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# The Role of Information and Communication Technology in Development of University Education in Nigeria

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## Abstract

*Information and Communication Technologies (ICTs) play vital roles in the development of university education in Nigeria. They aid in the storage, retrieval, display, and dissemination of information. This study examined the importance of ICTs in achieving the mission and vision of university education in Nigeria. This was informed by the fact that ICT has become an invaluable tool for the enhancement of teaching, learning, and research; and also community service. ICT facilities are now becoming indispensable tools for development with positive effects of ICT noted in commerce and industry, education, politics and government, culture, and other aspects of human life. The use of the ICTs may make or mar the goals and objectives of university education. This paper reviews the concept of information technologies, its application to education, the prospects and the challenges facing utilization of ICTs in the universities. Most lecturers and other stakeholders are not able to use ICTs. The researchers therefore suggested that seminars and workshops should be organized to educate lecturers and stakeholders in the education industry to acquire the technical skills required to be able to apply ICTs to teaching, learning and research, and its essence in the development of university education.*

**Key words:** Information and Communication Technologies, university education,

## Introduction

University is one of the institutions in tertiary education. Tertiary education is the education given after secondary education in universities, colleges of education, polytechnics, monotechnics and those institutions offering correspondence courses (Federal Republic of Nigeria, 2004). Universities are centres of creative undertakings, innovation and inventions where pertinent skills are imparted to all those admitted. University education is responsible for the development of high level manpower needed in the nation, through

its programmes of teaching, learning, and research. Also, universities are expected to carry out research that is relevant to the nation's development goals and disseminate the results to government and industries. According to Federal Republic of Nigeria (2004), university education is expected to contribute to national development in the following ways:

1. Intensify and vary its courses for the development of high level manpower within the context of the needs of the nation.
2. To make professional course contents to reflect our national requirements.
3. To make every student offer general study programme for all-round improvement in university education.

Universities play significant role in capacity building and national development. According to Nwezeh (2010), universities facilitate and contribute to societal development. The physical and intellectual knowledge generated from universities and transferred to the society are central to national development. The important role played by universities in capacity building and national development makes the use of ICTs in Nigerian universities inevitable. The use of ICTs in education have brought a new era into the education sector, thus making the traditional methods of carrying out work to become inappropriate. Onibere (2012) observed that ICTs have brought dynamic changes which influence all aspects of life to the society, while Alam (2010) reported that students are no longer motivated by the use of textbooks alone; rather, they prefer learning through ICTs. Thus, there is a need for stakeholders in university education to keep abreast of time in order to become relevant in the ever changing environment.

Tremendous changes have occurred through the introduction of ICT in education. In view of Selwyn (2007), the advent of computer-based teaching and learning have revolutionized and revitalized the university sector. He also observed that the efforts to position computer technology as a central tenet of university education have not been yielding the expected results because of the limited academic use by students and teachers for teaching and learning.

ICTs have revolutionized the way people work today and are now transforming education systems. ICTs facilitate knowledge acquisition and absorption, thus enhancing the prospects to improve

educational systems, policy formulation, and execution. International cooperation and collaboration are made possible as a result of ICT which is turning the world into a global village. According to Sofowora (2012), ICTs are effective tools for collaboration in education and national development, while Tinio stated that ICTs have the potentials of increasing access and improving relevance and quality of education in developing countries.

The prevalence of ICTs has brought swift changes in all spheres of life, thus making them indispensable. Ololube (2006) argued that ICTs are indispensable and have been accepted as part of the contemporary world as cultures and societies have adjusted to meet the challenges of the knowledge age. According to him, the widespread of ICT has brought rapid changes in technology, social, political, education, and global economic transformation. ICT has impacted on the quality and quantity of teaching, learning, and research in teacher education. Teachers need training not only in computer literacy, but also in the application of various kinds of software and programs in teaching and learning.

In order to make teaching and learning to be more effective and efficient, training of teachers on the use of ICT is very essential. The quality of teachers is known in virtually all countries to be a key predictor of student learning. According to Ojedokun and Owolabi (2003), teachers in the developing world will have to change their teaching styles and acquire relevant technological skills needed to transform classrooms. Teachers will need to learn new skills to teach students how to search for and use information from the Internet. They need to learn how to integrate ICTs into their classroom activities and school structures, because teachers' quality is a major predictor of students' learning. Teacher training is very crucial in the use of ICTs because ICTs are tools that can facilitate teacher training and also can help teachers take full advantage of the potentials of technology to enhance students' learning.

The Nigerian universities should take advantage of the ICTs' capability of providing easy access to information. ICTs enable the visualization of educational materials in an innovative and realistic manner. According to Ehikhamenor (2002), ICTs are bringing tremendous changes in the information seeking behavior of academics, the way researches are conducted and distribution of research results. While Nwezeh (2010) observed that ICT have

transformed the ways teaching, learning and research are carried out. Nwokedi (2007) opined that Internet has become an important component of electronic services in academic institutions, thus making it an extremely useful tool for teaching, learning and research in Nigeria. ICTs are enablers that optimize student-centered in the profession of teaching. ICTs are used to develop broad skills for problem solving, independent and collaborative learning, and communication.

The use of ICT in education is increasing very rapidly. The emerging ICTs contribute significantly on the content of education curricula. Already, there has emerged a need for educational institutions to ensure that graduates are able to display appropriate levels of information literacy. There is a need to promote ICT-based education so as to make Nigerian universities relevant in the ICT-based civilization of the 21$^{st}$ century. Education should keep pace with a rapidly and technologically changing world and as such, there is a need to integrate ICT to support the achievement of university objectives.

### Meaning of ICT

ICT can be referred to as a number of technological tools and resources that are used to communicate, analyze, disseminate, store, utilize and manage education. According to Asnafi (2005), ICT are the technologies that are use to record, store, process, retrieve, transfer, and receive information. While, Sarka (2012) defined ICTs as the collections of technological tools that are use to generate, distribute, collect and administer information.

ICT aids teaching and learning. Onuka and Emunemu (2012), defined ICTs as the computer and internet connections use to handle and communicate information for learning purpose. ICTs facilities include radio and television, telephony, computers, and the Internet, while the Internet technologies software used include file protocol software, use net news groups, discussion groups, web directories, search engines, and e-mail services. These can be harnessed by academics for good scholarly work Electronic learning also enhances course delivery and interaction. In order to use ICT for education, ICT tools such as films strips, slides, video, television sets, projectors, electronic notice boards, Internet, bulletin boards, radio, computer, etc. should be available.

## Prospects of ICT in University Education

The following are the possible prospects of ICT in the university systems:

1. The use of ICT in teaching and learning in universities will enhance efficiency. It will also improve the quality of work carried out by both teachers and students. Students can easily have access to the lecture notes prepared by their lecturers through the university server. Lecturers can equally access lecture notes prepared by other lecturers or view course contents in any part of the world.

2. Teaching methodologies are improved with the integration of ICT in university education. ICT helps in making teaching-learning more interesting as teaching has gone beyond chalk and talk method.

3. It makes teachers to be knowledgeable in their various disciplines. Tools are now available on the Internet to assist both teachers and students to keep abreast of knowledge in their disciplines and this will assist in carrying out research work. Also detect and avoid the pitfalls of plagiarism and copyright violations.

4. One of the benefits of ICTs in teaching is that they can improve the quality and the quantity of educational provision. It helps teachers to reach out to colleagues in order parts of the country. Collaborative work among teachers is encouraged with the use of ICTs.

5. With ICTs, time, distance, and location are no longer impediments to the growth of formal education.

6. ICT applications enable scholars to have access to research works carried out by erudite scholars across the world.

7. ICT is useful in research activities in universities. With availability of internet and digital libraries, articles for peer review and journal publications can now be sent by email and reviewer's report also sent by email. With online

journals, list of journals and published articles in any area of research using the internet are accessible.

8. ICT enhances efficiency of workers. It helps in reducing the bureaucracy in administration. It makes decision making in the education sector easy and faster. Students can register online for courses, book for hall allocation; check their results, pay school fees and other levies.

9.    The use of ICT s making major differences in the learning of students and teaching approaches. Several studies revealed that students using ICT facilities mostly show higher learning gains than those who do not use (Onibere, 2012).

10.    With ICT, you learn about computers, learn computers and then learn with computers, also, plagiarism and copyright violations can easily be detected.

## Challenges of ICT in University Education

In spite of the numerous advantages of ICTs, the challenges of applying ICT in our university systems include the following:

1. High cost of acquiring, installing, operating, maintaining, and replacing ICTs. While potentially of great importance, the integration of ICTs into teaching is still in its infancy. Introducing ICT systems for teaching in developing countries has a particularly high opportunity cost because installing them is usually more expensive in absolute terms than in industrialised countries.

2. Lack of exposure on the part of teachers and students to ICT facilities usage. Some lecturers cannot teach using ICT tools, while many students are not ICT literate.

3. ICT users in Nigeria are not use to the new technology. This has resulted in non-application of ICTs in their day-to-day information access and delivery.

4. Basic ICT infrastructures such as stable electricity supply, telephone networks, among others are not available in our universities, and where they are available, they are

inadequate; coupled with these problems is that there is no functional Internet facilities. These make it difficult for both staff and students to have access to ICT. You can only apply what you have access to, thus making the integration of instructional technology into the delivery of quality education difficult.

5.  Inadequate funds. This lack of sufficient funds hinders access to needed infrastructure. The poor financial situation of the university systems is a major obstacle to the implementation of ICTs in university education. Members of staff are not equipped with sufficient training to keep abreast in the ICT world.

6.  Inadequate ICT technical staff is also a major problem. There is lack of theoretical knowledge, practical management, control and maintenance of these technologies.

7.   Another problem is a serious neglect of ICT resources acquired over a period of years, which need upgrading or is out of usage. This increases the complexity of managing the ICT resources.

**Policy Implications for Management**
The study has the following implications for policy and management:

*   Government should make provision for adequate funding of ICT in the university. This will enable institutions to acquire, install, operate, maintain and replace ICTs when necessary.

*   Policy makers should develop appropriate policies that will lead to the implementation of ICTs in education in general and university education in particular. It is therefore recommended that issues and challenges of ICTs in education should be treated as urgent and given adequate attention. Also, problems associated with the use of ICT for educational activities should be addressed for proper implementation of ICTs in education.

- Government should ensure that sustainable and maintenance cultures are imbibed in the use of ICT in university education for teaching, learning, and research. Governments and higher institutions' management should develop strategies for effective sustenance of ICT.

- Government should assist in building organisational and institutional capacity to effectively deal with the complexities of integrating and implementing ICT. Enabling telecommunications and ICT policies should be provided by the government.

- While speaking on the usefulness of ICT in sustainable development, there is a need for the government to set up a well-equipped ICT centres in all educational institutions so as to enable universities to live up to their social and political responsibilities.

- Workshops and seminars on ICTs should be organized for all stakeholders regularly in order to keep abreast of time so as to explore the maximum benefits of using ICT in teaching and learning.

- There should be a sensitization programme and change of attitude on the part of the lecturers who are not computer literate. The university management should make it a policy for all lecturers to be computer literate. It should be made mandatory by appointing compliant officers that will insist on the use of ICT, through proper monitoring. Computer literacy should be the basis for employment of staff henceforth. Also, computer literacy should be tied to promotion exercises of the lecturers. If all these are adopted, the quality of university education will be enhanced.,

## Conclusion

This study has established that ICT in university education is essential because of the numerous benefits. ICTs enable access to various kinds of research information, learning new methods for disseminating knowledge produced, encourage collaboration; data sets and library resources can be shared by institutions in different

locations, easy access to and retrieval of current literature materials that are relevant to researcher's work. However, there is much to be done in the effective and efficient use of ICT in teaching, learning and research in our universities. For these to be achieved, adequate funds, enabling environment, training of university teachers, among others should be provided. This will go a long way in improving the *webometric* rating of Nigerian universities.

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