THE ROLE OF ICT AS A CHANGE AGENT FOR QUALITY EDUCATION IN TERTIARY INSTITUTION IN NIGERIA

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CERTIFICATION

We undersigned, certify that this research work was carried out by **NWAGBO OGBONNAYA ISRAEL** in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City in partial fulfillment of the requirement of the award of the Bachelor of Science (ed) degree in Computer science.

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DEDICATION

This research work is dedicated to the God almighty, the author and finisher of our Faith whom by His grace made this work a success and for seeing me through my academic years. I also dedicate it to my parents, Mr. and Mrs. I.C Nwagbo, my siblings and my family members without whose caring support and prayers it would not have been possible.

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ABSTRACT

The study investigated the role of ICT as a change agent for quality education in tertiary institutions in Nigeria. Three research questions were raised to guide the study. The population of the study comprised of over eighty thousand undergraduate students (80,000) in tertiary institutions of Edo State while the sample for the study comprised two hundred and eight (208) students randomly selected from different schools.

Structured questionnaires titled: The role of ICT as a change agent for quality education in tertiary institutions in Nigeria was used for data collection. The questionnaire was validated by the researcher's supervisor as well as two other experts in the Department of Curriculum and Instructional Technology while the Cronbach's alpha reliability method was adopted to ascertain the reliability of the instrument which yielded a co-efficient index of .766. Data were analyzed with simple percentage, mean and standard deviation.

The study concluded that ICT is a change agent for quality education in tertiary institutions. Strategies for effective use and implementation of ICT in tertiary institutions. From statistics, the percentage of students who agree that the ICT is a change agent for quality education in tertiary institutions is hundred percent (100%) which means that all students see ICT is a change agent for quality education in tertiary institutions.

CHAPTER ONE

INTRODUCTION

Background of Study

Education is a form of learning through which the knowledge, skills, values, benefits and habits of a group of people are transferred from one generation to the next (Churr, 2015). Education has been described as the most important aspect of human development, a key to successful living (Omede & Agahiu, 2016). Education is one of the most important needs for the well-being of individual and that of the society. Thus, education is a powerful instrument of social, political, and economic progress, without which neither an individual nor a society can attain professional growth.

Information and Communication Technology (ICT) is an indispensable part of the contemporary world. In fact, culture and society have to be adjusted to meet the challenges of the information age. ICT is a force that has changed many aspects of people's ways of life. Considering such fields as medicine, tourism, travel, business, law, banking, engineering and architecture, the impact of ICT in the past two or three decades has been enormous. The way the fields operate today is vastly

different from the way they operated in the past. But if one looks at the educational sector, there seems to have a little impact of ICT utilization and far less change, than other fields have experienced. However, a lot of people have attempted to explore this lack of activity and influence (Soloway and Pryor, 2016; Collis, 2015). The pervasive influence of ICT has brought about a rapid technological, social, political and economic transformation, which has paved way to network society, organized around ICT. The field of education has not been unaffected by the penetrating influence of information and communication technology. However, ICT has immensely contributed to the quality and quantity of teaching, learning as well as research in traditional and institutions of distance education. ICT enhances teaching and learning through its dynamic interactive and engaging content and provides real opportunities for individualization of instruction.

To accurately understand the role of Information and communication technology in higher Education there is need to actually understand the meaning of ICT. ICT refers to a type of technologies that arrange for access to information via telecommunication, (Ratheeswari, 2018; Gull, 2020). It is similar to Information Technology (IT) but focuses primarily on Communication Technologies,

(Ratheeswari, 2018). ICT encompasses all those gadgets that deal with the processing of information for cheaper and more accurate communication (UGWU & Nnaekwe, 2019). According to UNESCO, "ICT is a scientific , technological and engineering discipline and management technique used in the protection of information, its application and its association with social , economic and cultural problems" (Ratheeswari, 2018). In education, the communication process takes place between teachers , students, team leaders and staff, going to require a big quantities of data to be stored for retrieval as and when possible, to be disseminated or transmitted in the desired format.

In recent years, several studies and reports have highlighted the opportunities and the potential benefits of information and communication technologies (ICT) for improving the quality of education. ICT is viewed as a “major tool for building knowledge societies” (UNESCO 2003) and, particularly, as a mechanism at the school education level that could provide a way to rethink and redesign the educational systems and processes, thus leading to quality education for all. As we go through the 21st century, technology in the classroom is becoming more and more predominant. Tablets are replacing our textbooks, and we can research just

about anything that we want to on our smartphones (Cox, 2018). UNESCO (2018) posited that Schools use diverse set of ICT tools to communicate, create, disseminate, store, and manage information. They added that ICT can provide diverse options for taking in information, processing it, making sense of ideas for Students with different styles of learning. Sangra and Gonzalez-Sunmamed (2016) in a study on the role of information and communication technologies in improving teaching and learning processes in primary and secondary schools found that there is a wide spread view that ICT in teaching favors several teaching and learning processes. In particular, according to them, it shows that the contributions of ICT to the improvement of teaching and learning processes is higher in the schools that have integrated ICT as an innovation factor. For this to work, school must adapt the use of ICT tools in teaching and learning. *This means that effective ICT use in tertiary institutions in Nigeria could help to spur positive results in improving the overall learning (and teaching) experiences as well as in up-lifting the quality of the system.*

Nigeria as a nation has recognized the potential of ICT in her educational system. The national policy on computer education emphasized the need for the integration

of ICT into the Nigerian educational system. This dates back to the National Policy on Computer Education (FME, 1988) which emphasized the need for primary school pupils to be introduced to the basic computer skills, the use of the computer to facilitate learning and rudimentary use for text writing, computation and data entry. For secondary school, they have related goals which were to be achieved at higher level. The tertiary institutions were also required to teach computer science as a discipline and to integrate it in school administration and instruction. However, the implementation was not effective. The National Policy on Education (FRN) as revised in 2004 and 2013 re – emphasized the need for the integration of ICT in the Nigerian educational system. Hence the need to find out the roles of information and communication technology as a change agent for quality education in tertiary institution in Nigeria.

Statement of Problems

As Nigeria is striving hard to play a leadership role in Africa, particularly in the period of pragmatic and competitive science and technology, there is an urgent need to pay more prominent attention to the improvement of teaching and learning particularly in Nigerian tertiary institutions. This entails the adoption of

information, communication technology (ICT) in the institution. The ICT is an invaluable intervention of this modern time. Its inherent attributes such as accuracy, high speed performance, reliability and capability to store very large amount of data have made it possible for its applicability to all human endeavors including teaching, learning and research in educational institutions. This study is specifically set out to critically appraise the role of information, communication technology as a change agent for higher education in Nigeria. It also examines the implication and challenges of ICT on the development of higher education in Nigeria.

Research Questions

The following research questions will guide the study:

1. What role does ICT serve in the quality of education in tertiary institutions?
2. What is the extent of utilization of ICT in tertiary institutions?
3. What are the strategies for effective use and implementation of ICT in tertiary institutions?

Purpose of the Study

The main purpose of the study is to examine the role of ICT as a change agent for quality education. The study specifically sought:

1. To examine the role of ICT in the quality of education in tertiary institutions.
2. To determine the extent of utilization of ICT in tertiary institutions.
3. To determine the strategies for effective use and implementation of ICT in tertiary institutions

Significance of the Study

The outcome of this study would help the students and lecturers, of the tertiary institutions to acknowledge how Information, Communication Technology can be utilized to enhance various changes in the contents, methods and overall quality of teaching and learning thereby ensuring constructivist inquiry-oriented classroom

The outcome of the study would also help tertiary institutions management and lecturers to see the benefits of utilizing ICT resources in teaching and learning,

and its impact on learner's achievement so that they can be effectively committed to its usage.

Furthermore, it will enlighten the government and institutions on the importance of frequently organizing ICT training workshops and seminars for teaching staff so as to increase their mastery level, update their skills and boost their confidence. This study is also set to critically examine the role of ICT as a change agent for quality education in tertiary institutions development in Nigeria.

Scope and delimitation of the Study

This study is on the role of Information and Communication Technology as a change agent for quality education in tertiary institution in Nigeria. It will cover the extent of Utilization of ICT in the Institutions as well as the strategies for effective use and implementation of ICT in tertiary institutions in Nigeria. However, this study will be delimited to tertiary institutions in Edo state.

Definition of Terms

ICT: acronym for Information Communication Technology is a technological device Roled in passing and receiving information and Roled to enhance communication. These devices include; computer, radio, telephone, television etc.

Tertiary Education: this refers to any type of education pursued beyond the high school level. This includes diplomas, undergraduate and graduate certificate, and associates, masters and doctoral degrees.

Quality Education: this is one that provides all learners with capabilities they require to become economically productive, develop sustainable livelihoods, contribute to peaceful and democratic societies and enhance individual well-being.

Teaching and Learning: this is the process of attending to people's needs and experiences and feelings and making specific interventions to help them learn particular things.

Change Agent: is a person or something that helps the effectiveness, improvement, or development in the way things are done.

CHAPTER TWO

LITERATURE REVIEW

The relevant literatures on this study ICT as a change agent for Quality Education in Tertiary Institutions in Nigeria was reviewed under the following sub-headings:

- The Concept Information Technology
- The Concept Communication Technology
- Information and Communication Technology
- What is Quality Education?
- Agents of Quality Education in Nigeria
- ICT as change agent for Quality Education
- ICT usage in Tertiary Institutions
- Constraints to effective utilization of ICT in Higher Education in Nigeria
- Role of ICT in Higher Education
- ICT Policy in Nigeria
- Advantages of the Use of ICT in Education
- Summary

The Concept Information Technology

In today's world there is information explosion. This information explosion is taking place in such a fast speed that even a learned person is feeling as if he or she is illiterate being unable to cope up with such an information explosion. It is Information Technology (IT) that can help in coping with the information explosion. Information Technology is all about coping up with explosion of information. Information Technology (IT) is the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronics-based combination of computing and telecommunication. The term in its modern sense first appeared in a 1958 article published in the Harvard Business Review, in which it was commented that the new technology does not yet have a single traditional name but shall be tentatively called Information Technology. It spans a wide variety of areas that include but are not limited to things such as processes, computer software, computer hardware, programming, languages and data constructs. Information Technology consists of two words Information and Technology. The term Information refers to any communication or representation of knowledge such as facts, data or opinions in any medium or

form, including textual, numerical, graphic cartographic, narrative or audiovisual forms. It occupies a strategic role in the scheme of human existence; through communication of information, development is facilitated. Information means any communication or representation of knowledge in any form.

Information Technology has been defined by many authors in different ways; according to Long, (2014) Information Technology is a faculty or force that is totally permeating concrete and abstract reality and creating a new conception, new forms of interpretation, new ways of management and new insight into our life styles. Agomou (2015) refer to information as facts, instructions and processed data that have been organized in any medium or form such organized facts or data which is meaningful to the end users or recipients. It can also be seen as data which has been processed. Robson(2014) defined Information Technology as the phase that covers all the machineries or skill concerned with the capturing, storage, transmittal or presentation of information. Olive and Chapman (2013) saw IT as technology which supports activities involving the creation, storage, manipulation and communication of information together with their related method, management, and application.

Osuwa (2016) defined Information Technology as the application of scientific study of the art of using skills in making things, the mastery and utilization of manufacturing and industrial methods. Information Technology is a scientific, technological and engineering discipline and management technique used in handling information, its application and association with social, economic and cultural matters (UNESCO, 2003). In a nutshell, Information Technology is any equipment or interconnected system or sub system of equipment that is used in the acquisition, storage manipulation, management transmission or reception of data or information. It is anything that renders data, information or perceived knowledge in any visual format whatsoever, via any multimedia distribution mechanism, is considered part of the domains space known as Information Technology.

The Concept Communication Technology

Communication is an essential part of human existence. Communication is a kind of social interaction where at least two interacting agent share a common set of signs and a common set of semiotic rules (Ochai, 2016). It is communication that decides the very identity of human beings. The modern society is turning into

an information society and communication is the exchange of information. The advent of technological advancements helped to foster effective information communication in education. Technology is the science of the application of knowledge to practical purposes, it is regarded as a major platform for societal development.

Blissmer (2013) considered technology as the practical application of knowledge; it refers to those activities directed to the satisfaction of human needs, which produce alterations in material work. Therefore, Communication Technology is the process of transferring information from a Sender to a receiver with the use of a medium in which the communication information is understood by both sender and receiver. Communication Technology implies the knowledge, skills and understanding needed to exchange information verbally or non-verbal (Liverpool, 2012).

Information and Communication Technology

The influence of Information and Communication Technology (ICT) is becoming more prominent worldwide. It has become such that rarely is anything mentioned in any area of human endeavour without reference to this type of

technology. ICT cuts across all sectors, and it is becoming the driving force for effective and efficient operations of trade and commerce, government, medicine, education, human resources development, arts and culture, agriculture, national security and other areas of human endeavour. Information and Communication Technology could be said to encompass all those gadgets that deal with the processing of information for better and effective communication.

According to the United Nations (2015), ICT covers Internet service provision, telecommunications equipment and services, Information Technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services, and other related information and communication activities. In the last few decades, ICT has progressively played a critical role in all fields of human endeavours it is readily useful in the areas of agriculture, engineering, education, medicine, law, architecture, aviation, commerce, insurance, banking and finance as well as maritime activities. Information and Communication Technology (ICT) involves the use of computers, internet and other telecommunication technology in every aspect of human endeavour.

Similarly, Ochai (2016) defined ICT as any equipment interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, retrieval, movement, control, display, switching, interchange, transmission, reception of data. In another light, Information and Communication Technology is defined as the full range of electronic technologies and techniques used to manage information and knowledge (UNDP, 2015). Kayoma (2016) stated that ICTs are basically information handling tools, a varied set of goods, application and services that are used to reproduce, store, process, distribute and exchange information. Alkadi (2014) defined Information and Communication Technology as a collection of individual technology component that are typically organized into computer-based information systems.

(Okute, 2014). In addition to the aforementioned, ICT refers to the handling and processing of information for use by means of electronic and communication gadgets such as computers, overhead projectors, videos, it also encompasses the computer hardware and software, the network and several other devices (video, audio, photography camera, etc.) that convert information (text), images, sound,

motion, and so on into common digital form (Milken Exchange on Education Technology, 2012).

Lastly, Jimoh (2015) defined ICT as the handling and processing of information (texts, images, graphs, instruction etc) for use, by means of electronic and communication devices such as computers, cameras, telephone. Information and communication technology is daily giving rise to new concepts, new ideas and making impact not only in the industries or businesses but also in the education sector. Relating it to education, Miller and Akume, (2016) referred to it as the process of gathering accessing and dissemination of data for an enhanced learning.

What is Quality Education?

Quality education is a dynamic concept whose indices may vary according to the need of the country. Pigozzi (2015) wrote that a quality education is one that welcomes the learner and can adapt to meet learning needs, it is inclusive. A quality education strives to ensure that all learners, regardless of sex, age, language, religion and ethnicity, for example, are reached – that they have the possibility of participating and learning from organized learning activities. However, for a common understanding, this paper has noted the following as indices of quality

education: proper funding, effective quality control (to enforce standard), conducive and appropriate teaching and learning environment, sufficient staff quarters and classrooms in schools, adequate and proper equipment and staffing, good quality and well-motivated staff truly committed to undiluted scholarship.

According to Obasi (2013) the indicators of quality and functional education are: effective and efficient performance of graduates in society, industries and other work places, employability (self, national and international) of products/graduates (Entrepreneurship level)/ Graduate employment statistics, national and International mobility of generated manpower, market value or demand level of research products and other services provided by the institutions, level of discipline and patriotism of graduates, international transferability admissibility of graduates students for higher studies without remedial conditions, high rating of an institution and its products nationally and internationally and high absorptive capacity at all levels.

Quality education according to UNICEF (2000) is characterized by: learners who are healthy, well-nourished and ready to participate and learn, and supported in by their families and communities, environments that are healthy, safe,

protective and gender-sensitive, and provide adequate resources and facilities, content that is reflected in relevant curricula and materials for the acquisition of basic skills, especially in the areas of literacy, numeracy and skills for life, and knowledge in such areas as gender, health, nutrition, HIV/AIDS prevention and peace, processes through which trained teachers use child centered teaching approaches in well-managed classrooms and schools and skillful assessment to facilitate learning and reduce disparities and outcomes that encompass knowledge, skills and attitudes, and are linked to national goals for education and positive participation in society.

Pigozzi (2015) the quality of education will therefore determine the quality of manpower and their products; it will reduce the rate of unemployment, since graduates and technicians can become self-employed after graduation. It will equally impact on the moral rectitude of the society and quality of lives. This is because education is aimed at changing the character of the learner and impacting positively on his behavior. Poor quality of education is characterized by misplacement of values and educational goals. The insecurity we face is a reflection of human behavior, in a society that values money more than integrity, a

rich trader may be more recognized than a Professor; this cannot happen in the developed countries where their educational standard is very high (Iwundu& Inko-Tariah, 2015).

Agents of Quality Education in Nigeria

Quality education is a veritable tool for scientific discoveries, national development and transformation of a greater society to a greater height. Quality education transforms human capital to be creative, and to be an agent that can precipitate radical changes in the society. National development, according to Obasi (2013), is the social process by which a nation harnesses, and mobilizes all resources (human and material) available to it for the purpose of positively transforming its environment and ultimately improving the quality of the social, economic and political life of its citizenry. It is a holistic process involving the collective will and efforts of the people.

Inyamah (2014) observed that for any nation to be termed developed, a high percentage of her citizenry must be educated. Krishna (2014) in an earlier write up mentioned that there will not be a fundamental transformation in a society unless the individual is transformed and this comes from education. It is germane to note

that, national development is driven by human beings. Human capital must be qualified and developed before it can impact positively on the society. Therefore, a nation's development and its sustainability depend on the quality of its education. If twenty six percent (26%) of Nigeria budget is spent on promoting quality education, the human capital would have been so enhanced to produce commodities for the daily need and use of her people. Quality education will give room for result research that can propel technological innovations.

Nigerian government has made several efforts to ensure quality education for all citizens. It started with the Chief Obafemi Awolowo's Action Group party who introduced a free universal and compulsory primary education popularly known as the Universal Primary Education (UPE) for the western region in 1955. This scheme was launched in the east in 1957 and at the federal level in 1976. The UPE policy increased the number of enrollees at the primary level and grade two teachers training colleges. The UPE scheme later ran into problems such as political instability, inconsistence in policy formulation and ability to sustain policies, insincerity among major actors, lack of political will, dearth of reliable base line data, inadequate and lop-sided planning and lack of popular will, teachers

were neglected, the system was flooded with half-baked teachers to mention a few (Ehindero and Onaonya in Achuonye, 2004).

The failure of the UPE scheme gave rise to the launching of the Universal Basic Education (UBE) scheme by Chief Olusegun Obasanjo in Sokoto on the 29th of September 1999. The UBE bill was passed by the Senate in July 2002. The philosophy of the UBE is to provide free and compulsory education to every Nigerian from the primary to the junior secondary school level as well as to provide every citizen of Nigeria with basic literacy.

Achuonye (2004) noted that, the program was in fact intended as a national movement to be engineered by all tiers of government, to be embraced by all sectors of society, to be fully supported and promoted by local communities and individual families. There is therefore a great need for Nigeria and all stake holders in education to sustain the vision of the UBE programme and not to sabotage its implementation. If Nigeria can conform with allocation of her twenty-six percent (26%) of her national budget to education sector without any wrong diversion, education will propel our national development to a greater height. According to Okolo, (2013), education banishes ignorance and liberally criticizes people's

values, life options and redirects societal goals and pursuits. Socrates in Amaele et al. (2015) noted that education assists man to develop the virtues of thinking and morality and the understanding of the universe. All these traits are ingredients for national development, therefore without quality education, the thoughts and actions of man will be very inimical for national development.

The Agents of Quality Educational Development is Numerous

Quality education begets quality and accelerated national development. Quality education prepares young people for their active participation in the maintenance and development of their society. It improves an individual's economic status and enables people to improve their performance and production levels at a lower cost. It promotes national patriotism and good attitude for national issues. The quality of education in Nigeria can be enhanced for national development if there can be a synergy of all stake holders in education. Our history of education informs us that, the colonial masters bequeathed quality education to Nigeria, but the civil war and incessant military incursion into governance, relegated the quality of education and consequently brought the sector to its present deteriorated level. Scholars have suggested the following as strategies agents for quality education in Nigeria:

1. Provision of quality teaching and learning aids and office stationeries and equipment.
2. Ensure periodic supervision, accreditation and reaccreditation of the school system. This will enhance the sustainability of the infrastructures and standard of education.
3. Synergy between higher education provider and employers of labor. This will help graduates to acquire employable skills.
4. Policies should be made based on research findings instead of individual interests.
5. Healthy labor markets to absorb graduates being turned out from institutions of higher learning. This will make students to be more committed to learn.

We remember that the last time National Universities Commission (NUC) accreditation team visited our institution, the university environment changed overnight. Libraries were equipped, buildings were painted, and toilets were provided, with a whole lot of facilities being enhanced; in order to scale through the accreditation process.

Government agencies and private organizations should fund and encourage university research. It is through research those new technologies and discoveries will be made, which will ease and improve human living on earth. Research grants should be conceded to university lecturers by government and private organizations. Government agencies and private organizations should go into the universities to recruit research consultants that will advance into discoveries and solve problems.

ICT as a Change Agent in Higher Education

Importance of education in almost all walks of life has increased with the support of Information and Communication Technologies (ICT). During the past 20 years, the use of ICT has fundamentally changed the working of education. In the current environment-conscious world, the importance of education and acceptability of ICT as a social necessity has been increasing. Social acceptability of Information and Communication tools is necessary to improve the mobility in the society and increase the pitch for equity and social justice (Shah Md. Safiul Hoque, S. M. Shafiul Alam 2015).

ICT acts as a powerful agent to change many of the educational practices accustomed to the universities and colleges. As students and teachers gain access to technology, more direct forms of communication, and access to sharable resources, the capability to support these quality learning standards will continue to grow. ICT applications provide institutions with a competitive edge by offering enhanced services to students and faculty, driving greater efficiencies and creating enriched learning experiences.

ICT as Change Agent to Quality Education in Higher Education

The evolution of higher education in Nigeria combined with the need to sustain and be competitive in a global scenario requires decisions to be taken quickly and effectively. This has enhanced the scope and complexity of administration, thus making it necessary to adopt different methods of higher education administration the increasing student population in higher education accelerated the need for ICTs to process, store and retrieve data in a fast, systemic and accurate fashion. The focus of e-administration in higher education is on the creation of an efficient electronic administration by handling existing resources

economically. It aims at adding value to the educational sector by simplification of a lot of diversified management and administrative tasks.

According to Sanat, (2016), the usage of ICT in higher education institutions starts from the early stages of receiving e-notifications regarding admission, course schedules, and billing procedures and continues till the end of the course including online publication of results The concept of moving the traditional classroom of desks, notebooks, pencils, and blackboard to an online forum of computers, software, and the Internet intimidates many teachers who are accustomed to the face-to-face interaction of the traditional classroom (Sukanta Sarkar 2014).

ICT change the concept of teacher centred learning to student centred learning and teachers acts as coaches, mentors and knowledge facilitators and the learning environment focus on a real time problem solving methods learning is an active process of constructing knowledge rather than acquiring knowledge and that instruction is the process by which this knowledge construction is supported rather than a process of knowledge transmission (Duffy & Cunningham, 2014).the use of ICT in learning settings can act to support various aspects of knowledge

construction and as more and more students employ ICTs in their learning processes, the more pronounced the impact of this will become (Ron Oliver)

ICT according to a number of commentators, enhance teaching, learning, and research, both from the constructivist and instructive theories of learning. However the change in professional practices in which teachers are now enabled to design to incorporate more complex real world projects using ICT tools and resources In many countries, demand for higher education far outstrips supply and Governments and institutions are turning more and more to the use of ICTs to bridge the access gap. It is too early to say whether the role of ICTs in the teaching function of higher education is truly transformative, or whether it is simply a repackaging of previous pedagogy.

ICTs make possible asynchronous learning, or learning characterized by a time lag between the delivery of instruction and its reception by learners. Online course materials, for example, may be accessed 24 hours a day, 7 days a week. Teachers and learners no longer have to rely solely on printed books and other materials in physical media housed in libraries (and available in limited quantities) for their educational needs. With the Internet and the World Wide Web, a wealth of

learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time of the day and by an unlimited number (Sukantha Sarkar 2014). Student data related to academics, fees and administration can be tracked accurately and real-time, accurate MIS reports to management on various aspects of academia, administration and finance are readily available relevant data to assist management in taking key strategic and policy decisions from time to time can be easily provided (Swati Mujumdar 2015).

Researchers search information more on web and digital library rather than the library book shelves and computer became a mandatory for research work. Information Technology changes the concept of traditional method of research work and made the researchers to do more feasibility and reliability studies. With the evolution of ICT researchers can complete their research work in a short period of time and motivates many upcoming researchers to handle more research works.

Constraints to effective utilization of ICT in Higher Education in Nigeria

There have been a number of factors affecting the utilization of ICT in education across the nations. Such factors include inadequate funding to support the purchase of the ICT facilities, lack of training in the use of ICT facilities,

teaching personnel's lack of motivation and the need among teachers to adopt ICT as teaching tools (Starr, 2013). However, in Nigeria, the political conditions in the past thirty years give no room for continuity in ICT utilization in schools. Over the years, political situations in Nigeria have been used to entrench mediocrity, corruption in high places, misplace of priority and poor consumer culture have affected the use of ICT in the education sector.

Oliver and Short (2014) maintained that efforts have been strengthened to adopt ICT into classroom and learning settings. Such concerted efforts include a growing need to explore efficiencies in terms of program delivery; the opportunity for flexible delivery provided by ICTs; the capacity of technology to provide support for customized educational programs to meet the needs of individual learners and growing use of the internet of World Wide Web (www) as a tool for information access and communication. The various constraints to ICT utilization as a change agent for higher education in Nigeria are discussed as follows:

1. **Inadequate computer trained and certificates teachers:** The absence of trained teachers in computer to teach practical aspects of computer skills militate against proper utilization of ICT in Nigeria higher institutions. Large

number of lecturers is computer illiterates; and such lecturers would find it extremely difficult to deliver the appropriate education and training required by the information age of the 21st century for their students.

2. **Poor funding:** The overall educational system in the country is underfunded. Therefore, available funds are used to solve more urgent and important needs of the institutions. Low level of funding has resulted into inadequate ICT facilities in schools. This situation has been a major constraint to making Nigeria educational institutions ICT compliance.
3. **Irregular power supply:** Power supply all over the country is epileptic. If electricity supply is not stable and constant, it is difficult to keep ICT equipment and facilities such as computers and their accessories functioning properly. This problem also denies the rural dwellers the benefit of using ICT.
4. **Cost of equipment:** The cost of equipment in a country like Ondo State with a battered economy is very high. Apart from the basic computers, other cost associated with peripherals such as printers, monitors, papers, modem, extra disk drives, and other software are beyond the reach of higher institutions in Nigeria. Also, most of these institutions cannot afford the

exorbitant internet connection fees.

5. **Lack of Relevant Software:** Teaching with ICT facilities is a difficult task without up-to-date equipment and supplementary materials. According to Salomon (2015), there are clear indications from many countries that the supply of relevant and appropriate software is a major obstacle obstructing wider application of the computer.

Role of ICT in Higher Education

ICT role in higher education is solicited for improving quality, widening access and enhancing operational efficiency across all functions in higher education sector and to create new dynamics in higher education both at micro and macro levels. Introduction of ICTs in the higher education has profound implications for the whole education process ranging from investment to use of technologies in dealing with key issues of access, equity, management, efficiency, pedagogy, quality, research and innovation. ICT applications provide institutions with a competitive edge by offering enhanced services to students and faculty, driving greater efficiencies and creating enriched learning experiences.

ICT in Teaching and Learning

Higher Education sector is planned to build a knowledge repository of multidisciplinary subjects, as a strategy to counter the shortage of faculty in higher education, EDUSAT will be used to share the available expertise through modular programmes. This will be done by networking institutions, creation of virtual laboratories, creation of database, access to expert lectures and technological developments in Industries and Research organizations etc. Teaching and learning can further be improved by replacing of conventional teaching instead of the usual age-old method of chalk and talk for teaching by innovative methods like Power point presentations and animations, modelling and simulations, video clips and using AV aids, LCD projectors etc. This enhances the learning ability of the student and also helps the teacher to elaborate the difficult concepts effectively within a short time span. Seminars of the students can also be arranged allowing the references to be done using internet and the presentations using high tech display devices as LCD projectors. Different online courses of the foreign universities are made available for the students in the internet center in collaboration with the universities. (Savita Desai, Prashant Shah).

Some of the supporting environments are:

Tele-Education System: It is the application of space technology in education. An integrated network system comprising of EDUSAT, Broadband and V-SAT networks helps in bringing virtual class rooms in a multi class environment with seamless two-way interaction between the teachers and students in a collaborative environment.

Virtual Learning Campus (VLC): Virtual Learning Campus or VLC is an approach that divides the responsibility of building, commissioning and running the different systems and Information Infrastructure for education like Broadband, EDUSAT and ERNET services, Synchronous class room environment, Asynchronous knowledge interaction environment, Servers and Portals, E-learning & Digital library, ERP management solutions etc. under centers of specializations in different Institutions in different disciplines. Students in any college may access the services over the web. The college itself needs to maintain basic e-learning and library portals for convenience and providing convenient access to information.

Virtual libraries and digital learning: Teachers and students must be able to get information quickly and conveniently. Distance education requires virtual libraries.

It provides text, video, audio, and other formats for teaching and learning and support digital learning. They collect and organize information and help the users to use the right information at the right time (Schmitz, 2004). Digital education creates changing patterns for students, teachers, librarians, and others. This new pattern will increase the role of curators in this process. In a virtual library, librarians become curators who do not merely collect, organize, and lend material, but are also leaders, researchers, information gatherers and information analysers. A virtual library curator is a powerful person in managing a great volume of data (Husler, 2014).

Distance Learning: It is a type of education, where students work on their own at home or at the office and communicate with faculty and other students via e-mail, electronic forums, video conferencing, chat rooms, instant messaging and other forms of computer-based communication. It is also known as open learning. Most distance learning programs include a computer-based training (CBT) system and communications tools to produce a virtual classroom

Wireless connectivity (wifi): Wireless campus benefits both students and teachers. Wireless environment will help faculties to mould the future workforce, improve

campus efficiency, streamline operations and enable real time connectivity through any device. Students will benefit through expose to technology and expect services such as video conferencing, virtual class rooms and social media access through high-speed internet connections. Furthermore, the students adopting tablets and other devices, many educational institutions are embracing the concept of bring your own device to enhance learning and teaching. Going wireless helps as it addresses the need to be connected constantly and provide seamless networking, ensuring improved student engagement with technology.

ICT in Administration

ICT in administration of educational institutions play a major role in efficient utilization of existing resources and simplifies the administration tasks by reducing the paper work and replaces the manual maintenance of record keeping to electronic maintenance of records which helps in easy retrieval of any information of students, staffs and general within a fraction of seconds one can access the required information. In administration ICT helps in three ways:

In student administration: ICT helps in maintaining the student's personal profile, academic track record, placement participation, student alumni record,

student assessment etc. And it helps in student learning activities like assignment uploading and course material downloading, attending quiz &online test and preparing classroom and project presentations and access the information for career enhancements, attendance record in some institutions biometric attendance facilities, communicating academic details of students to parents via mail and sending text message, availability of time tables and course schedules in electronic form, etc.

In staff administration: ICT helps in maintaining the staff personal profile like personal details, pay scale, grade, performance record common for teaching and non-teaching staff and for teaching administration ICT plays a pivot role in assessment of teaching performance, research work, preparation and presentation of learning materials, duties and responsibilities etc.

In general administration: ICT helps in office administration and managerial administration like maintaining financial records of the institutions social networking with other institutions, companies and agencies for business transactions and dealings, issue notifications, facility of fee payments on online, scheduling of examinations, and allocation of e-hall tickets to students' online

student admissions process and communicating people for events and programs etc.

ICT in Research

Integration of ICT in higher education promotes research to move forward, as known to all that Nigeria research work is lagging behind and very less percentage of initiatives in research field due to lack of supporting systems and the quality of the research also not on similarity with other States. With the integration of ICT, the quality of research work will be enhanced and a greater number of individuals will enroll in the research work in various fields. ICT facilitates the links to across the world in all subject matter and made social networking. It saves time, money and effort to the researchers in their research studies like they can collect a data of large population with a single e-mail and retrieve data in a fraction of seconds and through the availability of various software the analysis of the research work become much easier to the researcher. The unprecedented growth in bandwidth and computing power provides opportunities for download huge amount of data and can perform complex computations on them in a fast manner to get an accurate and reliability of data. The researchers have a provision of online access of

thousands of journals, articles, e-books and publications etc. for their research work, and researcher have a provision to submit online publications.

ICT Policy in Nigeria

Nigeria started implementing its ICT policy in April 2001 after the Federal Executive Council approved it by establishing the National Information Technology Development Agency (NITDA), as the implementing body. The policy empowers NITDA to enter into strategic alliances and joint ventures and to collaborate with the private sector to realize the specifics of the country's vision of making Nigeria an IT capable country in Africa and a key player in the information society by the year 2015 through using IT as an engine for sustainable development and global competitiveness. The policy according to NITDA (2001) was:

1. To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life.
2. To create an enabling environment and facilitate private sector (national and multinational) investment in the ICT sector.
3. To encourage government and private sector joint venture collaboration.

4. To develop human capital with emphasis on creating and supporting a knowledge-based society.
5. To build a mass pool of ICT literate manpower using the NYSC, NDE, and other plat forms as a train-the-trainer scheme for capacity-building.

General objectives for ICT as stated in NITDA (2001) are:

1. Ensure that IT resources are readily available to promote efficient national development.
2. Guarantee that the country benefits maximally and contributes meaningfully by providing global solutions to the challenges of the information age.
3. Encourage local production and manufacturing of IT components.
4. Integrate Information Technology into the mainstream of education at all levels.
5. Create Information Technology awareness and ensure its universal access in order to promote its diffusion in all sectors, building a mass pool of IT literates and manpower.

Advantages of the Use of ICT in Education

In education, communication process takes place between teachers, students, management and administrative personnel which requires plenty of data to be stored for retrieval as and when required, to be disseminated or transmitted in the desired format. The hardware like Over Head Projector, Television, Radio, Computers and related software are used in the educational process. However, ICT today is mostly focused on the use of Computer technology for processing the data. In this context, according to Trucano (2015), the advantages of ICT in education can be listed down as follows:

a. **Quick access to information:** Information can be accessed in seconds by connecting to the internet and surfing through Web pages.
b. **Easy availability of updated data**: Sitting at home or at any comfortable place the desired information can be accessed easily. This helps the students to learn the updated content. Teachers too can keep themselves abreast of the latest teaching learning strategies and related technologies.
c. **Connecting geographically dispersed regions**: With the advancement of ICT, education does not remain restricted within four walls of the

educational institutions. Students from different parts of the world can learn together by using online, offline resources. This would result in enriching learning experience. Such collaborative learning can result in developing:

1. divergent thinking ability in students
2. global perspectives
3. respect for varied nature of human life and acculturation
4. facilitation of learning

d. **Catering to the individual differences**: ICT can contribute in catering to individual needs of the students as per their capabilities and interest. Crowded class rooms have always been a challenge for the teacher to consider the needs of every student in the class.

e. **Wider range of communication media**: With the advent of ICT, different means of communication are being introduced in the teaching learning process. Offline learning, online learning, blended learning are some of the resources that can be used in educational institutions. Collaborative learning, individualized learning strategies can enhance the quality of group as well as individual learning with the real society. This can ensure the applicability of knowledge.

Summary

This research examines ICT as a change agent for quality education in tertiary institutions in Nigeria, and this literature as reviewed that; ICT is very important as a change agent for quality education in tertiary institutions in Nigeria. The study discussed information as any communication or representation of knowledge such as facts, data, or opinions in any medium or form including textual, numerical, graphic cartographic, narrative or audio visuals. In the same vein it referred to communication as a kind of social interaction where at least two interacting agent share a common set of signs and a common set of semiotic rule. And technology was considered to be the practical form of scientific knowledge or the science of the application of knowledge to practical. The whole this chapter saw ICT as processing and sharing information using all kinds of electronic devices.

In the same light, it considered ICT in education as being linked with higher educational outcomes and higher quality pedagogy. And some of its advantages were said to include quick access to information, easy availability of updated data, connecting geographically dispersed region, catering to individual differences, and its possession of a wide range of communication media. This chapter also looked

at the specific benefits of ICT resources in teaching to include amongst others, preparation of learners for the real world, creation of great enthusiasm for learning among students and giving greater exposure to vocational and workforce skills for students. On the other hand, it considered barriers to the utilization of ICT resources in teaching, which includes: inadequate infrastructure and resources, insufficient funds, lack of vision and plan, teacher attitudes and beliefs about ICT, lack of knowledge and skills, lack of time and resistance to change.

Furthermore, this chapter highlighted enablers to ICT resource utilization in teaching and these are: readily available technical support, perceived usefulness, access to ICT resources, adequacy of ICT resources, supportive policies, and adequate training. In addition to these, this chapter considered education as a driving force of economic and social development in any country. Considering this, it is necessary to find ways to make education of good quality, accessible and affordable to all, using the latest technology available Use of ICT in education develops higher order skills such as collaborating across time and place and solving complex real-world problems. ICT integration in higher education brings a change in student and teacher learning behavior and the Collaboration of all

stakeholders in the universities and colleges by sharing the information for mutual benefit. Thus, the successful integration of ICT in higher education depends on the collaboration of national policies and institutional policies. The actions taken for the implementation of ICT needs to be a proper action plan and training to all stakeholders involved in the integration and bring change on them. In addition to this there should be proper controls and licensing, quality assurance and accreditation of technology must be compulsory to reduce the complexities of implementation.

Finally, this research is going to reveal, if ICT is been used effectively as a change agent for quality education in tertiary institutions Nigeria and also reveal the main challenges in using ICT as a change agent for quality education in Nigeria.

CHAPTER THREE

RESEARCH METHOD

This chapter is design to give the description of the method to be used in determining how ICT serves as a change agent for quality education in tertiary institutions in Nigeria, It also discuss the procedure used to collect and analyze data which will be used in this study.

The chapter will be discussed under these sub-headings;

- Research Design
- Population of the study
- Sample and sampling Techniques
- Research Instrument
- Validity of the instrument
- Reliability of research instrument
- Method of data collection
- Data Analysis technique

Research Design

The descriptive research surveys enabled the information obtained from a representative sample of the population to describe the situation as they exist. This method was considered appropriate because it helps to describe record analysis and help to interpret condition and situation as they exist in the research work.

Population of the Study

The population of the study comprises of over 80,000 students in tertiary institutions in Edo State. The population for the study consisted of over 80,000 students in the tertiary institutions in Edo State. The number of schools was sixteen (16) all together.

Sample and Sampling Techniques

The sample of the study was 208 students randomly selected from three (3) tertiary institutions in Edo state. The three (3) schools were purposively selected from the sixteen (16) tertiary institutions in Edo state.

S/N	NAME OF SCHOOLS	NUMBERS OF STUDENTS
I	University of Benin, Benin city	100
2	Ambrose Ali university, Ekpoma	54
3	Edo State university, Iyamu	54
	Total	**208**

Research Instruments

The instrument that was used for this research is a Questionnaire developed by the researcher. The questionnaire was designed to determine the frequency of responses. The instrument comprises four responses for each item which are Strongly Agree, Agree, Disagree, and Strongly Disagree, for each section of the questionnaire which indicates role, utilization and strategies for effective use and implementation Information, Communication Technology in tertiary institutions in Edo State.

Validity of the Instrument

The instrument was validated by the researcher's supervisor and two other lecturers in the Department of Curriculum and Instructional Technology,

University of Benin, Benin City, Edo State. The experts assessed the instrument to ensure clarity, relevance and appropriateness of the items. The corrections and modifications made by the experts were used to update the instrument to produce the final copy.

Reliability of Instrument

In order to establish the reliability of the questionnaire, the researcher carried out a pilot testing on the questionnaire. The questionnaire was administered by the researcher to twenty (20) tertiary institution students who were not part of the main study. The data collected from the pilot testing were analyzed in sections using Cronbach's Alpha statistic with a reliability coefficient of .766 which indicate that the questionnaire is reliable.

Method of Data Collection

The questionnaires were distributed to the respective tertiary institutions by the researchers, while administering the questionnaire to the randomly selected students in respective tertiary institutions, appeals were made to each of the respondents to complete the questionnaire accurately and honestly. Complete questionnaires were collected back on the spot.

Methods of Data Analysis

The Data generated from the research questionnaire were analyzed using mean and standard deviation. The mean value was accepted thus 4+3+2+1 divide by 4 =2.5. The decision rule was that any item with mean score of 2.50 and above was regarded as Agree while items with less than 2.50 was considered Disagree.

Mathematically the mean (x-x) and standard deviation (SD) will be determined as shows below

$$X = \frac{\sum fx}{\sum f}$$

$$SD = \sqrt{\frac{\sum F(X-X)^2}{\sum F}}$$

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF RESULTS

This chapter involved the analysis of data and the presentation of result in the course of the research. The data are presented in tables and are arranged according to research questions.

Presentation of Results

Research Question 1: What role does ICT serve in the quality of education in tertiary institutions?

Table 1:

S/N	ITEMS	N	SA	A	D	SD	Mean	Standard Deviation	Decision
1.	ICT plays an important role in the teaching and learning process.	208	135 75.4%	65 22.3%	5 1.5%	3 8%	3.7	.52	Agree

2.	ICT tools makes learning faster	208	176 82.6%	30 16.7%	2 8%	0 0.0%	3.8	.41	Agree
3.	ICT create a better atmosphere in the classroom.	208	84 44.7%	112 50.8%	10 3.8%	2 8%	3.4	.60	Agree
4.	ICT tools enable distance learning.	208	126 50.4%	67 43.9%	9 3.4%	6 2.3%	3.4	.67	Agree
5.	Information is much more easily available by using ICT tools than by visiting library.	208	76 43.6%	119 51.5%	11 4.2%	2 8%	3.3	.60	Agree

Research question one sought to examine the role of ICT in the quality of education in tertiary institutions. The data analyzed in table 1 reveals that out of the five items, all of them agreed representing hundred percent (100%) of items on the questionnaire.

Research Question 2: What is the extent of utilization of ICT in tertiary institutions?

Table 2:

S/N	ITEMS	N	SA	A	D	SD	Mean	Standard Deviation	Decision
1.	I use ICT tools as part of learning process	208	106 48.1 %	66 33.3 %	25 10.6 %	11 8.0 %	3.2	.93	Agree
2	Lecturers use ICT tools in the classroom.	208	98 52.3 %	63 33.0 %	38 10.6 %	9 4.2 %	3.3	.83	Agree
3.	Virtual learning environments are used in the courses.	208	94 46.6 %	66 41.3 %	28 6.8 %	20 5.3 %	3.3	.81	Agree
4.	Students and lecturers access the internet in search of information.	208	98 58.3 %	80 34.8 %	19 4.5 %	11 2.3 %	3.5	.69	Agree
5.	Students access the internet in search of information.	208	59 21.2 %	79 39.4 %	47 29.5 %	23 9.8 %	2.7	.91	Agree

Research question two sought to examine the extent of utilization of ICT in tertiary institutions. The data analyzed in table 2 reveals that all five items agreed representing hundred percent (100%) of items on the questionnaire.

Research Question 3: What are the strategies for effective use and implementation of ICT in tertiary institutions?

Table 2:

S/N	ITEMS	N	SA	A	D	SD	Mean	Standard Deviation	Decision
1.	Electronic blackboards facilities for teaching and learning	208	49 31.8	89 51.1 %	39 9.8 %	31 7.2 %	3.1	.84	Agree
2.	Internet cyber cafe on campus for students	208	27 10.2 %	68 48.1 %	90 32.6 %	23 9.1 %	2.6	.79	Agree
3.	Audio visuals/instructional television and radio for students	208	36 6.1%	93 40.9 %	48 36.0 %	31 17. 0%	2.4	.83	Agree
4.	Computer training centers for students on campus	208	22 14.8 %	74 48.9 %	94 25.4 %	18 11. 0%	2.7	.86	Agree
5.	An organized networking system between staff and students	208	24 6.1%	46 40.9 %	80 36.0 %	58 17. 0%	2.4	.83	Agree

Research question three sought to determine the strategies for effective use and implementation of ICT in tertiary institutions. The data analyzed in table 3 reveals

that all five items agreed representing hundred percent (100%) of items on the questionnaire.

Discussion of Results

Based on the analysis on the research questions, the following findings were revealed:

From the research questions and analysis done, it was ascertained that ICT plays an important role in the teaching and learning process, ICT tools makes learning faster, ICT create a better atmosphere in the classroom, ICT tools enable distance learning and Information is much more easily available by using ICT tools than by visiting library.

From the research carried out successfully on tertiary institution students, students use ICT tools as part of learning process, Lecturers use ICT tools in the classroom, Virtual learning environments are used in the courses, Students and lecturers access the internet in search of information and Students access the internet in search of information.

Furthermore, from the research carried out, it was determined that electronic blackboards facilities for teaching and learning, Internet cyber cafe on campus for students, Audio visuals/instructional television and radio for students, Computer training centers for students on campus and an organized networking system between staff and students are effective strategies for the use and implementation of ICT in the tertiary institution

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

The purpose of this study was to examine the role of ICT as a change agent for quality education. This chapter presents a summary of the research work, conclusion and recommendations.

Summary of the Study

The study assessed to examine the role of ICT as a change agent for quality education. The study:

- Examines the role of ICT in the quality of education in tertiary institutions.
- Determines the extent of utilization of ICT in tertiary institutions.
- Determines strategies for effective use and implementation of ICT in tertiary institutions.

Three research questions were raised. The descriptive survey research design was adopted in the study. A sample of 208 respondents was selected from a population of over eighty thousand (80,000) students in tertiary institutions in Edo State.

The researcher designed a questionnaire which was used to gather data on role of ICT as a change agent for quality education in tertiary institutions.

The data collected with the questionnaire were analyzed using descriptive statistics of frequency counts, percentage, mean and standard deviation was used to analyze the other research questions.

Conclusion

Based on the findings of the study it was concluded that ICT is a change agent for quality education in tertiary institutions. Students of tertiary institutions also agree greatly to the fact that there are strategies for effective use and implementation of ICT in tertiary institutions. From statistics, the percentage of students who agree that the ICT is a change agent for quality education in tertiary institutions is hundred percent (100%) which means that all students see ICT is a change agent for quality education in tertiary institutions.

Recommendations

In view of the findings and conclusion drawn from this study, the following recommendations were made.

- There is need for electronic boards facilities as well as Audio visuals/instructional television and radio for teaching and learning.
- There should be Internet cyber cafe on campus for students and measures should be made to assure good internet network services by network service providers
- Computer training centers should be made available for students on campus Within the school, a working and well-equipped ICT hub should be constructed for students' access.
- For the aspect of communication, an organized networking system between staff and students should be made available.

Suggestion for Further Research

Based on the conclusion and recommendations of the study the following are suggested for further studies.

- The present study assessed the role of ICT as a change agent for quality education in tertiary institutions. Similar study could be replicated in other state and country.
- Further studies could be carried out on the applications of the ICT by students in tertiary institutions.

REFERENCES

Adesina, S.(2015). *Growth without development: Ondo State's educational experience. 20*14-2015. Abeokuta: Educational Industries Nigeria Limited.

Ajayi I.A,& Ekundayo H. T (2010). Contemporary issues in educational management. Bolabay Publication Lagos Nigeria.

Ajayi, T. (2013).*Education and globalization: Challenges for institutional administrators in Ondo State.* A paper presented at the Faculty of Education annual lecture, University of Ilorin.

Akingbemisilu, A.A. (2016). Mobile Devices: A patent need for current re-defining education and innovation pedagogies. *International Journal of Information and Education Technology Official Publication of International Association of Computer Science and Information Technology, Singapore*6(8): 638-642.

Ashish, H. (2010), Atanu Gosh, Enhancing the quality and accessibility of higher education through the use of ICT.

Babalola, J. B. (2017). *Reinventing Nigeria higher education for youth employment in a competitive global economy.* Calabar: Department of Educational Administration and Planning, University of Calabar.

Barron, A. (2018). Designing Web-based training. *British Journal of Educational Technology, 29*(4), 355-371.

Berge, Z. (2018). Guiding principles in Web-based instructional design. *Education Media International, 35*(2), 72-76.

Collis, B. (2012). Information technologies for education and training. In: Adelsberger H, Collis B & Pawlowski J (Eds.) Handbook on technologies for information training. Berlin: springer verlag.

Collis, B. (2012). Information technologies for education and training. In Adelsberger, H., Collis, B, & Pawlowski, J. (Eds.) *Handbook on Technologies for Information and Training*. Berlin: Springer Verlag.

Dhirendra, S., & Vikram, S. (2010), ICT infrastructure and human resource performance- A study of university in the western Himalayas of India, *International Journal of advanced engineering application, Jan.* 3(2): 5-10

Duffy, T., & Cunningham, D. (2016). Constructivism: Implications for the design and delivery of instruction, *Handbook of research for educational telecommunications and technology 10* (2)170-198. New York: MacMillan.

Ezekwesili, O. (2016). Education reform: Escape from conquest through knowledge: *The Punch;* Friday2(17): 52.

Fafunwa, A.B. (2014). *History of education in Nigeria.* London: Unwin.

Federal Republic of Nigeria (2014).*National policy on education.*4th edition. Lagos: NERDC.

Fisseha, M. (2013), The role of information communication technologies in education review article with the emphasis to the computer and the internet

Freeman, M. (1997). Flexibility in access, interactions and assessment: The case for web-based teaching programs. Australian Journal of Educational Technology, 13(1), 23-39.

John, D. (2014), "ICT in education a curriculum for schools and programmer of teacher development

Jonassen D, Reeeves T (2016). Learning with technology: using computers as cognitive tools. In: Jonassen D (eds). Handbook Res. Educ. Educ. Commun. Technol. 5(6): 693-719.

Jonassen, D. & Reeves, T. (2016). Learning with technology: Using computers as cognitive tools. In D. Jonassen (Ed.), Handbook of Research Educational on Educational Communications and Technology. New York: Macmillan. 2(3): 693-719.

Kennedy, D. & McNaught, C. (1997). Design elements for interactive multimedia. Australian Journal of Educational Technology, 13(1), 1-22.

Laffey J., Tupper, T. & Musser, D. (1998) A computer-mediated support system for project-based learning. Educational Technology Research and Development, 46(1), 73-86.

Lawal, A. R. (2008).A cybernetic appraisal of reforms in the Nigeria educational sector. In A. R. Lawal, S. A. Jimoh, S. A. Olorundare & N.Y.S. Ijaiya (Eds.) *Education reforms in Ondo State: Past, present and future.* Ilorin: Faculty of Education, University of Ilorin.

Lebow, D. (1993). Constructivist values for instructional systems design: Five principles toward a new mindset. *Educational Technology, Research and Development, 41*(3), 4-16.

Littlejohn, A., Suckling, C., Campbell, L. & McNicol, D. (2002). The amazingly patient tutor: students' interactions with an online carbohydrate chemistry course. *British Journal of Educational Technology, 33*(3), 313-321.

McCausland H, Wache D, & Berk M (1999). Computer literacy: its implications and outcomes. A case study from the flexible learning centre. University of South Australia.

McCausland, H.,Wache, D. & Berk, M. (1999). *Computer literacy; its implications and outcomes.A case study from the Flexible Learning Centre*. University of South Australia.

Meenakumari.J, & Krishnaveni. R, (2010) "ICT based and learning in higher education-A study", *International Journal of Computer Science and emerging technologies*,

Moore, M. & Kearsley, G. (1996).*Distance Education: A Systems View*. Belmont, CA: Wadsworth.

More M, & Kearsley G (1996). Distance Education: A systems view. Belmont, CA: Wadsworth.

Neeru, S. (2009), "ICT in Indian universities and colleges: Opportunities and challenges", Management and Change, 2(3):13-18.

Obanya, Pai (2007). *Thinking and talking education.* Ibadan: Evans Brothers (Ondo State Publishers) Limited.

Oliver R (2000). Creating meaningful context for learning in web-based settings. Proceedings of open learning 2000, Brisbane Learning Network, Queensland.pp.53-62.

Oliver, R., & Short G (1997). The Western Australian telecentres network: A model for enhancing access to educational training in rural areas. Int. J. Educ. Telecommun. 2(4):311-328.

Oliver, R. & Short, G. (1996). The Western Australian Telecentres Network: A model for enhancing access to education and training in rural areas. *International Journal of Educational Telecommunications,* 2(4), 311-328.

Oliver, R. & Towers, S. (2000). Benchmarking ICT literacy in tertiary learning settings. In R. Sims, M. O'Reilly & S. Sawkins (Eds). *Learning to choose: Choosing to learn.* Proceedings of the 17th Annual ASCILITE Conference. Lismore, NSW: Southern Cross University Press. 4(5): 381-390

Oliver, R. (2000). Creating Meaningful Contexts for Learning in Web-based Settings. *Proceedings of Open Learning 2000.*(pp 53-62). Brisbane: Learning Network, Queensland.

Omolewa, M. (2008).Educational reforms for what? In A. R. Lawal, S. A. Jimoh, S. A. Olorundare & N.Y.S. Ijaiya (Eds.) *Education reforms in Ondo State: Past, present and future.* Ilorin: Faculty of Education, University of Ilorin.

Ron Oliver (2010), The role of ICT in higher education for the 21st century: ICT as a change agent for education

Sanat, W.D. (2006). Influence of sources of communication, user characteristics and innovation characteristics on adoption of a communication technology (Doctoral dissertation, The University of Kansas, 2000). *Journal on Technology and the teacher profession. Teacher and Teacher Education*, 21, 15-31.

Salomon G (1989). Computers in Curriculum. In: Eraut M (Ed.), The International Encyclopedia of Educational Technology, Oxford: Pergamon Press pp.167-170.

Shaikh Saleem (2012),"Role of ICT as a quality teaching tool", *An International multidisciplinary journal*, 2(5):22-29.

ShavininaLV (2001). A new generation of educational multimedia: High intellectual and creative educational multimedia technologies. In: Vandervert LR, Shavinina LV & Cornell RA (Eds.), Cyber education: The future of Distance Learning. Larchmont, NY: Mary Ann Liebert, Inc, 2(4):63-82.

Shazli H. K. (2012), Integration of ICT component in teacher education: Institutions unavoidable step toward transforming the quality of present teacher education system".

Soloway E, Pryor A (1996). The next generation in human computer interaction. Commun. ACM 39(4):16-18.

Stephenson J (2001). Learner- managed learning an emerging pedagogy for online learning. Teaching and learning online: pedagogies for new technologies. London, Kogan page.

Stephenson, J., Ed. (2001). *Learner-managed learning- an emerging pedagogy for online learning*. Teaching and Learning Online: Pedagogies for New Technologies. London, Kogan Page.

Sukantha Sarkar, (2012) "Role of ICT in higher education for the 21st century, Science Probe, 2(3) 45 - 50

Tabb, W.K. (2009). *Globalization.* Microsoft Encarta. Redmond, W, A: Microsoft Corporation.

Thierer A (2000). Divided over the digital divide, Washington, DC: Heritage Foundation.

UshaVyasuluReddi (2010), "Role of ICT in education and development potentials, pitfalls and challenges"

William J.Kramer,RobedSikatz (2011), „The role of the information and communication technology sector in expanding economic opportunity"..

Young, J. (2002). The 24-hour professor. *The Chronicle of Higher Education, 48*(38), 31-33.

Yusuf M.O, & OnasanyaS.A. (2004). Information and Communication Technology ICT and Technology in Tertiary Institutions In: Ogunsakin EA (Ed), Teaching in Tertiary Institutions Ilorin.

Zeininger, C., (2009), "The use of ICT in HEIs in Mozambique: Institutional websites as Ambassadors for educational technologies

APPENDIX

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY (CIT)

FACULTY OF EDUCATION,

UNIVERSITY OF BENIN, BENIN CITY

QUESTIONNAIRE ON THE ROLE OF ICT AS A CHANGE AGENT FOR QUALITY EDUCATION IN TERTIARY INSTITUTION IN NIGERIA

Dear respondent,

I am a student of the University of Benin from the Department of Curriculum and Instructional technology and I am carrying out a research on the **Role of ICT as a Change Agent for Quality Education in Tertiary Institutions in Nigeria**.

This questionnaire is basically designed for academic purpose and all information supplied will be strictly treated as highly confidential.

Please kindly respond to the items very sincerely and objectively.

Your responses will be highly appreciated.

Thanks.

INSTRUCTION

Please tick (✓) as appropriate

SECTION A: DEMOGRAPHIC DATA

Gender: Male [ ] Female [ ]

Name of School: _____

Department:

Faculty:

Level: 100 [ ] 200 [ ] 300 [ ] 400 [ ] 500 [ ]

Section B

Rating scale (SA - strongly agree, A - agree, D - disagree, SD– strongly disagree)

S/N	ITEMS	SA	A	D	SD
1.	ICT plays an important role in the teaching and learning process.				
2.	ICT tools makes learning faster				
3.	ICT create a better atmosphere in the classroom.				
4.	ICT tools enable distance learning				
5.	Information is much more available by using ICT tools than visiting the library.				
6.	I use ICT tools as part of my learning process				
7.	Lecturers use ICT tools in the classroom.				
8.	Virtual learning environments are used in the courses				
9.	Students and lecturers have access to the internet				
10.	Students access the internet in search of information.				
11.	Electronic blackboards facilities for teaching and learning				
12.	Internet cyber cafe on campus for students				
13.	Audio visuals/instructional television and radio for students				
14.	Computer training centers for students on campus				
15.	An organized networking system between staff and students				