

**THE ROLE OF ICT AS A CHANGE AGENT FOR QUALITY
EDUCATION IN TERTIARY INSTITUTIONS DEVELOPMENT IN
EDO STATE.**

BY

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CERTIFICATION

We undersigned, certify that this research work was carried out by Ogonu Ovie Evans in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City in partial fulfilment of the fulfillment of the award of the Bachelor of Science (ed) degree in Computer Science.

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DEDICATION

This research work is dedicated to God Almighty, always loving Father, my very present help in times of need and my sufficiency. His unending grace has seen me through my academic pursuit in University of Benin.

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ABSTRACT

This study was carried out to identify the role of ICT as a change agent for quality education in tertiary institutions development in Edo State. The research was carried out as a survey research using relevant literature from journals, magazines, books and the internet. Four research questions were raised and analyzed for the purpose of the study. A random sampling technique was used in selection of two hundred and fifty (250) undergraduate students from 100 level to 600 level which would be randomly selected faculty of Law, Education, Life science, Management Science, and Physical science, 50 students from each of the above-mentioned faculties. The data were collected with questionnaire instrument and analyzed using simple percentage.

The result revealed that; computers, smartphones, digital libraries, Google, internet facility, Computer laboratories multimedia projectors, and laptops were predominantly used by tertiary institutions students in Edo state, the use of ICT in tertiary institutions brings about better pedagogy in learning and helps to provide individualized learning, incorporating the use of technological applications allows students to participate in higher-order thinking and improve their performance and information Technology helps students to expand their knowledge in learning. And factors impeding the usage of ICT in Edo state tertiary institutions are, scarcity of ICT materials for obtaining information, epileptic power supplies, high acquisition and maintenance cost of ICT equipment, and most likely, Insufficient time to prepare electronic-based materials by lecturers.

Based on the results, it was recommended that 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, government at all levels should make available adequate funds and resources, particularly for the funding and sustenance of tertiary education, students in tertiary institutions should be encouraged on the use of internet to solve their academic problems and the Government should ensure the constant supply of power to tertiary institutions to aid the use of ICT associated facilities, and 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.

CHAPTER ONE

INTRODUCTION

Background to the Study

All over the world, education is the foundation of human development and civilization. Its mission is to bring about positive change that is beneficial to the people who will benefit. More precisely, it is a factory of human art. One of them is trembling because of his desire to fulfill his hopes, his hopes, and his desires through educational activities, which can be formal, formal and non-formal.

Quality education refers to education that helps everyone learn and develop; inclusive and structured education to realize the potential of each individual, regardless of status or economic status. Quality education is one of the goals (number 4 of the SDG, called SDG4) of the United Nations Development Program, which focuses exclusively on education, to ensure that quality education is inclusive and equitable and promotes learning longevity (Sean, 2016). Education is defined as the process of acquiring knowledge, skills, values, ethics, beliefs, practices, and personal development or supporting learning. It is a powerful tool for social,

economic and political progress, without which any individual or society can develop expertise. It is generally the basis of human development and civilization. Higher education is the third level of the education system and includes post-secondary education.

The role of tertiary education in today's world is large, complex and very important with many challenges and opportunities. Higher education institutions have a long term of engagement with the outside world as they are able to connect with the local and global sectors in different ways, making them have a revolutionary impact on different communities. The demand for higher education is strong and can be explained, among other things, by knowing its importance for the economic and social development of the country. The adoption of information and communication technology (ICT) in higher education allows students to access higher and broader areas of learning to develop research skills. Secondary schools should be encouraged to take the lead in promoting the benefits and potential of ICT. This is to ensure that it is safe and to maintain high standards for educational practices, because the rapid development of ICT will change the way

knowledge is created, acquired and transferred. However, ICT does not reduce the needs of teachers (Dorgu, & Odigie 2013).

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. Information and communication technology (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.

We are in the world of technological development, functional and qualitative education, which are viewed as a necessary condition for national qualitative education, as a necessary condition for national development that cannot be achieved without sound knowledge of Information and Communication Technology (ICT). Gbadamosi (2016) identifies ICT as a factor that promote quality in higher education. Moreover, communication is a fundamental act of the education process. Therefore, to enhance quality, attention must be given to ICT. Indeed, the impact of Information and Communication Technology is becoming more and more pronounced

worldwide such that rarely is anything mentioned in any area of human endeavour without reference to this technology.

The way various fields operate today is vastly different from the way they operated in the past. But if one looks at education 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 (Collis, 2012). The pervasive influence of ICT has brought about a rapid technological, social, political, and economic transformation, which has paved way to network society, organised 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 and learning and research in traditional and distance education institutions.

The Federal Ministry of Education FME, (2009) remarked that quality standard in the education system are goals or targets to which learners, teachers, staff and school administration aspires to attain. Quality assurance in the education system therefore, is a multi-dimensional concept involving the various functions and activities of the education system. Such functions

and activities include teaching research, staffing, students, buildings, facilities, ICT equipment, and service to the community and academic environment. It is ensuring that at least the provision of the minimum academic standard are attained and sustained.

However, today in most tertiary institutions in Nigeria, Edo state to be precise there exists general disenchantment and general factors in the quality of the education system as well as in the quality of education output, similarly Elele, (2013) cited in Yusuf, (2017) noted that quantitatively, the Edo State Education scene is quite impressive but qualitative deficient. The challenges confronting our educational system in tertiary institution centers on quality attainment of education delivery, almost everything connected with education in tertiary institution is in short supply. Quality teachers are in short supply, quality buildings, quality equipment, quality laboratories, good experimental farms and other resources input that can lead to quality education are inadequately provided.

The ICTs as a change agent has virtually diffused through all sectors, forcing technological changes and creating a culture of dependence on technology. The presence of ICTs has become ubiquitous and its knowledge

has deepened. Many countries now regard the understanding of ICTs and mastering of their basic skills and concepts as part of the core of education, alongside reading, writing and numeracy. ICT has also permeated the business environment, facilitated the growth of modern industries, strengthened value chains and provided governments with the necessary infrastructure for e-government and online citizen interaction. Also, the importance of ICT is for ICT to add value to the learning process, and to organize and manage learning institutions across the board. It has been reported that ICT has played a major role in redefining education across the continuum (from central to peripheral). It has brought great innovation and energy to teaching, research and learning and improved the interface between teacher and student by creating many communication channels (UNESCO, 2012).

Statement of the Problem

As Nigeria strives to play a leadership role in Africa, especially in the era of competitive science and technology, there is a need to focus more on improving education and learning, especially in Nigerian tertiary institutions. This means the adoption of information and communication technology

(ICT) in the company. ICT is a valuable contribution of the modern era. Its characteristics such as accuracy, speed, reliability, and the ability to store large amounts of data make it possible to use it in all human activities, including teaching, learning, and research. and educational institutions.

Despite the aforementioned role and benefits accrued to learners and the concerted efforts made by the Government to provide training for lecturers on the utilization of ICT related resources in teaching, the researcher, observations and researches has noted with disappointment that ICT resources are still grossly underutilized in most tertiary institutions in Nigeria, the ones available are not fit for use and there's brain drain in the staffs that are supposed to pass knowledge across to effect desired societal change and better economy instigated by sound and digitized graduates. This has no doubt deprived students of the benefits of learning with ICT resources, as experienced in other parts of the world. This study is specifically set out to critically appraise the role of ICT as a change agent for quality education in tertiary institutions in Nigeria.

Research Questions

The following research questions were formulated to guide this study.

1. What are the roles of ICT as a change agent for quality Education in tertiary institutions in Nigeria?
2. The impact of ICT on the academic performance of tertiary institutions students in Nigeria?
3. Are there available ICT facilities in tertiary institutions in Nigeria?
4. What are the constraints to the effective utilization of ICT as a change agent for quality education in tertiary institutions in Nigeria?

Purpose of the Study

The main objective of the study is to survey the role of ICT as a change agent for quality education in tertiary institutions in Nigeria, on a specific purpose, the study seeks to:

1. Examine the roles of ICT as a change agent for quality Education in tertiary institutions in Nigeria.
2. Determine impact of ICT on the academic performance of tertiary institutions students in Nigeria.
3. Examine whether there are available ICT facilities in tertiary institutions in Nigeria.

4. Find out constraints to effective utilization of ICT as a change agent for quality education in tertiary institutions in Nigeria.

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 Edo State.

Scope and the Delimitation of the Study

This research focuses on the role of information, communication technology as a change agent for quality Education in tertiary institutions in Edo state. In doing this, the research is delimited to tertiary institutions in Edo state, University of Benin as a case study.

Operational Definition of Terms

- **Tertiary Education:** any type of education pursued beyond the high school level. This includes diplomas, undergraduate and graduate certificate, and associates, masters and doctoral degrees.
- **ICT:** acronym for Information Communication Technology is a technical device used to transmit and receive information and is used to enhance communication. These tools include; computer, radio, telephone, television, etc.
- **Change Agent:** something that helps the effectiveness, improvement, or development in the way things are done.
- **Quality Education:** a type of education that provides all learners with the capabilities they require to become economically productive,

develop sustainable livelihoods, contribute to peaceful and democratic societies and enhance individual well-being.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter focuses on the review of related literature. And it will be discussed under the following sub-headings:

- Conceptual Framework
- The Roles of ICT as a Change Agent for Quality Education in tertiary Institutions.
- The Impact of ICT on the Academic Performance of Tertiary Institution Students.
- Available ICT Facilities in Tertiary Institutions
- Constraints to Effective Utilization of ICT as a Change Agent for Quality Education in Tertiary Institutions
- Summary of Reviewed Literature

Conceptual Framework

IT is an acronym for information technology. According to Egomo, Enyi and Tah (2012) ICT is usually expressed mathematically as computer + telecommunication = information technology. IT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form (Yusuf, Bashir & Dare, 2013). According to Hornby (2014), Information and Communication Technologies (ICTs) are electronic technologies

used for information storage and retrieval. Gannon (2004) describe IT as a complex varied set of goods, applications and services used for producing, distributing, processing, transforming information (including) telecoms, TV and radio broadcasting, hardware and software, computer services and electronic media. Ozoji in Jimoh (2017) refers to IT 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. Ofodu (2017) also refers to IT as electronic or computerized devices, assisted by human and interactive materials that can be used for a wide range of teaching and learning as well as for personal use. Adeleke (2015) views IT as a cluster of associated technologies defined by their functional usage in information access and communication.

Becta (2010) in its own definition refers to IT as techniques people use to share, distribute, gather information and to communicate through computers and computer networks. ESCAP (2010) in its own definition defined IT as techniques people use to share, distribute, gather information and to communicate through computers and computer networks. IT could be seen as a complex varied set of goods, applications and services used for producing, distributing, processing,

transforming information (including) telecoms, TV and radio broadcasting, hardware and software, computer services and electronic media in teaching and learning exercise.

ITs are technologies that enable an individual to tap any data or information in any outside data bank called a network, a collection of hardware and software that enables a group of computers to communicate with each and allows network users to share resources in computer network. Information and Communication Technology are computer based tools used by people to work with information and communication processing for the needs of an organization. It covers computer hardware, software, the network and other digital devices like video, audio, camera and so on which convert information (text, sound, motion etc) into digital form.

Currently, there are different IT facilities that can be used in teaching. IT devices for teaching and learning include Computer, Internet, Power Point, Television, Overhead Projectors, Camera, Radio Cassette, Video Tape, Audio Cassette, Audio CD, World Wide Web (WWW), Telephone, etc. The various IT facilities used in the teaching learning process in schools include; radio, television, computers, overhead projectors, optical fibres, fax machines, CD-

Rom, Internet, electronic notice board, slides, digital multimedia, video/ VCD machine and so on. Some of the examples of IT tools according to Akuegwu et al (2011) include computer lap tops, video machines, multimedia projectors or power points, digital cameras, internet facilities, computer network, telephone (GSM and land phones), e-library, television programmes, data base among others. IT resources capable of being used in teaching and learning include but are not limited to the following; radio, radio-cassette recorders, televisions, computer, multi-media projectors, fax machines, optic fibers, CD- Rom, internet, electronic notice boards, interactive white boards, slides and slide projectors, overhead projectors, video players and VCDs etc (Adeyemi & Olayele, 2010).

The Roles of ICT as a Change Agent for Quality Education in tertiary Institutions

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.

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 2012).

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, 1996).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.

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- ii. 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, 2012).
- iii. 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.
- iv. 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, 2016). 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).

- v. ICT applications provide many options and choices and many institutions are now creating competitive edges for themselves through the choices they are offering students. These choices extend from when students can choose to learn to when and where they learn (Ron Oliver).
- vi. 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.
- vii. In many countries, demand for higher education far exceeds 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.

Influence of ICT on the Academic Performance of Tertiary Institution Students

ICT is the acronym “information and communication technology” which means those technologies that offer the users to get the required information via telecommunications. It is far just like Information Technology (IT) however emphasizes on the whole on communication tools. It consists internet, Wi-Fi, cell telephones, and other mediums of communication”. Consisting computers and vital company software, storage, audio-visible structures, middleware that allows customers to contact, shop, transfer, and manage data” (Shamim Talukder, 2015).

ICT has a vital part in establishing the new international economic system to provide fast changes in the world. In preceding era, at all these speeds, the ICT advanced and developed that the developing nations were unable to catch the transition anymore and were left behind and as a result of their interaction with the developed countries lagged behind. ICT offers the impetus for the present world so that know-how and essential concepts of this technology are seen as an important factor of learning (UNESCO, 2002).

It enables the learner to understand the difficult things in a very simple way presented through simulations when it is added to real situations. Hence, it plays the role of dynamic learning oriented facilitator that foster the learner to develop and enhance higher order thinking (Alexander, 1999). The main prerequisite for learners to get assistance from this innovation but it depends on the level of accomplishment and understanding of these vital technologies and realizing essential technological skills (Trpkovska, 2010). For increasing the academic achievement of pupils, conventional teaching methods are required to be up-to-date. Computer-Assisted Instruction (CAI) is the way that ICT technology is used for time-independent learning and teaching, making it easy for students to go through the system at home or on their computer. CAI increases learning levels as novices can learn more by offering the same length of time as classically taught learners. In addition, ICT standards keep learning easier for students (Hussain, Suleman, Din & Shafique, 2017).

Within the past two decades, ICT has earned prolonged importance. The accessibility of a massive extent of facts, resources via internet, improvements of technology in the field of ICT and a prolonged pliability in

organizations and corporations has intensified the knowledge boom and information worldwide (Hasan & Sajid, 2013). Consistent with the words of Daniels (2012) ICT has turned out to be inside a totally brief time as one of the fundamental pillars of present day society. ICT is considered as to be a source of learning simple competencies, skills and concepts by many of the countries as well as the concepts of ICT integrated with education, alongside analyzing, writing and numeracy. But, a fallacy is that ICT usually denotes to ‘computer systems and computing associated sports’. This is luckily not like that, even though computers and their softwares play an extensive position in cutting-edge data control, other technology and/or structures also contain of the phenomenon this is normally seemed as ICTs. The Radio Assisted Instructions (RAI), Internet Assisted Instructions (IAI), CAI, TV Assisted Instructions (TAI) are some of the ICT-assisted instructions in some areas (UNESCO, 2014). Education arena of society that has been influenced by ICTs and absolutely influenced teaching and learning as well as the research. A splendid deal of the studies tested the advantages of quality of education and mentioned that;

1. ICTs have the ability to originate, boost up, improve, and deepen abilities, to encourage and interact with students, so that they could be able to utilize their skills in practical fields, generate financial capability for future personnel and enhance the teaching and learning experiences (Okoro&Ekpo, 2016).
2. According to Khan, et al (2015) ICTs have extended rise of attention of the students. ICTs has brought about revolutionary changes and totally changed the scope of education in the last few years. Most of the countries in Europe, ICT and its use has attained top level importance in education during the last decade.
3. ICT is used by teachers to guide old-fashioned learning strategies, for example, in getting information where college students are ‘submissive” of information as opposed to ‘active producers capable to take part within the gaining knowledge of technique.
4. It is entitled how ICT can encourage and improve the educational process. In UK ICTs use in education is emphasized due to two primary objectives.

- a. First, ICT can alternate the lesson s' speed: they specified that kids want to broaden adequate capacities and talents from the new potentials provided by the use of ICTs.
 - b. Secondly, a huge number of students are there in UK who has the interest to contribute in research and want to learn how to operate new technologies that can expand quality of teaching and learning at educational environment so this might help the inexperienced persons to attain higher results”.
5. By the wide ranged use of the ICTs It has great impact on students' academic performance. ICTs assist them to get increase in education, make stronger the implementation of education to the progressively virtual place of work, and raise instructional best.
6. The practice of presenting ICTs in the classroom and other academic situations everywhere in all over the world a long time indicates the potential and effective utilization of ICTs in education (Valasidou&Bousiou, 2015).

Available ICT Facilities in Tertiary Institutions

There are several evidences that, ICT can be an effective tool in supporting teaching and learning process in the classroom. However, its introduction into schools does not by itself improve the quality of education or raise students' attainment (Hennessy et.al, 2010). Effectively introducing technology into schools is also largely dependent upon the availability and accessibility of ICT resources (e.g. hardware, software and communications infrastructure). Clearly if technology cannot be accessed by the teacher, as in so many educational settings in Sub Sahara African countries, then it will not be used. These are predominantly ICT illiteracy and confidence among teachers, and education of subject teachers to assist them in integrating ICT into learning areas (Hennessy et.al, 2010).

There are various types of ICT facilities can be used in the teaching learning process in schools. These are; radio, television, computers, overhead projectors, optical fibers, fax machines, CDRoms, Internet, electronic notice board, slides, digital multimedia, video/VCD machine and so on. It is most common that such facilities are not sufficiently provided for teaching – learning process in many secondary schools in developing countries. Fakeye (2010) in Nigeria points out that, in most of schools

covered in his study do not have computers, hence are not connected to the internet. He has also added that, those who have computers do not use them for teaching but solely for administrative purposes. In another study Adomi, et.al, (2010) indicated that lack of adequate search skills and of access points in the schools were reported as forces inhibiting the use of internet by secondary school teachers.

The study to explore factors that influence classroom use of ICT in Sub-Saharan Africa, was noted that, introducing technology into schools is largely dependent upon the availability and accessibility of ICT resources (Hennesy et.al, 2010). It was observed that schools are increasingly being equipped with computers for teaching, learning and administrative purposes; connectivity is improving and students enthusiastic about using computers for learning despite lack of equipment available. They are also noted that, there are two main reasons why teachers use ICT. First, teachers feel that their own use of computers benefits the learners, and second, teachers feel learners benefit from using the computers themselves (Hennesy et.al, 2010).

According to Ajayi (2018), the use of ICT facilities, involves various method which include systematized feedback system, computer-based operation/network, video conferencing and audio conferencing, internet/worldwide websites and computer assisted instruction. It must however be stressed that the effective use of the various method of the ICT in teaching leaning depends on the availability of these facilities and teachers' competence in using them. Teachers need to be supported to get the most from using ICT in classrooms. The implementing of technological solutions need to ensure that they are context-specific, and adapted to local needs and conditions. It is also imperative that ICT programs are sustainable or effective by ensuring that the technologies embedded within them meet the demands of users in appropriate ways. It is essential that potential users have a sound understanding of how to use new ICTs beneficially, and a cultural view of the relationship between learning and technology (Leach, Ahmed, Makalima, & Power, 2015). There is a clear difference between teachers who choose ICT resources to enhance understanding of a particular topic, and those who choose resources merely to present students work in a new way without any direct application to the topic. The evidence shows that

when teachers use their pedagogical knowledge both of the subject and also of how students understand and learn the subject, they can then maximize the effects of using ICT in terms of increasing students' attainment (Cox, 2013).

Constraints to Effective Utilization of ICT as a Change Agent for Quality Education in Tertiary Institutions

The ICT developments also give benefits to the students in Tertiary Institutions especially in term of emerging the effectiveness of teaching and learning process. ICTs when utilized can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner-centered environment. ICT when properly utilized can enhance the quality of technical college students in the area such as: motivation to learn; ICTs such as videos, television and multimedia computer software that combine text, sound, and colourful, moving images can be used to provide challenging and authentic content that will engage the student in the learning process and tele-collaboration. Interactive radio

likewise makes use of sound effects, songs, dramatizations, comic skits, and other performance conventions to compel the students to listen and become involved in the lessons being delivered.

As a classroom tool, the computer has captured the attention of the education community. This versatile instrument can store, manipulate, and retrieve information, and it has the capability not only of engaging students in instructional activities to increase their learning, but of helping them to solve complex problems to enhance their cognitive skills.

In Nigerian Tertiary Institutions the problems of acceptance and deployment of ICT are attributed to several factors.

- Limited / poor IT-The schools lack / insufficient ICT equipment.
- Frequently disrupted electricity
- Failure to incorporate into school curriculum
- Weak ICT policy / Plan for executing the project
- Insufficient ICT manpower in Schools
- ICT facilities / components High cost Limited school budget
- Teachers lack / restricted ICT skills
- Teachers and administrators lack / poor perception of ICTs

- Inadequate Technology for Education
- Poor management of school administrators and government.
- Lack of Maintenance culture.
- Students lacking interest in / use of ICT applications.

Research shows that ICT implementation and deployment in Nigeria are not well developed due to poor information infrastructure (Adomi, 2015, then 40 percent of Africa's population is in areas not covered by telecom services. Schools located in such areas will face ICT connectivity issues.

Others Include:

1. Lack of qualified teachers to teach ICT in schools.

There has been a huge demand for ICT learning and the number of teachers trained to teach ICT cannot meet the demand. Many students are eager to be taught computer skills than the teachers are willing to transfer the skills.

2. Computer shortages

Computers are still very costly and despite concerted attempts by government agencies, Charities, private organizations and individuals to

donate computers to as many schools as possible, a large percentage of schools still remain unable to buy computers for their students' use.

3. Electricity shortages.

There are still many schools that are not connected to electricity; Nigeria is a developing country, and the government has not been able to connect all parts of the country to the national grid. Some schools which fall within these areas are therefore left with disabilities and may not be able to offer computer studies.

4. Computers are still expensive in Nigeria

In a country with high inflation rates, most people and schools cannot afford to buy a computer and consider it a luxury item, more expensive than a television. While the 2nd hand computers cost between N105, 000 and above as N50,000 naira and branded new computers sold.

5. Broken down computers

While a large number of schools have benefited from donated used computers, they have not been properly equipped with the same on

maintenance and repair, hence it's very normal to see a school computer lab full of broken down machines, some repairable and some not. This was in fact a major problem and the government has now put strict measures on any individual, NGO or corporate body willing to donate 2nd hand computers. (It is called a dumping ground); control of e-waste;

6. Burglary

The fact that computers in Nigeria are still very expensive; this makes them a target for criminals who typically have ready markets at much lower numbers to another group. This has led many schools to incur additional expenses attempting to burglar-proof the computer rooms. The extra expense leads some schools to shy away from buying their students computers.

7. Lack of Internet or weak connectivity

Many schools are unable to link to the World Wide Web because of the high costs involved in telecommunications. On average it will cost about \$150 a month to connect to around 15 computers on a 128/64kbps bandwidth. This is considered very expensive for a very slow speed.

8. The moral deterioration

Internet pornography, cyberbullying and other antisocial behaviors is a disturbing emerging concern. The problem that emerges in delivering education technology stems from a lack of financial resources and a limited capacity for distribution. Nonetheless, many African countries were unable to hire teachers, and gave resources to meet this need. That results in poor educational quality. Additionally, many African governments face the educational expansion dilemma that corresponds to economic development. Notwithstanding the failures, most governments place a strong focus on access to education.

Summary of Reviewed Literature

Several pieces of literatures has revealed that ICT is very important as a change agent for quality education in tertiary institutions. 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.

CHAPTER THREE

METHODOLOGY

This chapter describes the research methodology that was used in the study under the following sub-headings:

- Design of the study
- Population of the Study
- Sample and Sampling technique
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of data collection
- Method of Data Analysis

Design of the Study

The survey research method was adopted to enable the researcher to carry out a systematic investigation to obtain information across the population of the study.

Population of the Study

The population of the study consisted of the thirty-nine thousand, two hundred and forty-three (39243) students in the university of Benin. The breakdown of the population is given below.

Table1.1 population of university of Benin students according to their faculties.

S/N	Faculty	Number of students
1	Physical science	3552
2	Social science	3036
3	Environmental science	596
4	Law	989
5	Life science	5088
6	Management science	3131
7	Agriculture science	2056
8	Art	5710
9	Basic medical science	1948
10	Medicine	795
11	Pharmacy	994
12	Dentistry	168
13	Education	7369
14	Engineering	3811
	Total	39243

(University of Benin students affair, 2022)

Sample and Sampling Procedure

The sample consists of two hundred and fifty undergraduate students from 100 level to 600 level which were randomly selected from faculty of Law, Education, Life science, Management Science, and Physical science, 50 students from each of the above-mentioned faculties through purposive sampling technique.

Research Instrument

The research instrument was a structured questionnaire and a checklist designed by the researcher. The instruments are divided into two sections: Section A and B. Section A contains particulars of the respondents (demographic data) such as name of faculty, level, and sex while section B contains several items. The items contained in the questionnaire revolves around the research questions raised in chapter one of this study and the response obtained from the respondent will help to validate the research checklist.

Validity of the Instrument

In order to ascertain the validity of the instrument, the questionnaire was given to the research supervisor and two lecturers in the Department of Curriculum and Instructional Technology (CIT) to scrutinize and for necessary corrections to ensure that content and face validity. Corrections made to the draft were incorporated in the final draft.

Reliability of the Instrument

The reliability of the instrument was determined by administering the questionnaire to twenty (20) students who were not part of the main study. The data collected from the students were subjected to Cronbach alpha reliability statistics., the reliability of the instrument was established at 0.746

Method of Data Collection

The questionnaires were administered personally by the researcher with the assistance of two trained researcher to the respondent that was randomly selected from the sample students. The respondents were assured of confidentiality and urged to answer the questions honestly in the best of their knowledge. Instructions were given to the respondent on how to fill the

questionnaire and the questionnaire were collected the same day to avoid incident of loss.

Method of Data Analysis

The data collected were properly organized and tabulated. The responses were statistically analysed by the use of simple percentage.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

This chapter presents the results obtained from the analysis of data for answering the research questions raised. The data was presented in tables and are arranged according to research questions.

Data Presentation

Research Question 1: Are ICT facilities available in University of Benin?

S/N	ITEMS	ALWAYS		SOMETIMES		NEVER	
		FREQUENCY	%	FREQUENCY	%	FREQUENCY	%
1	Computers	171	68.4	44	17.6	35	14
2	Smartphones	227	90.8	21	8.4	2	0.8
3	Digital libraries	128	51.2	46	18.4	76	30.4
4	Interactive boards	21	8.4	39	15.6	190	76
5	Multimedia projector	187	74.8	31	12.4	32	12.8
6	E-mails	102	40.8	89	35.6	59	23.6
7	Google	216	86.4	31	12.4	3	1.2
8	Internet facility	189	75.6	34	13.6	27	10.8
9	Internet/Web Environment	179	71.6	23	9.2	48	19.2
10	Computer laboratories	114	45.6	54	21.6	82	32.8
11	Laptops	169	67.6	49	19.6	32	12.8

Table 1. The first item is Computers; as observed 171(68.4%) of the respondents always use computers, and 44(17.6%) of the respondents sometimes use computers, while 35(14%) of the respondents do not use computers for learning.

The second item is Smartphones; as observed, 227(90.8%) of the respondents always use smartphones, 21(8.4%) of the respondents sometimes use smartphones while 2(0.8%) of the respondents do not use smartphones for learning.

The third item is Digital libraries; as observed 128(51.2%) of the respondents use Digital libraries, 48(18.4%) of the respondents sometimes use Digital libraries, while 76(30.4%) do not use Digital libraries for learning.

The fourth item is Interactive boards; as observed, 21(8.4%) of the respondents always use Interactive boards, 39(15.6%) of the respondents sometimes use Interactive boards, while 190(76%) do not use Interactive boards for learning.

The fifth item is the Multimedia projector; as observed 189(74.8%) of the respondents always use Multimedia projector, 31(12.4%) of the

respondents sometimes use Multimedia projector, while 32(12.8%) do not use Multimedia projector for learning.

The sixth item is E-mails; as observed, 102(40.8%) always use E-mails, 89(35.6%) of the respondent sometimes use E-mails, while 59(91.6%) of the respondents do not use E-mails for learning.

The seventh item is Google. As observed, 216(86.4%) of the respondents always use Google, 31(12.4%) of the respondents sometimes use Google, while 3(1.2%) of the respondents do not use Google for learning.

The eighth item is Internet facility. As observed, 189(75.6%) of the respondents always use Internet facility, 34(13.6%) of the respondents sometimes use Internet facility, while 27(10.8%) of the respondents do not use Internet/Web Environment for learning.

The ninth item is Internet/Web Environment. As observed, 179(71.6%) of the respondents always use Internet/Web Environment, 23(9.2%) of the respondents sometimes use Internet/Web Environment, while 48(19.2%) of the respondents do not use Internet/Web Environment for learning.

The tenth item is Computer laboratories. As observed, 114(45,6%) of the respondents always use Computer laboratories, 54(21.6%) of the

respondents sometimes use Computer laboratories, while 82(32.8%) of the respondents do not use Computer laboratories for learning.

The last item on Table one, is the Laptops; as observed, 169(67.6%) of the respondents always use Laptops, 49(19.6%) of the respondents sometimes use the Laptops, while 32(12.8%) of the respondents do not use Laptops for learning.

Research Question two: What are the roles of ICT as a change agent for quality Education in University of Benin?

Table 2 the roles of ICT as a change agent for quality Education in University of Benin.

S/N	ITEMS	SA	A	D	SD	Mean	Decision
1.	The use of ICT helps in creating opportunities for the institutions to communicate with one another e.g. through e-mail.	112 (44.8)	81 (32.4)	24 (9.6)	3 (1.2)	3.0	Agree
2.	Instructional cites (powered by ICT) provide opportunities for individualized instructions.	136 (54.4)	66 (26.4)	25 (10)	23 (9.2)	3.3	Agree
3.	Audiovisual media may help to change the methods of teaching and learning.	179 (71.6)	45 (18)	12 (4.8)	14 (5.6)	3.6	Agree
4.	The use of interactive whiteboard in the lecture rooms may help to improve the quality of tertiary education.	174 (69.6)	51 (20.4)	19 (7.6)	6 (2.4)	3.5	Agree
5.	The use of spreadsheet helps to enhance calculation related activities in tertiary institutions.	144 (57.6)	65 (26)	23 (9.2)	18 (7.2)	3.3	Agree

Result in table 2 indicates the responses to the above question. The use of ICT helps in creating opportunities for the institutions to communicate with one another e.g. through e-mail, instructional cites (powered by ICT) provide opportunities for individualized instructions. Audiovisual media

may help to change the methods of teaching and learning, the use of an interactive whiteboard in the lecture rooms may help to improve the quality of tertiary education and the use of spreadsheets helps to enhance calculation-related activities in tertiary institutions; they had mean scores of 3.0, 3.3, 3.6, 3.5 and 3.3 respectively. The use of ICT in tertiary institutions brings about better pedagogy in learning and helps to provide individualized learning.

Research Question three: What are the impacts of ICT on the academic performance of University of Benin students?

Table 3 The impact of ICT on the academic performance of University of Benin students

S/N	ITEM	SA	A	D	SD	Mean	Decision
6	Information Technology helps students to expand their knowledge in learning	156 (62.4)	74 (29.6)	18 (7.2)	2 (0.8)	3.5	Agree
7.	Incorporating the use of technological applications allows students to participate in higher-order thinking and improve their performance	154 (61.6)	69 (27.6)	16 (6.4)	11 (4.4)	3.5	Agree
8.	Information Technology helps students engage in collaborative problem-solving activities and discussions	184 (73.6)	54 (21.6)	7 (2.8)	5 (2)	3.7	Agree
9.	Technology makes it easier for students to find information quickly and accurately	158 (63.2)	49 (19.6)	33 (13.2)	10 (4)	3.3	Agree
10.	Information technology creates a fun opportunity for computer science students to practice what they learn	169 (67.6)	45 (18)	19 (7.6)	17 (6.8)	3.5	Agree

From table 3 the following mean scores (x) were obtained, 3.5, 3.5, 3.7, 3.3, and 3.15. The above mean score stood for Information Technology helps students to expand their knowledge in learning, Incorporating the use of technological applications allows students to participate in higher-order

thinking and improve their performance, Information Technology helps students engage in collaborative problem-solving activities and discussions, Technology makes it easier for students to find information quickly and accurately and Information technology creates a fun opportunity for computer science students to practice what they learn were on the same table. This means there was no disagreement from the respondents. The table, therefore, concludes that incorporating the use of technological applications allows students to participate in higher-order thinking and improve their performance and information Technology helps students to expand their knowledge in learning.

Research Question four: What are constraints to effective utilization of ICT as a change agent for quality education in University of Benin?

Table 4: constraints to effective utilization of ICT as a change agent for quality education in tertiary institutions in Edo state

S/N	ITEMS	SA	A	D	SD	Mean	Decision
11.	Lack of interest of teachers in ICT usage	96 (38.4)	84 (33.6)	56 (22.4)	14 (5.6)	2.6	Agree
12.	Scarcity of ICT materials for obtaining information	149 (23.2)	58 (23.2)	19 (7.6)	24 (9.6)	3.3	Agree
13.	Lack of adequate power supply	184 (73.6)	53 (21.1)	9 (3.6)	4 (1.6)	3.8	Agree
14.	Insufficient time to prepare electronic-based materials	141 (56.4)	49 (19.6)	39 (15.6)	21 (8.4)	3.2	Agree
15.	High acquisition and maintenance cost of ICT equipments	188 (75.2)	48 (19.2)	6 (2.4)	8 (3.2)	3.7	Agree

The respondents gave the following indices to indicate their stand on the above issue. The items; Lack of interest of teachers in ICT usage, the mean (x) of 2.6, which was followed by Scarcity of ICT materials for obtaining information. had a mean score of 3.3. item number 13, 14, and 15 showed that lack of adequate power supply, Insufficient time to prepare electronic-based materials, and high acquisition and maintenance costs of ICT equipment. They had mean scores of 3.8, 3.2, and 3.7 respectively. Table 4 therefore, reveals that the factors impeding the usage of ICT in Edo state tertiary institutions are, scarcity of ICT materials for obtaining information,

epileptic power supplies, high acquisition and maintenance cost of ICT equipment, and most likely, Insufficient time to prepare electronic-based materials by lecturers.

Discussion of the Findings

The result of this study has been quite, informative and revealing. Based on the analysis of data or information collected from the opinion of the respondents on **the role of ICT as a change agent for quality education in University of Benin.**

From the research question one, among the various ICT tools listed, the analysis revealed that computers, smartphones, digital libraries, Google, internet facility, Computer laboratories multimedia projectors, and laptops were predominantly used by tertiary institutions students in Edo state.

Research two findings indicate that students agreed that the use of ICT helps in creating opportunities for the institutions to communicate with one another e.g. through e-mail 77.2% in support of it, Instructional cites (powered by ICT) provide opportunities for individualized instructions, Audiovisual media may help to change the methods of teaching and learning,

The use of interactive whiteboard in the lecture rooms may help to improve the quality of tertiary education and the use of spreadsheet helps to enhance calculation related activities in tertiary institutions. had percentages of 80.8%, 89.6%, 89.6% and 83.6%.

Research findings also show from research question three, that 92% were in support of Information Technology helps students to expand their knowledge in learning, 89.2% revealed that Incorporating the use of technological applications allows students to participate in higher-order thinking and improve their performance. Information Technology helps students engage in collaborative problem-solving activities and discussions also had 95.2%. Technology makes it easier for students to find information quickly and accurately had 82.8% and Information technology creates a fun opportunity for computer science students to practice what they learn had 85.6%.

From research question four, result gathered shows that among the factors impeding the use of ICT, Lack of interest of teachers in ICT usage had 72% this was followed by scarcity of ICT materials for obtaining information with 82.8%. Lack of adequate power supply had 94.8%,

Insufficient time to prepare electronic-based materials and High acquisition and maintenance cost of ICT equipment had 76% and 94.4% respectively.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter gives the summary of this work, as well as conclusion and recommendation drawn from the findings of the study

Summary

The purpose of this research was designed to find the role of ICT as a change agent for quality education in tertiary institutions development in Edo State.

The researcher made effort in analyzing ICT facilities available in Edo state tertiary institutions, the roles of ICT as a change agent for quality Education in tertiary institutions in Edo state, impact of ICT on the academic performance of tertiary institution students in Edo state, and, constraints to effective utilization of ICT as a change agent for quality education in tertiary institutions in Edo state. All of these have been discussed in detail under the review of the literature.

The collection of data was carried out through the administration of questionnaire to two hundred and fifty undergraduate (250) students from

100 level to 600 level which were randomly selected from faculty of Law, Education, Life science, Management Science, and Physical science, 50 students from each of the above-mentioned faculties. The data were interpreted and discussed using percentages, mean, and frequency table. The sampling technique used for the research is purposive random.

An appropriate research instrument was designed to address the questions. University of Benin undergraduate students made up the population for the study and data gathered were analyzed, interpreted and presented.

Conclusion

Following the analysis of the data collected and finding made, the following conclusions were drawn:

1. computers, smartphones, digital libraries, Google, internet facility, Computer laboratories multimedia projectors, and laptops were predominantly used by tertiary institutions students in Edo state
2. The use of ICT in tertiary institutions brings about better pedagogy in learning and helps to provide individualized learning.

3. incorporating the use of technological applications allows students to participate in higher-order thinking and improve their performance and information Technology helps students to expand their knowledge in learning. And
4. factors impeding the usage of ICT in Edo state tertiary institutions are, scarcity of ICT materials for obtaining information, epileptic power supplies, high acquisition and maintenance cost of ICT equipments, and most likely, Insufficient time to prepare electronic-based materials by lecturers.

Recommendations

Based on the findings and conclusion, the following recommendations were made by the researchers.

1. 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 tertiary education.

3. Students in tertiary institutions should be encouraged on the use of internet to solve their academic problems and the Government should ensure the constant supply of power to tertiary institutions to aid the use of ICT associated facilities
4. 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.

Suggestions for Further Studies

This study investigated the role of ICT as a change agent for quality education in tertiary institutions development in Edo State, using 250 respondents. The future researcher may repeat this study by using larger population such as more than one university.

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APPENDIX

STUDENT QUESTIONNAIRE

DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY

(CIT)

FACULTY OF EDUCATION,

UNIVERSITY OF BENIN, BENIN CITY

THE ROLE OF ICT AS A CHANGE AGENT FOR QUALITY

EDUCATION IN TERTIARY INSTITUTIONS DEVELOPMENT IN

EDO STATE.

Dear Respondents,

This checklist is designed for academic purposes. It is structured to find out **the role of ICT as a change agent for quality education in tertiary institutions development in Edo State.**

Please respond sincerely to the questions by ticking [] where applicable. Your responses which are needed for research purposes only will be treated with high level of confidentiality. Thank you.

Section A

Instructions: Please tick (✓) where applicable.

1. Name of

faculty: _____

2. Sex: male() female ()

3. level: 100level () 200level () 300level () 400level() 500level ()
600level ()

SECTION B:

Research question 1: Are ICT facilities available in Edo state tertiary institutions?

S/N	ITEMS	Always used	Sometimes used	Never used
	Multimedia Aids			
1.	Podcast			
2.	Computers			
3.	Ipads			
4.	Smartphones			
5.	Digital library			
6.	Interactive boards			
7.	Multimedia			

	projectors			
8.	E-mails			
9.	Wikis			
10.	Internet facilities			
11.	Internet/Web Environment			
12.	Computer laboratories			
13.	Learning Management System (LMS)			
14.	Laptops			

KEY: SA; Strongly Agree, A; Agree, SD; Strongly Disagree, D; Disagree.

	ITEMS	Strongly agree	Agree	Strongly Disagree	Disagree
	What are the roles of ICT as a change agent for quality Education in tertiary institutions in Edo state?				
1.	The use of ICT helps in creating opportunities for the institutions to communicate with one another e.g. through e-mail.				
2.	Instructional cites (powered by ICT) provide opportunities for individualized instructions.				
3.	Audiovisual media may help to change the methods of teaching and learning.				
4.	The use of interactive whiteboard in the lecture rooms may help to improve the				

	quality of tertiary education.				
5.	The use of spreadsheet helps to enhance calculation related activities in tertiary institutions.				
	The impact of ICT on the academic performance of tertiary institution students in Edo state?				
6.	Information Technology helps students to expand their knowledge in learning				
7.	Incorporating the use of technological applications allows students to participate in higher-order thinking and improve their performance				
8.	Information Technology helps students engage in collaborative problem-solving activities and discussions				
9.	Technology makes it easier for students to find information quickly and accurately				
10.	Information technology creates a fun opportunity for computer science students to practice what they learn				
	What are constraints to effective utilization of ICT as a change agent for quality education in tertiary institutions in Edo state?				
11.	Lack of interest of teachers in ICT usage				
12.	Scarcity of ICT materials for obtaining information				
13.	Lack of adequate power supply				
14.	Insufficient time to prepare electronic-based materials				
15.	High acquisition and maintenance cost of ICT equipments				