Information and Communication Technologies (ICTs) are major driving forces of globalized and knowledge-based societies of a new world era. The increasing complexities of the modern educational system, the new technological environment and societal demand have made quality a watchword in the educational development in “ICT” presents the education system with a challenge to develop a capacity for change that will ensure quick and flexible response to new opportunities and bring about the needed quality in the system.

Johnson (2007) posited that schools, these days, are challenged to do more with fewer resources as they try to meet the complex and changing demands of society. According to him, educators now find that the traditional method of managing education and transmitting knowledge and skills are fast becoming inadequate to deal with the accelerated change in the educational system. Therefore, the effective use of the wide range of facilities offered by “ICT” opens up unprecedented opportunities for invigorating teaching and learning in the schools and

E-LEARNING: THE IMPERATIVES FOR INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN THE TEACHING AND LEARNING PROCESS IN NIGERIAN TERTIARY INSTITUTIONS

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Abstract
The study examined the Imperatives of Information and Communication Technology (ICT) in Nigerian tertiary institutions. The importance of ICT in advancing knowledge and skills necessary for effective functioning in teaching and learning process were examined, However, the state of utilization of Information and Communication Technology in tertiary institutions were very unsatisfactory due to lack of fund, lack of skilled manpower, epileptic power supply, the cost of procuring the ICT facilities and the reluctance of some lecturers to change from the traditional “chalk and talk” method of teaching. Recommendations were made on how to address the problems so that Nigerian educational system and the economy as a whole can start enjoying the tremendous benefits associated with Information and Communication Technology (ICT) in the 21st century.

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According to Yufus and Onasanya (2004), information and Communication Technology (ICT) provides opportunities for schools to communicate with one another through e-mail, mailing lists, chat rooms and so on. It also provides quicker and easier access to more extensive and current information. And it can be used to do complex mathematical and statistical calculations. The development in the technological world poses unprecedented challenges to tertiary institutions.

Conceptual Issues

The greatest achievement in the twentieth century was the development of Information and Communication Technology (ICT) for use in all facets of human endeavour. The importance of Information and Communication Technology (ICT) in Nigeria strongly manifests itself from an economic standpoint. Today, as a result of globalization, industrial competition is increasingly harsh and companies not only come up with innovating products and services to the global market, but also do so with unprecedented speed (Aduwa-ogegbaen & Iyamu, 2005). Besides, Ajayi and Ekundayo (2009) posited that the field of education has certainly been affected by the penetrating influence of “ICT” world wide and in particular developed countries.

According to Nwite (2007), Information and Communication Technology (ICT) is a broad term that has to do with harnessing of process, the methods and the products of electronic and communication related technologies and other related resources in today’s knowledge driven society. Bandele (2006) opined that Information and Communication Technology (ICT) is a revolution that involves the use of computers, internet and other telecommunication technology in every aspect of human endeavour.

Ofodu (2007) also defined Information and Communication Technology (ICT) as, electronic or computerized devices, assisted by teaching and learning, and for personal use.

According to Aribisola (2006), Information and Communication Technology (ICT) is generally regarded as the super-highway through which information is transmitted and shared by people all over the world. From the collection of definitions, it could therefore be said that “ICT” is a scientific method of storing and processing information and correspondingly sharing, and sending such information from one place to another using all kinds of electronic device.

Generally, Information and Communication Technology (ICT) holds out the opportunity to revolutionize
pedagogical methods, expand access to quality education, and improve the management of education systems (World Bank, 2002).

Looking at the role of education in the development of a nation and the unprecedented explosion of students in Nigerian tertiary institutions, the learning process becomes imperative. There is the dire need to improve the academic training for students in the country, and this can be achieved through the revolutionized pedagogical methods brought about by Information and Communication Technology (ICT).

The Imperatives of Information and Communication Technology in Teaching and Learning Process in Nigerian Tertiary Institutions

Information and Communication Technologies have changed the way people live, work, and play (Berenfeld, 1999). The global interest to advancement of education in both advanced and developing countries of the world has been challenged by Information and Communication Technology (Nwite, 2007). In order to fit into the new trend, it is necessary for Nigerian institutions and individuals alike to develop a society and culture that places a high premium on ICT-compliance education and training. Thus, there is the need for institutions of learning to embrace technology-driven education system to avoid being eliminated from the scheme of things in the global village.

According to Edeson (1997), a full access to internet is just equivalent to a good library. The followings are some of the imperatives of Information and Communication Technology (ICT) for teaching and learning in tertiary institutions in Nigeria.

i. **ICT Provides Access to Huge sources of Information:** According to Kwache (2007), Information and Communication Technology facilities allow students and teachers to control, manipulate and contribute information to learning and teaching environments as books, journals are made available through the internet. Teachers and students alike who have access to “ICT” stand a better chance of getting very vast information as the web can offer a wider body of knowledge than what the teacher and the textbook can provide, students would access the internet to gather information or interact with experts or with other students on a subject matter. This tends to broaden and deepen students’ understanding.

ii. **ICT Improves the Quality of Teaching** — The use of new multimedia Internet-based technologies will improve the quality of teaching and learning related activities. Johnson (2007) posited that the multimedia system is the ability of the computer to...
combine sound, images, graphics, video and texts in a single presentation. This system creates room for creativeness and genuity of educators to derive new approaches to teaching and learning.

iii. **ICT Reduces the Burden of the Teachers:** With Information and Communication Technology, lecturers’ role in the classroom has shifted from being the sole giver of information to being a facilitator of learning and manager of instructional resources. Information and Communication Technology has replaced the traditional “chalk and talk” method of teaching to a computer–enhanced teaching where teachers prepare and preview the sources of information, introduce the lesson, give out the guide questions and monitor the learning process. Aduwa-Ogiegbaen and Iyamu (2005) submitted that today computers perform a host of functions in teaching and learning as many nations are adding computer literacy, reading and writing literacy as skills students will need for succeeding in a technology developed world.

iv. **ICT Challenges Students to Learn Independently:** The use of Information and Communication Technology will give opportunity to individuals who might wish to combine work and learning at his or her own pace, irrespective of location (Kwache, 2007). Individuals can learn at their own pace. Besides, the internet has the potentials to being about a profound change in education for all professions. Oluwafemi, (2006) argued that the traditional approaches to teaching, lecturing and tutoring confined to classrooms are beginning to be extended by new approaches using more recent technology of on-line classrooms, multimedia, distant course and on-line workshops among others.

v. **ICT Improves Quality of Data Available to both lecturers and Students:** Information and Communication Technology can improve the quality of data available to both the lecturers and students. Information gained from the internet can be more up-to-date and data obtained from loggers can include more frequent and more accurate findings.

vi. **ICT Motivates the Learners to Learn:** Ajayi and Ekundayo (2009) Submitted that learners are more highly motivated when their learning is supported by engaged in activities, show increased interest and demonstrate a longer attention span. However, despite the enormous benefit inherent in the utilization of Information and Communication Technology in the teaching and learning process, it appears that there are several
impediments to the successful use of Information and Communication Technology in Nigerian tertiary institutions.

Impediments (Obstacles) to the Use of Information and Communication Technology (ICT) in Nigerian Tertiary Institutions

There are several impediments (obstacles) to the successful use of Information and Communication Technology (ICT) in Nigerian tertiary institutions and some of these impediments (obstacles) are examined below:

i. Low Funding: The issue of funding has been a very perennial problem in the Nigerian educational system. According to Okebulola (2005), under-funding has been a major problem of education in many developing countries including Nigeria. The overall educational system is under-funded, therefore, available funds are used to solve more urgent and important survival needs by the institution (Debesaki, 2005). Low level of funding has resulted in the low level of provision of internet facilities and other “ICT” infrastructures such as computer hardware and software among others.

ii. Lack of Skilled Manpower: Lack of skilled manpower to manage available systems and inadequate training facilities for “ICT” education in the tertiary level may be a factor to contend with the implementation of “ICT” for teaching and learning at the tertiary level.

According to Nwite (2007), the absence of trained teachers in computer science to teach students practical aspects of computer skills and non-availability of computer and allied tools in schools, all put together militate against actual utilization of “ICT” in the school system. Kwache (2009), and Ajayi and Ekundayo (2009) also submitted that most schools in the country lack computer-literate teachers. This invariably hinders effective utilization of “ICT” in the teaching and learning process.

iii. Epileptic Power Supply: The use of “ICT” in tertiary institutions in Nigeria demands that certain facilities must be put in place, among which is the power supply. Power supply all over the country seems epileptic.

However, proper and efficient functioning of “ICT” depends on steady power supply. There have been cases whereby expensive household worth millions of naira have been damaged by upsurge in power supply after a long period of
power outage. Aduwa-Ogiegbaen and Iyamu (2005) argued that when electricity supply is not stable and constant, it is difficult to keep high-tech equipment such as computers functioning.

iv. Cost of Equipment: The cost of procuring the internet facilities and other tools is enormous for a developing country like Nigeria, with a battered economy and seriously devalued currency. Apart from the basic computers themselves, other costs associated with the systems such as printers, monitors, paper, modem and the likes are beyond the reach of most institutions mainly because of the dwindling revenue allocation.

Dabesaki (2005) argued that the over-dependence of educational institutions on government for everything has limited institutions ability to collaborate with the private sector or seek alternative funding sources for “ICT” educational initiatives.

v. Resistance to Change: There have not been much evidence to show that lecturers are reluctant to change as far as utilization of “ICT” is concerned. However, Ajayi and Ekundayo (2009) found out that reluctance to change by some lecturers hinder effective utilization of ICT in the tertiary institutions in Nigeria. Most lecturers are glued to the traditional “chalk and talk” method of disseminating knowledge to the students.

Conclusion and Recommendations

The importance of Information and Communication Technology tools for effective teaching and learning cannot be overemphasized. Though the “chalk and talk” method has been used for educational purposes over the years, none has quite impacted on the teaching and learning process like the modern day computers. However, the state of utilization of the “ICT” facilities in tertiary institutions is still very unsatisfactory. This could be attributed to a number of problems which include: low funding, lack of skilled manpower, epileptic power supply, the cost of procuring internet facilities and reluctance to change among lecturers. However, if Nigeria wants to be a major player in the global market place and also prepare her citizens for the new trends in the era of globalization, urgent measures need to be taken to enhance utilization of Information and Communication Technology in her tertiary institutions. To this end, the following recommendations are made:

i. Improved Funding: To fully integrate “ICT” into teaching and learning in tertiary institutions in Nigeria, government need to allocate more funds to the institutions so that they can be more effective in their operations. The institutions on their own
should strengthen their internally generated revenue in order to make more funds available to the system. Major parastatals and organizations involved in funding tertiary education in Nigeria such as Education Trust Fund (ETF), Petroleum Technology Development Fund (PTDF) among others should rise up to their responsibilities of assisting the tertiary institutions in the provision of fund to compliment the direct funding from governments. Availability of fund will enhance easy procurement of internet facilities and other allied tools for usage.

ii. **Enhancing Level of literacy In “ICT” among Lecturers and Students: More academic staff in the field of computer should be recruited into the institutions, while there is the need to achieve high level of computer literacy among existing lecturers through training and retraining. All employed lecturers in the tertiary institutions in the country should be made to undertake compulsory training in “ICT” related programmes. This will help provide the lecturers with practical and functional knowledge of the computer, students of tertiary institutions should also be made to undergo some compulsory courses in “ICT” to enhance their literacy in computer. ICT should form part of the general studies for the students.**

iii. **Proper Monitoring:** Putting in place National “ICT” policy in the school curricula is not a sufficient condition for the attainment of its success. It is therefore recommended that there should be a monitoring, inspection and evaluation division at all levels of education that will be responsible for ensuring that the “ICT” curricula are strictly adhered to and the fund allocated for such purpose are not diverted.

iv. **Regular Power Supply:** Government should, as a matter of urgency, address the problem of erratic power supply in the country as it affects not only education sector but all other sectors of the economy. Management of the various tertiary institutions should procure generating sets for their institutions to serve as already made alternative for power supply.

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