

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) FOR FUNCTIONAL EDUCATION IN NIGERIAN TERTIARY INSTITUTIONS

By

MANASSEH KWAGHAERGA SALEMGA

Faculty of Education
Department of Educational Foundations
Philosophy of Education Unit
Nasiriya State University, Keffi

&

FRIDAY AUDU AGAH

Faculty of Education
Department of Educational Foundations
Philosophy of Education Unit
Nasarawa State University, Keffi

Abstract

This paper is a study of Information Communication Technology (ICT) for functional education in schools yesterday, today and tomorrow. The study shows that Information and Communication Technology (ICT) can make lots of impacts in the educational practice in schools. Information and Communication Technology (ICT) has become a strong agent for change among many educational practices. It is evident from the study that the efficient use of Information and Communication Technology (ICT) in schools will greatly enhance the desired growth both in the education and every aspect of students and educators. The use of Information and Communication Technology (ICT) in education lends itself to more student-centered learning settings; it enhances continuing and distance learning education. Information and Communication Technology (ICT) enhances teaching, research and effective and efficient school administration. Indeed, with the world moving rapidly into digital media and information, the role of (ICT) in education is becoming more and more important and this importance will continue to grow and develop that's, (yesterday today and tomorrow). Thus, the paper suggests that Information and Communication Technology (ICT) in developing schools' is not only for educational development only, but also as well as a way of socio-economic development of institutions, educators and, the entire Nigeria as a nation.

Keywords: Information and Communication Technology (ICT), Functional Education, Schools, Students and Educators.

Introduction

Etymologically, the phrase Information and Communication Technology has been used by academic researchers since the 1980s, and the abbreviation ICT became popular after it was used in a report to the UK government by Dennis Stevenson in 1999, and in the revised National Curriculum for England, Wales and Northern Ireland in 2000. But in 2012, the Royal

Society recommended that Information and Communication Technology ICT should no longer be used in British schools "as it has attracted too many negative connotations", and with effect from 2014 the National Curriculum uses the word computing, which reflects the addition of computer programming into the curriculum. Variations of the phrase have spread worldwide, with the United Nations creating a "United Nations Information and Communication Technologies Task Force" and an Internal "Office of Information and Communications Technology

ICT is an acronym that stands for Information and Communication Technology. It is a composite term, which embodies three important concepts: information, communication and technology.¹ submits that that to understand the term ICT, one must understand all the three concepts. He then defines information as scientifically processed data which aids decision making.², information means data that has been put into a meaningful and useful context and communicated to a potential user who uses it to make decisions.³ also defines communication as the transfer or exchange of information from person to person or from one place to another, while he describes Technology as the use of scientific knowledge to create tools for enabling human beings to subdue environmental hazards and obstructions to comfort. The computer, telephone, cell phone, GSM handsets, television, radio, etc are given as examples of products of communication technology. Coming to the definition of ICT,⁴ defined it in: The acquisition, analysis, manipulation, storage and distribution of information; and the design and provision of equipment and software for these purposes. Elsewhere, ICT is also defined as the various technologies that enhance the creation, storage, processing, communication and dissemination of information. ICTs also refer to the different infrastructures used in these processes, their applications and the numerous services these infrastructures render.

The elements of ICTs include communication media e.g. radio, television, information machine (e.g computers) and telecommunications technologies and equipment (e.g satellites, fibred optic cables, phones, and facsimile machines).Telecommunications infrastructures in particular have turn out to be the driving forces of ICTs because they have the ability to link all various ICT elements together irrespective of locations and to provide a converging platform for them all.

The role of Information and Communication Technologies (ICTs) in the 21st century education system has been described as vital to keeping abreast with rapidly changing. Its importance has been translated into huge potentials in terms of positive outcomes, although investments in ICTs in Nigerian's education system have not yielded much when compared to similar investments made in communication⁵.

The field of education in Nigeria and entire global has certainly been affected by the penetrating influence of ICT worldwide. ICT has made impact on the quality and quantity of teaching, learning and research in the institutions using it⁶. According to Ololube, Ubogu and Ossai, the introduction of ICT usage, integration and diffusion has initiated a new age in educational methodologies, thus has radically changed traditional method of information delivery and usage patterns in the domain as well as offering contemporary learning experience for both instructors and learners.⁷ ICT has the potential to accelerate, enrich and

deepen skills, motivate and engage students in learning; helps to relate school experiences to work places, helps to create economic viability for tomorrow's workers, contribute to radical changes in school, strengthens teaching, and provides opportunities for connection between the school and the world.⁸ described Information and communication technology (ICT) as electronic technologies used for information storage and retrieval. According to the Online Oxford Dictionary, Information and communications technology or information and communication technology, usually abbreviated as ICT, is often used as an extended synonym for information technology (IT), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions. ICT as described by Scott (2002) encompasses a range of applications, communications and technologies which aid information retrieval and research communication and administration. These include online databases, library services and online services and fax machine. It has become a global phenomenon of great importance and concerns in all aspects of human endeavor, spanning across education, governance, business, labour, market, shares, productivity, trade, agriculture, commerce and others. The expression was first used in 1997 in a report by Dennis Stevenson to the UK government and promoted by the new National Curriculum documents for the UK.¹⁰

Concept of Information And Communication Technology (ICT).

Information:

When you are curious about something, you made enquiries and you get some results. These results, when stored or compiled, they help you to confirm or reject your assertions or help you make decisions. These results are facts or details that tell you something about a situation, person or events. (Williams and Sawyer, 2005). In essence, Information is therefore the facts or details that are summarized or manipulated for decision making.

Communication:

Communication could be seen as a complex phenomenon without which no human activity is complete. It is basic to every day existences because though communication we can acquire knowledge to conquer our environment. If this knowledge is impaired, human beings could be reduced to robots because both the mental and physical alertness will be impaired. The giant stride made in technology is a result of improved communication system. Communication means different things for different people. To a broadcaster or a teacher, it could mean the sharing of ideas between two or more people, the transmitting of information from the source (sender) to the destination (receiver), to a technology-based person, as described by O'Leary¹², it could mean the process of sharing data, programmes, information between two or more computers. Communication could be verbal or non-verbal. It could occur between two animals, man and lower animals, between man and machine, animal and machine, and between machine and machine¹³.

Technology:

Technology dates back to the beginning of man's history. It is a means of applying solution to problems encountered. The Early man invented fire to keep himself warm, cook and preserves his food. Technology means several things to several people. It is scientific. This informed the definition of Galbraith¹⁴ which described technology as "the systematic application of scientific or other organized knowledge to practical task." Akanbi¹⁵ also described technology as "an application of scientific knowledge and principles about human learning, communication and management to the solution of problems in teaching and learning. Process of applying a means that could solve the problems or needs of man is technology. This is intrinsically related to the culture and needs of man. Thus we have print technology, textile technology, and educational technology.

The Internet:

This is the heart of information age. It is called "the mother of all networks." It is a large computer network available to everyone with a microcomputer and a means to connect it. It is a worldwide computer network which connects hundreds of thousands of smaller networks. The network is made up of wires, cables and satellites. Internet networks links educational, commercial, non-governmental agencies, military as well as individuals.

World-Wide-Web (WWW):

This is the multimedia aspect of the internet. It is often called the 'web'. It is the media inter-connected system of internet computers (called servers) that support specially formatted documents in multimedia form. The word is from 'multiple media' meaning technology which presents information in more than one medium such as text, still images, and sound. It is the sequential or simultaneous use of variety of media format in a given presentation or self-studied programme.

Local Area Network (LAN):

This is a network with allows all the personal computers under the same roof to share the same peripherals. It connects, usually by cables, a group of desktop, Central Processing Unit CPC and other devices, such as printers, in an office or a building. It could also be the networking of home appliances, linking stereos, lights, heating system, phones, radio, television, teleconferencing, mobile learning devices, etc.

What is Information and Communication Technology in Education?

Information and communication technologies (ICT) in its application consist of hardware, software, networks and media for collection, storage, processing, transition and presentation of information (voice, data, text and images) (World Bank, 2002). According to Cox¹⁶, it is the design, study and use of process representing physical, hypothetical or human relationships, employing collection, creation, storing retrieving, manipulation, presentation, sending and receiving of information. He also remarked that it refers to electronic and / or computerized devices and associated human interactive materials that enable the user to employ them for a wide range of teaching and learning processes in addition to personal use. According to Federal Ministry of Education FME¹⁷ Information and Communication Technology ICT is the art and applied sciences that deal with data and information. It

encompasses all (equipment including, computational machinery, computers, hardware, software, tools, methods, practices. Processes, procedures, concepts, principles and the sciences) that come into play in the conduct of information activities: acquisition, representation, processing, presentation, security, interchange, transfer, management, organization, storage and retrieval of data and information. Several different types of technology could be used to maintain and improve learning. All from digital moviemaking, video content, to handheld technologies and laptop computing has been used in classrooms. Likewise, new usage of technology such as pod casting are constantly emerging¹⁸. From Marshall's view point, a variety of technologies bring different types of package and provides different purposes in the classroom. E-mail and Word processing promotes communicational skills; spreadsheet and database programmers promote organizational skills; and software for modeling promotes the basic understanding of Mathematics and Science concepts. It is imperative to look at how these electronic technologies vary and what type makes them essential as a van for education¹⁹.

Available technologies in classrooms nowadays vary from simple tool-based functions for example word processors, to scientific repositories of online data. Others are handheld computers, primary historical documents, two-way distance learning classrooms and closed-circuit television channels.²⁰ emphasized that even the mobile phones that a lot of people now take with them can be used to gain knowledge. In accordance with²¹ all technology is possible to play diverse roles in the learning of students. Instead of trying to illustrate the effect of all technologies by putting them as the same, researchers ought to consider the various types of technologies that are being used in class-rooms and for what intentions. Two universal differences can then be looked at from literature.

Learners can study from computers where technologies are used basically as teachers and tend to enhance student's essential knowledge and skills. Furthermore, it is feasible for them to be taught with computers where technologies are used as tools that can be used in varieties of goals in the knowledge acquisition process and can be as resources to help in the development of advanced order thinking, research skills and creativity²², said that the primary structure of student studying from computers is explained as DES (Discrete Educational Software), CAI (Computer-Assisted Instruction), ILS (Integrated Learning System), and CBI (Computer-Based instruction). Applications of this software are also the most broadly accessible applications of learning machinery in schools nowadays, alongside the word-processing software, and have immensely helped in classroom for over 20 years²³.

Elucidates that teachers employ the use of (Discrete Educational Software) DES not only to enhance teaching, as in the previous years, but to provide means for self-study, bring in topics, and give chances to learn ideas otherwise difficult to get to students. The software also performs two key hypotheses about how computers can aid learning²⁴. Primarily, the user's capability to relate with the software is barely described in methods intended particularly to encourage studying with the tools. Secondly, computers are seen as a medium for acquiring knowledge, to a certain extent than as tools which may perhaps support more learning. As Discrete Educational Software (DES) is known as the universal method or approach to

computer use in student's acquisition of knowledge. Of late, the usage of computers in schools has developed more varieties as educators identify the potency of studying with technology as a way of enhancing or improving student's problem solving abilities and reasoning.

Remarks that "this move that has been motivated by the superfluity of communication devices and new information now more available to students at home and in school, each of which gives new enablement to students and teachers alike for enhancing and improving student success and to meet demands the 21st century skills."²⁵

This therefore shows that Information Communication Technology ICT is an indispensable part of the contemporary world. ICT has been in a system, but its application has been a matter of concern especially in developing countries. Advanced nations of the world have used ICT to a great advantage for example of countries like America, Canada, Britain's. In education some of the technologies that are being used to enhance teaching and learning include the following; Radio Sets, Television, Video Discs, Computers, Smartphones, Virtual Library, Virtue Classroom, Virtual Laboratory, Podcast /Webcast etc.

The use of these new technologies requires skills and competences which must be acquired by both the teacher and learner. The application of ICT in education will continues to grow and recent advances are likely to also increase their range and applications dramatically. Access to these tools thus becomes a matter of critical importance for the schools and the science teachers that seeks to become viable and effective in teaching his / her students, and providing them with adequate skills and capacity to live in a technological oriented world.

Information and Communication Technology (ICT) is an indispensable part of contemporary world. In fact, culture and society have to be adjusted to meet the challenge of the knowledge age. The importance's of ICT has brought about rapid technological, social, political and economic transformation which has led to a network of societal organized world. The information age, is epitomized by the unprecedented growth in the access to information enabled by new technologies which emerge from time and in every generation. However, new technologies defer in the nature, sources, impact, and rate of diffusion, purpose and ability to generate newer or better technologies. Generic technologies, a name given to technologies with disruptive or radical impact on social and economic system are not so common. Any generation that experiences at least the emergence of one generic technology is economically widened and often has profound benefits that result in considerable human welfare. The stream engine revolutions in the 19th century are major examples of generic technologies.

The Role of Information and Communication Technology (ICT) in Enhancing Education in Developing Countries

ICT is one of the driving forces of globalization because it faces the rapid transformation of remote and isolated information units into global inter-connected super highways, it is a transforming mechanism that can influences the way its live by converting our societies into truly knowledge based, therefor ICT impact so much in enhancing education, Considering the importance of ICT in national development as well as education in particular. Below are some of the vital roles ICT can play in enhancing education in developing countries:

1. **Access to information:** student who uses computer in the classroom has access to more information to propel his/her learning. Can research a topic the teacher talks about in the classroom, using the internet. Many textbooks come with computer, a Compact Disc CDs is a portable storage medium that can record, store and play back audio, video and other data in digital form. To supplement classroom learning. Educational software programs, as well as online-based games, promote learning as well. All of these resources become quickly accessible with a computer in the classroom.
2. **Improved Technology Skills:** students who access computers in the classroom will build their computer skills, which are invaluable in a technologically sophisticated society. By the time computer use becomes mandatory at the nursery, primary and secondary schools, and universities levels, students will be well-versed in using basic word processing programs, doing computer-based research and typing. Building these skills at a younger age by way of classroom computers can pay dividends as learners move through middle school, high school and perhaps beyond. Students also learn to work with the computer programs, such as word processors and Web browsers.
3. **Learning enhancement:** students might explore the Internet to find illustrations related to subjects they are studying. Science students might browse scientific magazines or websites. Students also use computers to perform research for their assignments. Interaction in classroom has always enhanced the learning process, as interactivity bring students a more thorough understanding of course material, these 'extras' are limited and not always possible for many subjects, however, with the power of a computer, online extras lessons are easily accessible. Computers allow students and teachers to access additional tools in learning process.
4. **Educators or Teachers:** computers are versatile tools that can relate to many aspects of life, from communication research to problem solving, teachers can use the Internet to connect and interact with students via social networking sites and class blogs, share resources, expertise and advice, computer technology offers flexibility in when and where tasks are carried out. Gains in computer technology, literacy skills confidence and enthusiasm. Easier planning and preparation of lessons and designing materials. Access to up-to-date pupil and school data, anytime and anywhere.
5. **Individualization of instruction:** its providing opportunities for individual to received instruction, the learner, through the application of Information and Communication Technology ICT can receive instruction alone anywhere and time that is comfortable and convenient for him/her. The internet is good tool to do this ²⁶.
6. **Instructional materials:** provide enrichment of teaching materials to teachers, the application of Information and Communication Technology ICT to teaching helps the teacher with rich materials to use in classroom thus guaranteeing higher quality standards in schools. ²⁷.

How Can ICT Be Integrated Into Teaching and Learning Process

Promoting ICT and having it integrated into teaching and learning process integration in teaching and learning process. Is it worth investing so much money? What advantages do ICT

have in education? Many researchers have given their view points about the advantages and how Information and Communication Technology ICT can be integrated in curriculum.

Believed that the basic skills of the future are the use of powerful technologies.²⁸ The traditional textbook can no longer fulfill the need in the rapid changing and the information-explosion world. He asserted that the traditional teacher-cantered approach makes classroom no longer an effective system to prepare students for the realities which they face in the near future.

Pam.²⁹ stated that technology works best as a supporting tool-making complex processes or creative experience either possible or easier to accomplish task. He thought that technology can offer new ways to provide meaningful, real-life context for learning, it also allows students to collaborate with peers and experts across the country and around the World.

Rose³⁰ described Information and Communication Technology ICT as good as, or even better than, traditional method of teaching and learning as it being limitless of time and space.³¹ pointed out that suitably integrated computer use can contribute to successful results in the classroom as to: support teaching and learning, support children's socialization, enable children with disabilities to integrate and enables a teacher to duplicate excellence.

According to Kayode³², integration of ICT in teaching requires understanding at a deeper level to facilitate the development of strategies and process to identify opportunities, solve problems and evaluate solution. They believe that these higher-level objectives require not only technical knowledge and skills, but the ability to choose an effective strategy for a problem.³³ shared his view that the technology is only a tool to both teacher and student. The effectiveness of the tool depends entirely on the skills they bring to the learning process. He believed that the teachers' task is thus to nurture the student's willingness to learn.

New technologies contribute to the ways of learning knowledge, skills and attitudes, but still dependent on pre-requisite knowledge and type of learning activity. New technologies spur spontaneous interest more than traditional approaches of learning. Students using new technologies concentrate more than those in traditional settings. Moreover, the above outlined points are balanced by further genuine observations: Benefits of Information and Communication Technology ICT for students are greatly dependent on the technological skills of the teachers and their attitudes towards technology. Skill and attitude in turn are largely dependent on the staff training in this area, United Nations Educational, Scientific and Cultural Organization UNESCO³⁴.

ICT in Teaching and Learning Process

Information and Communication Technology have made a tremendous impact in all aspects of human activities including education. Apart from reducing the world to a global village, it has made the most tremendous impact in education. It revolutionized education by making all vital information available to the learners. This is why Gates³⁵ noted that the most fundamental difference between today and the future is that information will be created, stored, and transmitted in digital formats. With ICTs the learners can access information from different parts of the world and they no longer depend solely on the teacher for information. In fact, learners who have access to ICT facilities such as internet and use these facilities in

their learning can be said to be more versatile than their teachers who have no access to these ICT facilities.

For teachers to be relevant in this new information and technology age, teacher education or training must adopt ICT programmes in their training. The incorporation of ICT into teacher education curriculum not only positions the teacher to be more effective and efficient but also, to remain relevant in the new world ruled by information and communication technologies. In view of the importance of ICT in enhancing education in developing countries and national development in general and educational advancement in particular. The prospects and accuracy of speed to each of these administrative tasks like data processing, recording keeping, along with the convenience of storing large quantities of information on a compact disk is prevailing condition in school administration and management in Nigeria is indeed encouraging. A benefit of information and communication Technology to students has invaded every aspect of lives, including the school. Many educators incorporate technology into the classroom any way they can, and classrooms often include a computer for students to share. Students who learn in a classroom with computer access a number of educational advantages. From expanding their world views to engaging in projects with their peers, students with computer access stay well connected with the following benefits³⁶ as listed below:

- As a matter of policy, all countries should be equipped with minimum specific numbers of computer in an Information and Communication Technology ICT laboratory and be put into effective use for both teachers and students
- Management of each school should take an active role in creating awareness through media, workshop and seminar about Information and Communication Technology ICT
- There should be Study tour and film trip so as to assist educational administrators on how Information and Communication Technology ICT can support education administration and how it can impact learning process.
- Management of the institutions should collaborate with private sectors and Non-Governmental Organization NGO to fund Information and Communication Technology ICT in all level of education in Nigeria
- Information and Communication Technology ICT should be combined with more traditional technologies such as books and radio and be more extensively applied to the training of teachers
- Government should create Information and Communication Technology ICT awareness and ensure universal access in promoting diffusion into all sectors of the schools
- Government should create an enabling environment and facilitate private sectors investment in the Information and Communication Technology ICT.

Challenges of Integrating ICT into Teaching and Learning Process in Nigeria

The major challenges identified in Information and Communication Technology ICT teaching and learning practices are:

- I. Interrupted electricity supply or no supply at all
- II. Poor funding from government, federal, state and local government

- III. Lack of monitoring and evaluation
- IV. Phobia of technology on the part of teachers resulting in the poor utilization of existing facility.
- V. Information and Communication Technology ICT policy on education not accompanied by a detailed implementation plan or commitment from governments to implement the policies.
- VI. Shortage of Information and Communication Technology ICT professionals and lack of educator with ICT skills.
- VII. Information and Communication Technology ICT equipment: equipping schools and colleges with ICT equipment is very expensive due to hardware and software purchase as well as the recurrent costs associated with maintenance and support
- VIII. Managements attitudes: the attitudes of various management in and outside institutions towards the development of Information and Technology ICT related facilities such as the internet and procurement of computers is rather slow in some instances, and in others there are no aids or support by the government at all,³⁷.

Merits of Using ICT in Teaching and learning Process Enhancing Education

Information Communication Technology (ICT) has a revolutionary impact on educational methodology globally. The challenges for school system throughout the world are that of providing an effective education for all students in schools which will prepare them for inclusive participation in the work place, social environment, and political sphere.

Countless millions of students are dropping out of school due to the seeming irrelevancy of education to their lives,³⁸. The major focus in any educational institution should be, that good norms and value are impacted to students at all level for the development of the society and humanity.

Information and Communication Technology (ICT) have introduced a new era in traditional methods of teaching and offering new teaching and learning experience to both teachers and students. Hence the Nigerian educational environment should take advantage of this capability to provide easy access to information, since technologies enable the visualization of educational materials in innovative and realistic manner. However, in our nation today, it is obvious that this revolution in education is not widespread, therefore, there is a need to strengthen.

The history of utilization of media in human communication started as far back as the Stone Age where the surface of rocks and stone served as the medium of communicating visual information. This later developed to the use of the blackboard, chalkboard and later printed materials which were combined with verbal communication. These were effective then because the teachers were the only source of knowledge and information. As new technologies were developed in the era of entertainment and information dissemination there were distraction in the classroom as students became restless so much that educators were challenged to do research in media disseminating information as presented by Shabari,³⁹. They remark that the outcome of research to make learning interesting brought about technologies in the classroom.

There is no gain saying that Information and Technology ICT has had great impact on every facet of human existence in our world today. The application of ICT in education enhancing developing countries has made significant impact on the quality and quantity of teaching-learning and research in the traditional educational institution. According to Kurache as ⁴⁰, institutions that encourage their teachers and learning to use ICT are more efficient and productive. Information and Technology ICT enhances teaching and learning as it involved the usage of a variety of tools to enhance and facilitate teacher's pedagogical activities through it dynamics interaction, flexible and engaging content. To this end, Mohammed⁴¹

1. Improved teachers handling of large classroom
2. Developed teachers interest and confidence in his or her work
3. Sustained life-long learning
4. Promotes teacher's capabilities to carry out meaningful research
5. Promote effective and meaningful research
6. Promote effective and efficient education administration
7. Teachers studying by distance or long vacation programmes have access to information from lecturers or internet and others sources.

Recommendations

There should be awareness campaign at all levels as teachers' interest in Information and Communication Technology ICT is low.

Education Resource Centre's in all state and local government areas should be provided with Information and Communication Technology ICT facilities that will be accessible to all teachers within the zone for practices.

Information and Technology ICT should not be restricted to a single course but should permeate all courses in the teachers training programmes and institutions of learning in Nigeria

Government should ensure that costs of connectivity, equipment maintenance and support are affordable for individual, institutions or ensure that there is provision to cover the cost centrally.

Teachers' trainees at all levels and their trainers in Nigeria should be directed to possess computers by the institutions authorities. (Loans could be arranged for them through the banks)

Funding, government at all levels should make Information and Communication Technology ICT a matter of priority, provides the specifically needed for the training of teachers in computer education who shall in turn be equipped with ICT knowledge and skills to teach students computer or ICT basic.

Conclusion

The National Policy on Education (FRN) as revised⁴², re – emphasized the need for the integration of Information and Communication Technology ICT in the Nigerian educational system. This is an acceptance of the need to go beyond computer to the level of ICT also the

need for infrastructure. Three major objectives, among others were emphasized in the Nigerian National policy for Information Technology FRN,⁴³. These are to empower youths with ICT skills to prepare them for good impact in society.

Competitiveness in a global environment, integrate Information Communication Technology ICT into the mainstream of education and training and establishment of multifaceted Information and Communication Technology ICT institutions as centers of excellence of ICT. To achieve these objectives, nine major strategies were outlined. These include

- i. Making Information and Communication Technology ICT compulsory at all educational institutions
- ii. Developing Information and Communication Technology ICT curricular for all levels of education
- iii. Using Information and Communication Technology ICT in distance education
- iv. Information and Communication Technology ICT companies' investment in education
- v. Giving study grant and scholarship on Information and Communication Technology ICT
- vi. Training the trainers' scheme for youth corps services on Information and Communication Technology ICT
- vii. Information and Communication Technology ICT capacity building at the zonal, state and local government levels
- viii. Establishing private and public dedicated Information and Communication Technology ICT institutions
- ix. Working with international and domestic initiative to transfer Information and Communication Technology ICT knowledge.

The vision to make Nigeria an Information and Communication Technology Information and Communication Technology ICT capable country in Africa and a key player in the information society by using Information and Communication Technology ICT as an engine for sustainable development and global competitiveness is yet to be achieved; this is because Information and Communication Technology ICT is at particularly a dynamic stage in Africa and Nigeria is not left out.

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