging situation and commitment to their students as an inspiration for success of their dreams, Nigeria cannot be exceptional. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it is impossible to carry on with the traditional classrooms management of teaching and learning of face-to-face interactions between teachers (lecturers and students, students, and students), as well as the non-academic staff and management (Ukata, 2020).

As such, the urgent need for the application of ICT towards minimizing traditional classrooms challenges of teaching and learning during covid-19 pandemic in Nigerian tertiary institutions. The three approaches of ICT in education are the (1): form of lesson units or workshops for students and teachers, (2): ICT as a means of information storage and retrieval and a method of doing research, and (3)

ICT as the channel for delivering and receiving instruction (Baydas & Goktas, 2016; Ebrahimi & Ira, 2009). Most private tertiary in Nigeria seem to have adjusted to e-learning, however, it has become a herculean task for public tertiary institution to effectively utilize ICT in e-learning in Nigeria. This has been due to some challenges militating against its effective use.

In addition, Aduwa-Ogiegbean & Iyamu, (2005) noted that many developing countries, especially in Africa, are still low in ICT application and use. Thus, it is believed that to emerge beyond the first stage in the last three which are termed the 'functional approaches', a lot of policy implementation and funding is required. Incredibly though, Nigeria is reputed to have an advantage in this 'begging field', as there are many ICT experts of Nigerian parentage in the diasporas, with no knowledge of any concerted effort being made to genuinely attract their potential to accelerate and sustain ICT development in their fatherland (Enang *et al.,* 2016). Though government efforts have not gone without much notice toward the implementation of ICT in Nigerian educational institutions, the challenges are there from paucity of funds and lack of access, to unsteady power (not all local ISPs can maintain their boosters for 24-hours without fuel which is costly); and high cost of ownership (with the rapid increase in population and demands across the service sectors, there is the growing realization that in this 21st century, the government of

Nigeria alone can no longer fund education and its concerns except by partnering with the private sector).

Obstacles of ICT Usage in Nigerian Tertiary Institutions

The poor usage of ICT in Nigerian tertiary institutions is being affected by several factors. These factors include:

Inconsistent Electricity Supply

In Nigerian institutions, electricity supply is the biggest challenge to its growth and development, and it is a huge setback to the progress of Nigeria, as it is difficult to boast of one full day without electricity interruption. This is a big obstacle to ICT in Nigerian tertiary institutions, and indeed all industries require electricity to operate ICT and electronic gadgets (Azuh & Modebelu, 2014). Another related study posits that proper infrastructure including electricity is fundamental and necessary for using the computers (Aduwa-Ogiegbaen & Iyamu, 2005). The acquisition, deployment and management of information technology resources and services for teaching depend on electricity (Osakwe, 2012).

High Cost of ICT Services

The high cost of internet data and electronic services is basically the element of ICT usage and value and is one of the challenges of installing ICT in Nigerian tertiary institution (Tongia & Subrahmanian, 2006). American government received huge

amount of dollars from most of developing countries for the connection of few megabits per annumdue to the fact that it has a strong hold and control of the ICT (Tongia & Subrahmanian, 2006). This apparently affects the deployment and full utilization of ICT in these developing countries, of which Nigeria is inclusive. In Nigeria, the high cost of internet data and fast tariff set by internet providers, mostly international companies doing business in the country with the main interest of making profits is among the challenges of ICT deployment.

The high cost of getting, replacing, lack of technical support for maintenance of systems, operating, maintaining, installing, and ICT systems, use of unlicensed software, outdated hardware, and software systems, are among obstacles of ICT usage as it relates to the higher institutions lecturers (Balasubramanian et al., 2009).

Computer Illiteracy among Personnel

Many staff in the Nigerian tertiary institutions are not ICT computer literate and it is disappointing in this modern digital era (Idowu, Esere, & Iruloh, (2017). As it is believed that practice makes perfect, most of the lecturers that studied computer application or undergoes computer training but without continuous practice is as good as nothing. According to Anene, Imam, & Odumuh, (2014) illiteracy in this current age of ICT boom is really a great threat to any establishment, let alone of an educational institution whereas almost all human activities depend on ICT. It is

interesting to note that as ICT is more important in tertiary institutions than most organizations. Within Nigerian tertiary institutions, specifically academic staff needs ICT for their numerous tasks which includes students' assessments; exams and records, administration for managerial purposes, design, and development of tertiary institutions website; and etc. (Beda *et al*., 2012). Computers cannot operate without electricity even if all the equipment required is present. Many lecturers in Nigerian tertiary institutions have never use computers in their lives as such they are terribly shy when they are confronted with this new technology and the terminology related with using them (Ajegbelen, 2016).

Fear of Change

The fear of change from old method of doing this, to adopting new techniques is another challenging factor facing the integration and utilization of ICT in Nigerian tertiary institutions, especially public universities. Basically, when modern ways are coming to replace the old method, it appears challenging to any establishment be it tertiary institution or any form of organization. Consequently, maintaining the new method involves huge sum of money, time, planning, disruption, increase in personnel and organizational change (Sherwani et al., 2004). According to Idowu & Esere (2013) the tertiary institutions lecturers get the excuse that they are of older generation and have no time to learn the new generation's ways of doing things as such tend to shy away from modern technology.

Fear of Being Made Redundant

Usually, not only in Nigeria but throughout the world the introduction of technology is associated with reduction in need physical labour, leading to the laying off so many workforces as such people's value in the society or organization will be reduced with the adoption of modern technologies (Anene, Imam, & Odumuh, 2014). Again, Nigerian tertiary institutions are part of such illusive philosophical thinking, and which is the reason why most staff did not embrace it nor are they in support of any discussion about the ICT technologies (Oye, Salleh, & Iahad, 2011). The introduction of ICT is seen as one of the threats to tertiary institutions academic staff, as most of them have been in the service for many years without its requisite knowledge (Azuh & Modebelu, 2014).

The progress and development of any country depends largely on the ability to search for and learn new ideas of doing things better, thus creating more job opportunities and improved standard of living for the benefit of all citizens. According to Alturise & Alojaiman, (2013) the challenge to ICT deployment can be dealt with by creating ICT awareness, which will help to ensure tertiary institutions staff that these technologies are operated by human beings, not meant to take the place of humans and when properly managed helps to lessen human burdens and make the work enjoyable.

Internet and Electronic Security

Nigeria has a bad reputation on the incidence of internet fraud, hacks and usage, which most times discourages most responsible Nigerians from engaging in any electronic transaction or internet activities (Harijith, Ebenezer, & Natarajan, 2014). This is the consequences of youth unemployment which forced most young people into cyber-crimes in order to survive. However, there have been various methods enacted to tackle financial fraud, in line with the Economic and Financial Crimes Commission (EFCC) being the main institution in charge of curtailing this menace. There have been various measures such as enactment of the Bank verification number (BVN), and the use of National Identity Number (NIN). This is intended, especially the BVN, to tackle financial fraud and creation of new job opportunities to overcome youth unemployment. However, the disgrace of past experience is still in the blood stream of most responsible citizens and foreigners, of which the image of our tertiary institutions equally is not spared. This is a huge challenge to the deployment of ICT in Nigerian tertiary institutions more specifically State universities and Colleges of Education has damaging reputation on Nigeria in the sight of other countries of the world. Consequently, people will just keep you at arm's length or being cautious in any business dealings with a Nigerian due to the wrong notion that Nigerians are fraudsters which is not true of all Nigerians.

According to Caperna (2010) some of those dubious elements engaging in fraudulent internet activities and electronic transactions is a challenge to ICT deployment in most Nigerian tertiary institutions particularly Colleges of Education. In order to guarantee security and instill confidence in people, the government is now making effort in collaboration with the Nigerian Universities Commission to ensure adequate security of universities electronic activities and internet dealings through a federal ICT center to be sited in each university in the Country. As stated by Robinson et al., (2010) this could be done by equipping each University ICT center with all it takes to battle cyber

Lack of Adequate facilities

Another challenging factor militating against the deployment of ICT in Nigerian Tertiary institutions is lack of facilities (Alturise & Alojaiman, 2013). This is evident when compared to other tertiary institutions of the developed world, that Nigeria tertiary institutions lack basic office gadgets and technologies like computer, printers, faxing machines, photocopiers, binders, and projectors not even to talk of internet in most of the institutions. Even when these gadget and technologies are available, they are not operational at full capacity. The dearth of these rudimentary facilities contributes to the challenges facing placement of ICT in Nigeria tertiary institutions, as no institutions can function effectively in this modern trend of ICT without these facilities. Apart from educational training, these office gadgets and

technologies are so much vital and needed to equip students for future office and corporate activities after their studies. In a study conducted by Adeosun, (2010) showed that lack of ICT resources and poor infrastructure prevents full implementation of ICT in Nigerian tertiary institutions.

Empirical Review

ICT and Availability of ICT Facilities in Public and Private Tertiary Institutions

Ojo and Oluwolola (2019) examined the availability and utilization of information and communication technology facilities in carrying out administrative tasks in tertiary schools cannot be undermined. The researcher adopted descriptive survey design for the study. The population for the study comprised of public and privacy polytechnics within Ilorin metropolis. The sample consists of 100 staff, that is, 5 personnel from each school. A research instrument titled "Availability and Utilization of ICT Facilities Questionnaire" (AUICTFQ) was employed to elicit relevant data from the respondents. This study was guided by two research questions. The research questions raised for the study were answered with descriptive statistics of percentages while t-test was used as statistical tool for testing the two hypotheses at 0.05 level of significance. The study found that a significant difference exists in the availability and utilization of ICT facilities for administrative purposes in the

two independent groups i.e. private and public tertiary institutions in Ilorin metropolis. The findings showed further that ICT facilities like computer, laptop, photocopying machine, and printer are highly available in the public and private polytechnics while some ICT facilities such as projector and scanner are less available in public and private polytechnics in Ilorin metropolis of Kwara State. In line with what was found out in this study, it was recommended that school administrators, the government, and relevant stakeholders should seek to the provision of these facilities as this will help to improve the administrative functions of tertiary institutions.

Nja and Idiege (2019) investigated access and application to Information and Communication Technology (ICT) infrastructure and academic performance of public and private tertiary chemistry students in thermochemistry in Calabar, Cross River State, Nigeria. Three research questions were raised, and one hypothesis was formulated. Do teachers in both public and private schools have access to ICT Infrastructure? Do personnel in both public and private schools have the necessary ICT skills? and to what extent do academic performance of chemistry students differ with regards to school type. The null hypothesis stated that, there is no significant difference in the academic performance of Chemistry students with regards to school type. The study undertook an expo-faco design and had a sample size of 20 teachers from 2 randomly selected tertiary institutions in Cross River. 60 chemistry students

constituted the sample for the research. Two instruments were used for the study: Information and Communication Technology Teachers' Questionnaire (ICTTQ) and Chemistry Achievement Test (CAT). Finding showed that chemistry lecturers in public school had more ICT skills than the teachers in private schools. Private school teachers in turn had opportunity for more access to computer without internet services. Both public and private school teachers had a high percentage of ICT skills in communication in social networks there was a low percentage (%) in use of spreadsheet to plot graphs. Both public and private schools do not have phone for teachers' use in the teaching of Chemistry.

The null hypothesis seeking for no significant difference in academic performance of Chemistry students with regard to school type was retained. Recommendations were made among which was, regular training of teachers in ICT usage and ICT infrastructure supplied to schools should be taken seriously.

Achor and Ityobee (2020) assessed information and communication technology facilities for teaching and learning in Benue State. The study also examined the public and private schools across location. Three research questions guided the study. The study adopted survey research design. Population of the study was 69,798 respondents (personnel and students), in Benue State University, and the University of Mkar, Nigeria. The instrument for data collection was ICT Availability Check List (ICTAC). The data generated were analyzed using simple percentages,

mean and standard deviation to answer the research questions. It was found that Information and Communication Technology (ICT) facilities were not adequate in Benue State. Information and Communication Technology facilities were more available in the public school than private tertiary institution in Benue State. Government, school administrators and NGOs should endeavor to provide ICT facilities in public and private institutions through allocation, provision and aids in order to meet up with the contemporary demands of this computer age among others.

ICT and Impact of ICT on the Quality of Education

Information and Communication Technologies (ICTs) is increasingly becoming indispensable part of the education system. Saxena (2017) examined the impact of ICT in improving the quality of education. Adopting the qualitative research method, it was shown that ICT has changed many aspects of the lives. These changes have caused educational institutions, administrators, teachers to rethink their roles, teaching and vision for the future. ICT has opened new challenges for quality education. ICTs help expand access to education, motivate to learn, facilitates the acquisition of basic skills, and can transform the learning environment thus help improving the quality of education. ICT has tremendous potential for education. ICT enables a teacher to reach out widely efficiently and effectively. It helps teachers and institutions to be more modern and dynamic. Eventually, the use of ICT will enhance the learning experiences of students. It also helps for building a successful

career, in a technology savvy world. The study recommended that ICT should be encouraged and adequately utilized to impact the quality of education in the country.

Madhuri (2013) in his journal examined the impact of ICT on education. He noted that Information and communication technologies ICT are extremely influencing every discipline under the sun including Education. It is affecting every aspect of education from teaching-learning to assessment and evaluation. It improves the effectiveness of education. It aids literacy movements. It enhances scope of education by facilitating mobile learning and inclusive education. It facilitates research and scholarly communication. Impact of ICT and its potential for the education field is manifold. It positively affects all the stakeholders of the education field. The current paper, using qualitative method of research, discussed the same along with the various challenges posed by ICT. The challenges include economic issues, educational and technical factors. Appropriate content, Design and workability of ICT also play a crucial role in adoption of ICT in the education field. The paper delineates in brief the challenges and probable solutions.

Damkor, Irinyang, and Haruna (2015) examined the role of ICT in educational system in Nigeria. ICT in Education is an instrument par excellence that a nation can rely upon to bring about self-reliance. The study observed that Nigeria still experiences a lag in its implementation, and this continue to widen the digital and knowledge divides and the access to ICT facilities is a major challenge facing most

African countries. The study concludes that despite the roles ICT can play in education, schools in Nigeria have yet to extensively adopt them for teaching and learning. Efforts geared towards integration of ICT into the school system have not had much impact. Problems such as poor policy, project implementation strategies and poor information infrastructure militate against these efforts. The study recommends that efforts should be made by government to post and provide teachers skilled in ICT to each school to impart ICT skills to the student and should stabilize electricity supply in Nigeria.

ICT and Level of personnel knowledge of ICT usage

Maisamari, Adikwu, Ogwuche and Ikwoche (2018) assessed lecturers' competency in the use of ICT. Five research questions and two hypotheses tested at 0.05 alpha level guided the study. Using purposive sampling techniques, 140 respondents were sampled from the total population of tertiary teachers in Benue metropolis. The population consist of the entire teachers of both public and private schools in Abia State. A modified instrument tagged "Teachers ICT use survey" (TICTUS) adapted from ICT survey indicator for teachers and staff by UNESCO (2004) was used to gather data for the study. The instrument was trial tested on 30 respondents from Benue State which was outside the study area. The reliability coefficient was determined using Cronbach Alpha (α). The overall reliability index was 0.82.

Statistically weighted mean and simple percentage (%) were used for answering research questions, t-test was used for testing the null hypotheses and Special Package for Social Sciences (SPSS) version 21 was the software used to run the analysis. The findings of the study revealed among others that there is poor personnel knowledge and use of ICT to facilitate teaching and learning. Recommendations were made based on results found.

Summary

This chapter presented the review of literature and theoretical framework for this study. Under the literature review, various concepts were discussed such as concept of ICT, ICT and education in the 21st century, Nigerian tertiary institutions; role of ICT in Nigerian tertiary institutions; extent of application of ICT, and obstacles of ICT usage in Nigerian tertiary institutions. It can be said, based on these reviews, that none of the works have carried out a comparative study of the role and utilization of ICT in public and private tertiary institutions in Nigeria, using the extent of ICT application, availability of ICT facilities, adequacy of personnel knowledge and problems related to ICT usage in public and private tertiary institutions in Ekiti State.

CHAPTER THREE

RESEARCH METHOD

This chapter focuses on the research design, population, sample and sampling techniques, research instrument, validity of the instrument, reliability of the instrument, administration of the instrument and data analysis.

Research Design

The descriptive research design of the survey type was used in this study. This is systematic empirical inquiry in which the research does not have control of independent variable because their manifestation has already occurred. The survey research design was carried out using primary data collected through the use of questionnaire which was not manipulated. Through this design, the use of questionnaire was considered appropriate as a method of retrieving information for data classification from respondents in public and private tertiary institutions in Ekiti State.

Population

The population consisted of all students in public (Federal University, Oye-Ekiti) and private tertiary institution (Afe Bablola University) in Ekiti State. Respondents were drawn across these institutions and information was solicited on the role of ICT as a change agent for quality education. According to information

acquired from the ICT Unit of Afe Babalola University (2020), the total population of students amounts to 8,500 (ICT Unit ABU, 2020) while the Federal University, Oye-Ekiti amounts to 23,500 (FUOYE, 2020).

Sample and Sampling Techniques

This sample for this study consisted of 395 students selected from Faculties of University of Federal University, Oye-Ekiti and Afe Babalola University out of the population, across both universities. The sample was determined by applying the simple random sampling technique. 198 students were randomly selected across Federal University, Oye-Ekiti while 197 students were randomly selected across all the Faculties of Afe Babalola University. In all, 395 students from Federal University, Oye-Ekiti and Afe Babalola University were selected in Ekiti State, Nigeria.

Research Instrument

The research instrument for this study was the questionnaire, which is a primary source of data. The questionnaires, titled "Role of Information Communication Technology in Tertiary Institutions Questionnaire" (RICTTIQ), were used to elicit information from respondents on the role of ICT as an agent of change in tertiary institutions in Ekiti State.

The instrument consisted of five sections namely: Sections A, B, C, D, and E.

Section A of the instrument sought for comprehensive bio-data of the respondents among which are gender, age, religion, university and level. *Section B* consisted of 5 items which sought information on the extent to which ICT can improve quality of education in public and private tertiary institutions, while *Section C* consisted of 5 items on the availability of ICT facilities in public and private tertiary institutions. *Section D* consisted of 5 items on the adequacy of knowledge and utilization of ICT tools usage by personnel, while *Section E* consisted of 6 items on the problems related to ICT usage and improvement of quality of education in public and private tertiary institutions.

Section B and E of the instrument were prepared using the Likert type scale which was used as follows: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1 while multi-choice options (always utilized, occasionally utilized and not utilized) were used for options C and D respectively.

Validity of the Instrument

The validity methods used were face and content validity. The items in the Questionnaire were presented to specialists in the Faculty of Education, such as experts in the field of Guidance and counselling as well as researcher's supervisor. To ensure the face validity of the instrument, the experts helped to determine the face value of the rightness of the instrument. The instrument was validated by the researcher's supervisor. After drawing the questions, it was presented to him, who

after making corrections and suggestions, the researcher incorporated them into the final draft for administration. This was done to ensure the instrument has content validity and serves the purpose for which it was drawn.

Reliability of the Instrument

The reliability of the instrument was trial tested with 39 respondents (10% of the sample) in Ekiti State University which was outside the area of study. To ascertain the internal consistency of the instrument Cronbach Alpha technique was used to compute the reliability index to ensure the questionnaire is considered appropriate for use.

Administration of the Instrument

The researcher visited and sought for permission from each of the institutions sampled in the study. The aim of the study was explicitly made known to the respondents to solicit for their co-operation. The researcher therefore administered the instrument with the help of two research assistants from each of the institutions sampled in the study and this eased retrieval of the instrument.

Data Analysis

The data collected from the instrument were analyzed using the simple percentage method. The simple percentage method was used to analyze the personal

data of respondents and the research questions. The Chi-square test statistics was used to test the hypothesis.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the results and discussion of findings. Presentation of data was carried out in two stages. The first stage involved the descriptive aspect involving frequency counts, percentages and mean while the second stage covered the testing of hypotheses.

Table 1: Response Rate

Response Rate	Frequency (N)	Percentage (%)
Numbers of Questionnaire Returned	351	88.9
Number of Questionnaires Not Returned	44	11.1
Total	395	100.0

Source: *Field Survey 2021*

Table 1 above details the response rate of the respondents. Out of the 395 questionnaires administered, 351 were returned as shown above. The return rate of 88.9% is satisfactory and deemed large enough to make valid conclusion. This is in line with the submission of Dane (2000), as stated before that "a survey research project may include as few as 100 participants or as many as 250 million".

Percentage Distribution of the Respondents by Socio-Demographic Characteristics

Table 4.3 shows the percentage distribution of the respondents that were interviewed by socio-demographic information.

Table 2: Percentage Distribution of the Respondents by Gender

Gender	Frequency (N)	Percentage (%)
Male	184	52.4
Female	167	47.6
Total	351	100.0

Source: *Field survey, 2021*

Table 2 above shows the percentage distribution of the respondents by gender. Table 1 depicts that 52.4% of the respondents were male while 47.6% of the respondents were female. This shows that the study constitutes of more male respondents the female ones.

Table 3: Percentage Distribution of the Respondents by Age

Age	Frequency (N)	Percentage (%)
Under 21	94	26.8
21 – 30	177	50.4
31 – 40	63	18
40 and above	17	4.8
Total	351	100.0

Source: *Field Survey, 2021*

Table 3 above shows the percentage distribution of the respondents by age. Table 3 depicts that 26.8% of the respondents were under 21 years of age, 50.4% of

the respondents were between age 21-30, 18% of the respondents were within 31-40 years of age, and 4.8% of them were 40 years or more.

Table 4: Percentage Distribution of the Respondents by Religion

Religion	**Frequency (N)**	**Percentage (%)**
Christianity	225	64.1
Islam	120	34.2
Traditionalist	6	1.7
Others, please specify	0	0
Total	351	100.0

Source: *Field survey, 2021*

Table 4 above shows the percentage distribution of the respondents by religion. From the table, 64.1% of the respondents were Christians, 34.2% of the respondents were muslims, while 1.7% of the respondents were traditionalists. However, none of the respondents were unemployed.

Table 5: University

University	**Frequency (N)**	**Percentage (%)**
Federal university, Oye-Ekiti	145	41.3
Afe Babalola University	206	58.7
Total	351	100.0

Source: *Field Survey 2021*

Table 5 above depicts those 145 respondents representing 41.3% of the respondents were students at Federal University, Oye-Ekiti while 58.7% of the respondents were from Afe Babalola University. This shows that most of the respondents were from Afe Babalola University, however, it was a close margin.

Table 6: Year/level

level	**Frequency (N)**	**Percentage (%)**
100 level	0	0
200 level	45	12.8
300 level	33	9.4
400 level	200	57
500 level	73	20.8
Total	351	100.0

Source: *Field Survey 2021*

Table 6 above depicts those 45 respondents representing 12.8% of the respondents were 200 level students, 33 representing 9.4% of the respondents were 300 level students, 57% of the respondents were 400 level students while 73 (20.8%) were 500 level students. This shows that a majority of the respondents were students who have been familiar with the school environment for a period of time and can provide accurate answers to the questionnaire.

Analysis of Research Questions

Table 7: Extent to which ICT can improve quality of education in public and private tertiary institutions

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%
ICT in education improves engagement and knowledge retention	231	65.8%	107	30.5%	8	2.3%	5	1.4%
The use of ICT can expand learning opportunities and make education accessible	204	58.1%	105	29.9%	29	8.3%	13	3.7%
ICT can raise the quality of education at a great extent	142	40.5%	177	50.4%	19	5.4%	13	3.7%
ICT has contributed to effective learning through expanding access, promoting efficiency and improving the quality of learning and improving management systems	111	31.7%	163	46.4%	68	19.4%	9	2.5%
ICT has helped students' curiosity and motivation that has in turn forced lecturers to seek more knowledge	178	50.7%	114	32.4%	45	12.8%	14	4.1%

Source: *Field survey, 2021*

Table 7 above showed the extent to which ICT can improve quality of education in public and private tertiary institutions. 67.8% of the respondents strongly agreed that ICT in education improves engagement and knowledge retention, 30.5% of the respondents agreed, 2.3% of the respondents disagreed and 1.4% of the respondents strongly disagreed.

The table also showed that 58.1% of the respondents strongly agreed that the use of ICT can expand learning opportunities and make education accessible, 29.9% of the respondents agreed, 8.3% of them disagreed and 3.7% of the respondents strongly disagreed. This implies that ICT can expand learning opportunities and make education accessible.

The table also depicted that 40.5% of the respondents strongly agreed that ICT can raise the quality of education at a great extent, 50.4% of the respondents agreed, 5.4% of the respondents disagreed and 3.7% of the respondents strongly disagreed. This implies that ICT can raise the quality of education at a great extent.

The table further shows that 31.7% of the respondents strongly agreed that ICT has contributed to effective learning through expanding access, promoting efficiency and improving the quality of learning and improving management

systems, 46.4% of the respondents agreed, 19.4% of the respondents disagreed and 2.5% of the respondents strongly disagreed.

The table equally showed that 50.7% of the respondents strongly agreed that ICT has helped students' curiosity and motivation that has in turn forced lecturers to seek more knowledge, 32.4% of the respondents agreed, 12.8% of the respondents disagreed and 4.1% of the respondents strongly disagreed that. This implies that ICT has enhanced students' curiosity and motivation.

Table 8: Availability of ICT facilities in Public and Private Tertiary Institutions

ICT Tools	Available	Not available	Available but insufficient
Projector	206	-	145
Podcast	0	351	0
Internet access	351	0	0
Desktop computers	200	-	151
Laptops/Tabs	13	231	107
Social media output channel	42	309	0
USB flash drives	177	32	142
Google docs	77	111	163
Google spreadsheets	173	59	114
Plagiarism software	351	0	0
Slideshare	351	0	0
Google drive (online storage)	145	-	206
TesTeach (For digital lessons)	0	351	0
Showbie (app for assignments and feedback for classroom)	0	351	0
Infogram (app for visualisation of data in charts and infographics, interactive, responsive and engaging)	0	351	0

Source: Field Survey, 2021

From the above table, 206 respondents noted that projectors are available in the school, while 145 respondents noted that projectors are available but insufficient. Most of the respondents that had projectors available and sufficient were from the private tertiary institutions. The table also showed that none of the schools had podcasts available.

From the table above, all respondents (351) had internet access readily available and sufficient in their institutions; however, 200 of the respondents indicated that they had desktop computers available, while 151 noted that desktop computers were available but insufficient.

The table pointed out that 13 respondents had laptops available and sufficient in their institutions, 231 of the respondents noted that laptops/tabs were not available while 107 noted that it was available but not sufficient. Also, 42 of the respondents indicated that social media output channels were available and sufficient while 309 respondents noted that it was not available in their institution.

The table also showed that 177 of the respondents noted that USB flash drives were available and sufficient, 142 of the respondents noted that USB flash drives were available but insufficient, while 32 respondents indicated that the ICT tool was not available. Also, 77 of the respondents noted that Google docs were available and sufficient in their institution, 163 respondents indicated that Google docs were available but insufficient while 111 indicated that it was not available. From the table, 173 respondents indicated that google spreadsheets were available, 59 noted that it was not available, while 114 noted that google spreadsheets were available but insufficient.

From the above table, all the respondents noted that plagiarism software and slideshare were available and sufficient in their tertiary institutions. From the table, 145 respondents, mostly from the public university, noted that they have google drive (online storage) readily available and sufficient, while 206 respondents, mostly from the private institution, noted that google drive was available but not sufficient.

All the respondents from both institutions noted that TesTeach (for digital lessons), Showbie (app for assignments and feedback for classroom) and infogram (app for visualization of data in charts and infographics, interactive, responsive and engaging) were not available in their institutions.

Table 9a: Adequacy of Knowledge and Utilization of ICT tools usage by personnel

ICT Tools	Always Utilized	Utilized Occasionally	Not utilized
Projector	206	145	0
Podcast	0	0	351
Internet access	351	0	0
Desktop computers	200	151	0
Laptops/Tabs	13	107	231
Social media output channel	42	309	0
USB flash drives	177	32	142
Google docs	77	163	111
Google spreadsheets	173	114	59
Plagiarism software	351	0	0
Slideshare	351	0	0
Google drive (online storage)	145	206	-
TesTeach (For digital lessons)	0	0	351
Showbie (app for assignments and feedback for classroom)	0	0	351
Infogram (app for visualization of data in charts and infographics, interactive, responsive, and engaging)	0	0	351

Source: *Field survey, 2021*

From the above table, 206 respondents noted that projectors are always utilized in the school, while 145 respondents noted that projectors are utilized occasionally. The table also showed that none of the schools utilized podcasts.

From the table above, all respondents (351) indicated that they always utilized the internet access in their institutions; however, 200 of the respondents indicated that

they always utilized desktop computers while 151 respondents occasionally utilized computers in their institutions. The table pointed out that 13 respondents noted that they always utilized laptops and tabs, 107 utilized occasionally while 231 noted that laptops and tabs were not utilized in their institutions. Also, 42 of the respondents indicated that social media output channels were always utilized while 309 respondents noted that it was occasionally utilized in their institution.

The table also showed that 177 of the respondents noted that USB flash drives were always utilized, 32 of the respondents noted that USB flash drives were occasionally utilized while 142 respondents noted that USB flash drives are not utilized.

Also, 77 of the respondents noted that Google docs were always utilized in their institution, 163 respondents indicated that Google docs were occasionally utilized while 111 indicated that it was not utilized. From the table, 173 respondents indicated that google spreadsheets were always utilized, 59 noted that it was not utilized, while 114 noted that google spreadsheets were utilized occasionally.

From the above table, all the respondents noted that plagiarism software and slideshare were always utilized in their tertiary institutions. From the table, 145 respondents, mostly from the public university, noted that they always utilized

google drive (online storage), while 206 respondents, mostly from the private institution, noted that google drive was occasionally utilized.

All the respondents from both institutions noted that TesTeach (for digital lessons), Showbie (app for assignments and feedback for classroom) and infogram (app for visualization of data in charts and infographics, interactive, responsive, and engaging) were not utilized in their institutions.

In conclusion, it can be said that most of the ICT tools were occasionally utilized in the public and private institution, however, respondents from the private institution utilized more ICT tools than the respondents in public tertiary institutions. This shows that the adequacy of knowledge and utilization of ICT tools usage by personnel in private institution is higher than that of public tertiary institutions in Ekiti State.

Table 9b: Adequacy of Knowledge and Utilization of ICT tools usage by personnel

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%
School lecturers provide some ICT tools for their own use during teaching	5	1.4%	10	2.8%	172	49.1%	164	46.7%
Students are allowed to use the available ICT tools during teaching and learning	183	52.1%	149	42.5%	7	2.0%	12	3.4%
Lecturers teach, communicate online, uploads and browse materials from school website or from a learning platform for students	116	33.1%	101	28.8%	82	23.3%	52	14.8%
Professional development has been carried out on basic word processing, spreadsheets, presentations, and databases	15	4.3%	19	5.4%	259	73.8%	69	19.1%

Source: *Field survey, 2021*

In line with the previous table, 1.4% of the respondents strongly agreed that school lecturers provide some ICT tools for their own use during teaching, 2.8% of the respondents agreed, 49.1% of the respondents disagreed and 46.7% of the respondents strongly disagreed. This implies that school lecturers do not provide some ICT tools for their own use during teaching.

Also, from the table above, 52.1% of the respondents strongly agreed that students are allowed to use the available ICT tools during teaching and learning, 42.5% of the respondents agreed, 2% disagreed while 3.4% of the respondents strongly disagreed. This shows that students are allowed to use the available ICT tools during teaching and learning.

The table showed that 33.1% of the respondents strongly agreed that lecturers teach, communicate online, uploads and browse materials from school website or from a learning platform for students, 28.8% of the respondents agreed, 23.3% of the respondents disagreed and 14.8% of the respondents strongly disagreed. This implies that lecturers teach, communicate online, uploads and browse materials from school website or from a learning platform for students.

The table also depicts that 4.3% of the respondents strongly agreed that professional development have been carried out on basic word processing, spreadsheets, presentations, and databases, 5.4% agreed, 73.8% of the respondents disagreed and 19.1% of the respondents strongly disagreed. This implies that professional development has not been carried out on basic word processing, spreadsheets, presentations, and databases.

Table 10: Problems related to ICT Usage and improvement of quality of education in public and private tertiary institutions

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%
Inconsistent electricity supply	286	84.1%	32	9.4%	9	2.6%	13	3.8%
High cost of ICT services	102	30.0%	95	27.9%	109	32.1%	34	10.0%
Computer illiteracy among personnel	117	34.4%	88	25.8%	101	29.7%	34	10.0%
Fear of being made redundant among school personnel	196	55.8%	123	35.1%	14	4.0%	18	5.1%
Interned fraud, hacks, and electronic insecurity has militated against the use of ICT in this institution	129	36.8%	180	51.3%	24	6.8%	18	5.1%
There is lack of adequate ICT facilities in this school	105	29.9%	98	27.9%	112	31.9%	36	10.3%

Source: *Field survey, 2020*

Table 10 provided for the problems related to ICT usage and improvement of quality of education in public and private tertiary institutions. 84.1% of the respondents strongly agreed that inconsistent electric supply affects ICT usage in their institution, 9.4% agreed, 2.6% disagreed while 3.8% strongly disagreed.

Also, from the table above, 30% of the respondents strongly agreed that the high cost of ICT services militates against ICT usage, 27.9% agreed, 32.1% disagreed while 10.0% strongly disagreed with the assertion.

The table also found that that 34.4% strongly agreed that computer illiteracy among personnel have militated against ICT usage and improvement of quality education in public and private tertiary institutions, 25.8% agreed, 29.7% disagreed while 10.0% strongly disagreed. This implies that computer illiteracy among personnel militates against the use of ICT in tertiary institutions.

Also, 55.8% of the respondents strongly agreed that fear of being made redundant among school personnel have affected the use of ICT and quality of education in public and private tertiary institutions, 35.1% agreed, 4% disagreed while 5.1% strongly disagreed with the above assertion.

36.8% of the respondents strongly agreed that internet fraud, hacks, and electronic insecurity has militated against the use of ICT in this institution have discouraged the use of ICT and improvement of quality of education in public and private institutions, 51.3% agreed, 6.8% disagreed while 5.1% of the respondents disagreed. This implies that internet fraud, hacks, and electronic insecurity has militated against the use of ICT in the institutions.

The table also showed that 29.9% of the respondents indicated that lack of adequate ICT facilities has militated against ICT usage and improvement of quality of education, 27.9% agreed, 31.9% disagreed while 10.3% strongly disagreed. This shows that lack of adequate ICT facilities in the school have militated against its use.

Test of Hypotheses

Hypothesis One: There is no significant difference on the impact of ICT on the quality of education in public and private tertiary institutions in Ekiti State

Table 7: Chi-square analysis on the difference between the impact of ICT on the quality of education in public and private tertiary institutions in Ekiti State

	Value	Df	Asymp. Sig (2-sided	Decision
Pearson Chi-square	59.25	4		
Likelihood ratio	23.51	4	0.07	No Significant
liner	2.06	1		
N of valid cases	351			

Table 7 shows the test of significance on the difference between the opinion of students in public and private tertiary institutions regarding the impact of ICT on the quality of education. The results give the chi-square coefficient as 59.25 and he asymptomatic significance as 0.07. Since the asymptomatic probability of significance is greater than the significance level of 0.05, we accept the null

hypothesis that there is no significant difference on the impact of ICT on the quality of education in public and private tertiary institutions in Ekiti State.

Hypothesis Two: There is no significant difference on the availability of ICT facilities to improve quality of education in public and private tertiary institutions in Ekiti State

Table 8: Chi-square analysis showing difference on the availability of ICT facilities to improve quality of education in public and private tertiary institutions in Ekiti State

	Value	Df	Asymp. Sig (2-sided	Decision
Pearson Chi-square	13.88	4		
Likelihood ratio	12.14	4	0.08	Not Significant
Liner	1.80	1		
N of valid cases	351			

Table 8 shows the test of significance on the difference between the responses of students in public and private secondary schools regarding the availability of ICT facilities to improve quality of education in public and private tertiary institutions in Ekiti State. The result gives the chi-square coefficient 13.88 and the asymptomatic significance of 0.08.

Since the asymptomatic probability of significance is greater than the significance level of 0.05, we accept the null hypothesis that there is no significant difference on

the availability of ICT facilities to improve quality of education in public and private tertiary institutions in Ekiti State

Hypothesis Three: There is no significant difference on the level of personnel knowledge on ICT usage in public and private tertiary institutions in Ekiti State

Table 9: Chi-square analysis on the difference on the level of personnel knowledge on ICT usage in public and private tertiary institutions in Ekiti State

	Value	Df	Asymp. Sig (2-sided	Decision
Pearson Chi-square	8.13	4		
Likelihood ratio	14.04	4	0.07	Not Significant
Liner	2.54	1		
N of valid cases	351			

Table 8 shows the test of significance on the difference on the level of personnel knowledge on ICT usage in public and private tertiary institutions in Ekiti State. The result gives the chi-square coefficient 8.13 and the asymptomatic significance of 0.07.

Since the asymptomatic probability of significance is greater than the significance level of 0.05, we accept the null hypothesis that there is no significant difference on the level of personnel knowledge on ICT usage in public and private tertiary institutions in Ekiti State.

Discussion

The study revealed that information communication technology improves the quality of education in public and private tertiary institutions at a high extent. The study revealed that ICT improves engagement and knowledge retention, expands learning opportunities, raises the quality of education, and promotes efficiency and improves educational management systems. This is in line with the findings of Baishaki and Kamal (2016) who noted that ICT has helped students' curiosity and motivation that has in turn forced lecturers to seek more knowledge. The knowledge of ICT also required aids teachers, students and parents to come together. In the same vein, Mikre (2014) found that ICT benefits education systems to provide quality education in alignment with constructivism, which is a contemporary paradigm of learning.

The study also discovered that ICT facilities are moderately available in public and private institutions. It was shown that only projectors, internet access, desktop computers, USB flash drives, google spreadsheets, plagiarism software, and slideshares in public and private universities in Ekiti State. There are similar findings in Soneye (2017) who found that ICT resources are available at a low extent for quality education in Universities in South-West Nigeria. This is also in line with the findings of Akuegwu, Ntukidem and Ntudikem (2015), as they found that the availability of ICT facilities for quality instructional service in universities in Akwa

Ibom and Cross River State, Nigeria is significantly low except internet-connected desktop computers and institutional cybercafes.

From the results, the study found that personnel possess inadequate knowledge of ICT usage to facilitate quality education in public and private tertiary institutions in Ekiti State. The study found despite the fact that some ICT tools are utilized in both institutions, other tools are not adequately utilized due to low levels of ICT knowledge. The study showed that there has been low professional development carried out on basic word processing, spreadsheets, presentations and databases. This is in consonance with the findings of Akuegwu *et al.,* (2011) who found that lecturers' utilization of ICT facilities is significant low as lecturers from federal universities in Akwa Ibom and Cross River States. It was shown that lecturers from federal universities utilized more ICT facilities more than state universities.

The study further exposed that inconsistent electricity supply, high cost of ICT services, computer illiteracy among some personnel, fear of being made redundant among school personnel, internet fraud, hacks and electronic insecurity, and lack of adequate ICT facilities in the institutions. This is in line with the findings of Muhammad, Tumburku, Muza and Gwandu (2019) as they discovered that poor knowledge on ICT facilities, internet fraud and hacks, and fear of being made redundant have militated against the full utilization of ICT facilities in tertiary institutions in Kebbi State.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary, conclusion, and recommendations of the findings in the study. It also highlights limitation ad suggestions for further study.

Summary

This study examined the role of ICT as a change agent for quality education in tertiary institutions in Ekiti State. The study specifically examined the extent at which ICT can improve quality of education in public and private tertiary institutions in Ekiti State; the availability of ICT facilities in improving quality of education in public and private tertiary institution in Ekiti State; the personnel knowledge of ICT usage in facilitating the quality of education in public and private tertiary institutions; and the problems related to ICT usage and improvement of quality of education in public and private tertiary institutions in Ekiti State.

The descriptive research design of the survey type was used in this study. The population consisted of all public and private tertiary students in Ekiti State. The sample of the study consisted of 395 students selected across various departments in Federal University Oye-Ekiti and Afe Babalola University, Ekiti State. the ample was selected through simple random sampling procedure. A self-designed constructed questionnaire tagged “Role of Information Communication

Technology in Tertiary Institutions Questionnaire (RICTTIQ)" was used to collect relevant data for the study. The instrument consisted of five sections namely: Sections A, B, C, D, and E. *Section A* of the instrument sought for comprehensive bio-data of the respondents among which are gender, age, religion, university and level. *Section B* consisted of 5 items which sought information on the extent to which ICT can improve quality of education in public and private tertiary institutions, while *Section C* consisted of 5 items on the availability of ICT facilities in public and private tertiary institutions. *Section D* consisted of 5 items on the adequacy of knowledge and utilization of ICT tools usage by personnel, while *Section E* consisted of 6 items on the problems related to ICT usage and improvement of quality of education in public and private tertiary institutions. Section B and E of the instrument were prepared using the Likert type scale which was used as follows: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) while multi-choice options (always utilized, occasionally utilized and not utilized) were used for options C and D respectively.

The instrument was validated by the project supervisor. After drawing the questions, it was presented to him, who after making corrections and suggestions, the researcher incorporated them into the final draft for administration. The reliability of the instrument was estimated through trial testing. The instrument was administered on 39 respondents from Ekiti State University which was outside the

area of the study, using the Cronbach Alpha technique to compute the reliability index. A co-efficient of 0.722 was obtained which was considered statistically high to make the instrument reliable.

The data collected from the questionnaire was analysed using the simple percentage method and Pearson Chi-square test statistics. The simple percentage method was used to analyze the personal data of respondents and the research questions. The Chi-square test statistics was used to test the hypotheses.

The findings revealed the following:

1. Information communication technology improves the quality of education in public and private tertiary institutions at a high extent.

2. ICT facilities are available in public and private institutions at a moderate extent.

3. Personnel possess inadequate knowledge of ICT usage to facilitate quality education in public and private tertiary institutions in Ekiti State.

4. Inconsistent electricity supply, high cost of ICT services, computer illiteracy among some personnel, fear of being made redundant among school personnel, internet fraud, hacks and electronic insecurity, and lack of adequate ICT facilities in the institutions are the problems related to ICT

usage and improvement of quality of education in public and private tertiary institutions in Ekiti State

5. There was no significant difference on the impact of ICT on the quality of education in public and private tertiary institutions in Ekiti State

6. There was no significant difference on the availability of ICT facilities to improve quality of education in public and private tertiary institutions in Ekiti State

7. There was no significant difference on the level of personnel knowledge on ICT usage in public and private tertiary institutions in Ekiti State

Conclusion

It can be concluded from the findings of this study that information communication technologies are influencing all aspects of life including education. They are promoting changes in working conditions, handling and exchanging of information, teaching-learning approaches and so on. One area in which the impact of ICT is significant, is education. This research has shown that ICTs are making major differences in the teaching approaches and the ways students are learning. ICT-enhanced learning environment facilitates active, collaborative, creative, integrative, and evaluative learning as an advantage over the traditional method.

In addition, the major promises of ICTs use in education systems in public and private institutions focus on training teachers in new skills and introducing innovative pedagogies into the classrooms, investing on ICT infrastructure for schools and creating networks among educational institutes, improving overall standard of education by reducing the gap in quality of education between schools in urban and rural areas, initiation of smart school with objectives to foster self-paced, self-assessed, and self-directed learning through the applications of ICTs, and developing ICT policy for education and training. This research has shown that ICT tools have not been adequately utilized in public and private tertiary institutions, as there have been some poor underutilization and low availability of some important ICT tools. This has been facilitated by some challenges as identified in the course of the study. The removal of wastages and management of tasks cannot be effectively achieved without the effective application of Information and Communication Technology in all areas of tertiary institution's operations. Thus, there is a need to adequately ensure improvement in the development of ICT in Nigeria public and private tertiary institutions, as by the acknowledged principle that unless the ICT initiative is packaged, networked and marketed on the global stage, the objective of bridging the digital divide and effectively acting as a change agent for quality education, may not be fully achieved.

Recommendations

The following recommendation were made based on the findings of this study.

1. Public and private tertiary institutions should be equipped with modern and advanced technological infrastructure to enable the effective use of appropriate technologies required for teaching and learning programmes.
2. Government at all levels should make available adequate funds and resources particularly for the funding and sustenance of public tertiary institutions.
3. Information and Communication Technology foundation classes should be taught compulsory at both primary and secondary levels in order to integrate ICT into the curriculum of schools. This will make ICT to become part of students.
4. Free and compulsory Information and Communication Technology services should form part of students' general studies programmes in tertiary institutions to provide students with functional and practical knowledge of the computer, internet and other associated areas of ICT.
5. Public and private tertiary institutions should be provided with appropriate and adequate infrastructural and instructional ICT facilities to promote effective and efficient ICT training.
6. In view of the uniqueness of ICT, staff of tertiary institutions should measure up to the demands of new technology for knowledge creation. The benefits of

ICT should be effectively harnessed in teaching and learning, for personal use in research, publication of articles, communication within and outside the institutions as well as social interaction.

7. Students in tertiary institutions should be encouraged on the use of internet to solve their academic problems.
8. Government should ensure the constant supply of power to tertiary institutions to aid the use of ICT associated facilities.

Limitations to the Study

The time taken to carry out the research was lengthened due to the measures adopted in line with coronavirus pandemic policies in tertiary institutions. Also, the researcher was unable to retrieve 44 copies of the questionnaire, some of which were not properly filled, thus cancelled. That notwithstanding, the cooperation received from some of the students helped the research to get a good result. However, this delay did not impact the result of the findings.

Contributions to Knowledge

The outcome of this study would provide information on:

1. The extent at which ICT has improved the quality of education in public and private tertiary institutions

2. The availability of ICT facilities in improving quality of education in public and private tertiary institutions
3. Personnel knowledge on ICT usage in facilitating quality education in public and private tertiary institutions
4. The problems related ICT usage and improvement of quality of education in public and private tertiary institutions
5. The difference in the impact of ICT on quality of education, availability of ICT facilities, and level of personnel knowledge on ICT usage, in public and private tertiary institutions in Ekiti State

Suggestions for Further Studies

The researcher suggest that similar research could be carried out in the Northern Region of the Federation. Similar studies can also be carried out using dependent variable such as academic performance of students, that is the role of ICT in improving the academic performance of students in tertiary institutions in Northern Nigeria.

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APPENDIX I

EKITI STATE UNIVERSITY, ADO-EKITI

FACULTY OF EDUCATION

DEPARTMENT OF SOCIAL SCIENECE EDUCATION

ROLE OF ICT AS A CHANGE AGENT FOR QUALITY EDUCATION IN TERTIARY INSTITUTIONS IN EKITI STATE QUESTIONNAIRE

Dear Respondents,

Request to Complete a Questionnaire

I am a final year student, carrying out a research work on "The Role of Information Communication Technology (ICT) as a Change Agent for Quality Education in Tertiary Institutions in Ekiti State"

Kindly spare a few minutes to fill this questionnaire. Your response will be treated as confidential, and year honest opinion will be appreciated.

Thank you for your response,

Researcher

SECTION A - Demographic Data of the Respondents

Instruction: fill in the answers and please tick (√) the options that are appropriate

1. Gender: Female [ ] Male[ ]
2. Age: Under 21 [ ] 21- 30 [ ] 31 – 40 [ ] 40 and above[ ]
3. Religion: Christianity [ ] Islam [ ] Traditionalist [ ] others, please specify**……....**
4. University Federal University, Oye-Ekiti [ ]; Afe Babalola University [ ]
5. Year/level: 100 level [ ] 200 level [ ] 300level [ ] 400 level [ ] 500 level [ ]

SECTION B

Extent to which ICT can improve quality of education in public and private tertiary institutions

SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree

S/N		SA	A	D	SD
1	ICT in education improves engagement and knowledge retention				
2.	The use of ICT can expand learning opportunities and make education accessible				
3.	ICT can raise the quality of education at a great extent				
4.	ICT has contributed to effective learning through expanding access, promoting efficiency and improving the quality of learning and improving management systems				
5	ICT has helped students' curiosity and motivation that has in turn forced lecturers to seek more knowledge				

SECTION C

Availability of ICT Facilities in Public and Private Tertiary Institutions

Please select the available ICT tool in your institution

S/N	**ICT Tools**	Available	Not available	Available but insufficient
1	Projector			
2	Podcast			
3	Internet access			
4	Desktop computers			
5	Laptops/Tabs			
6	Social media output channel			
7	USB flash drives			
8	Google docs			
9	Google spreadsheets			
10	Plagiarism software			
11	Slideshare			
12	Google drive (online storage)			
13	TesTeach (For digital lessons)			
14	Showbie (app for assignments and feedback for classroom)			
15	Infogram (app for visualisation of data in charts and infographics, interactive, responsive and engaging)			

SECTION D

Adequacy of Knowledge and utilization of ICT tools usage by personnel

Please select the tool that is being utilized by personnel during teaching

S/N	**ICT Tools**	Always Utilized	Utilized Occasionally	Not utilized
1	Projector			
2	Podcast			
3	Internet access			
4	Desktop computers			
5	Laptops/Tabs			
6	Social media output channel			
7	USB flash drives			
8	Google docs			
9	Google spreadsheets			
10	Plagiarism software			
11	Slideshare			
12	Google drive (online storage)			
13	TesTeach (For digital lessons)			
14	Showbie (app for assignments and feedback for classroom)			
15	Infogram (app for visualisation of data in charts and infographics, interactive, responsive, and engaging)			
16	Others:			

SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree

S/N		**SA**	**A**	**D**	**SD**
17.	Students are allowed to use the available ICT tools during teaching and learning				
18.	School lecturers provide some ICT tools for their own use during teaching				
19.	Professional development has been carried out on basic word processing, spreadsheets, presentations, and database				
20.	Lecturers teach, communicate online, upload and browse materials from school website or from a learning platform for students				

SECTION E

Problems related to ICT Usage and improvement of quality of education in public and private tertiary institutions

SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree

S/N		SA	A	D	SD
1.	Inconsistent electricity supply				
2.	High cost of ICT services				
3.	Computer illiteracy among personnel				
4.	Fear of being made redundant among school personnel				
5	Interned fraud, hacks, and electronic insecurity has militated against the use of ICT in this institution				
6.	There is lack of adequate ICT facilities in this school				

APPENDIX II

LIST OF TERTIARY INSTITUTIONS STUDIED IN EKITI STATE

1. Federal University Oye-Ekiti
2. Afe-Babalola University, Ado-Ekiti