Review Article

ICT Skills as an aid to teaching and Learning in Nigeria Challenges and Prospects

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Abstract

Though it has been rightly said that what is wrong with education cannot be fixed with technology; there is no doubt that modern life is dominated by technology. There is universal recognition of the need to use Information and Communication Technology (ICT) in education as we enter the era of globalization where the free flow of information via satellite and the internet hold sway in global information dissemination of knowledge. Information and communication technology (ICT) is being increasingly utilized for the purpose of meeting challenges facing humanity. It is now recognized that ICT is a helpful instrument for facilitating teaching and learning at all levels. Yet the application of ICT to the field of education in third world countries is highly limited even at the tertiary level. In such nations, not only do teachers generally lack ICT skills, but there is scarcity of infrastructural resources to support teaching and learning activities. In modern society, Nigeria needs ICT to aid teaching and learning and educational management. This presentation examines the necessity for the acquisition and utilization of ICT skills by professional teachers and reports challenges faced in a third world country (Nigeria) as well as prospects of ICT to teaching and learning.
Keywords: Education, modern life, Communication, ICT skills.

INTRODUCTION

The role of technology in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy [1, 2]. Most experts in the field of education agreed that, when properly used, information and communication technology hold great promise to improve teaching and learning in addition to shaping workforce opportunities. Poole [3] has indicated that computer illiteracy is now regarded as the new illiteracy. This has actually gingered a new and strong desire to equip schools with computer facilities and qualified personal necessary to produce technologically proficient and efficient students in developed countries of the world. There is no doubt that computer can aid the instructional process and facilitate students' learning. Many studies have found positive effect associated with technology aided instruction [4, 5].

In a rapidly changing world of global market competition, automation, and increasing democratization, basic education is necessary for an individual to have the capacity and capability to access and apply information. Such ability and capability must find bearing in information and communication technology in the global village. The Economic Commission for Africa has indicated that the ability to access and effectively utilize information is no longer a luxury but a necessity for development. Unfortunately, many developing countries, especially in Africa, are already on the wrong side of the digital divide in the educational use of ICT.

Meaning of ICT

ICT is an acronym for information and communication technology. It is basically concerned with the use of technological tools for managing the communication process.

As it relates to the field of education, ICT is said to be a combination of technologies for collecting, storing, processing, and delivering information. This includes the use of computer and telecommunication systems as well as instructional technology facilities. It is therefore evident that ICT is a useful tool in the hands of the professional teacher.

Uses of ICT

The various components of ICT are being utilized in different ways by service providers. Computer systems are being used for efficient

processing of information, telecom systems for disseminating information, and the instructional technology to facilitate presentation of information in the fields of industry, mass media and education to mention only a few. ICT has made it possible for educational institutions and professional teachers to effectively provide information and training through a variety of innovative tools including virtual library, virtual laboratory, and video conferencing as well as through interpersonal approaches.

ICT as aids to teaching and learning

The importance of ICT is quite evidence from the educational perspective. Though the chalkboard, textbooks, radio/television and film have been used for educational purpose over the years, none has quite impacted on the educational process like the computer. While television and film impact only on the audiovisual faculties of users, the computer is capable of activating the senses of sight, hearing and touch of the users. ICT has the capacity to provide higher interactive potential for users to develop their individual, intellectual and creative ability. The main purpose of ICT "consists just in the development of human mental resources, which allow people to both successfully apply the existing knowledge and produce new knowledge [6]".

Information and communication technologies are being used in the developed world for instructional functions. 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 technologically developed world [7]. At the instructional level, computers are used by pupils to learn reading, mathematics, social studies, art, music, simulation and health practices.

In educational multimedia application Shavinina [8] asserted that today's learning contents are domain-specific products and that they dominate the world market.

Nigeria cannot afford to lag behind in using multimedia to raise the intellectual and creative resources of her citizens. This is particularly important for children whose adulthood will blossom in a cyber environment entirely different from that of the present [6]. Nigerian children need to be taught by radically new educational programme and variety of educational contents with multimedia playing key role.

ICT as tool for educational management

It is not uncommon to find that many establishments in Nigeria, including educational institutions, still keep records in files and tucked them away in filling cabinets where they accumulate dust. Many of these files are often eaten up by rodents and cockroaches thus rendering them irretrievable. A great

deal of routine administrative work in government establishment is still done manually with the state and the Federal government showing little or no interest in embracing ICT. The official administrative drudgery in government offices and education institutions can be better managed through ICT.

In most Nigeria schools, officials still go through the laborious exercise of manually registering students, maintaining records of pupil, performance, keeping inventory list of supplies, doing cost accounting, paying bills, printing reports and drawing architectural designs. The huge man-hour spend on these exercises can be drastically reduced with ICT to enhance overall management procedure. Thomas [7], said that "Computers bring great speed and accuracy to each of these tasks, along with the convenience of storing large quantities of information on 'small disks or tapes' (P.5).

The prevailing condition in school management in Nigeria is disheartening and discouraging. The country seems to be living in prehistoric times in the educational management while even developing countries in Africa such as South Africa, Kenya, Uganda and Tanzania are far ahead of Nigeria in ICT applications.

Current teaching challenges to the use of ICT in Nigeria

There are several impediments to the successful use of information and communication technology in schools in Nigeria. These are: cost, weak infrastructure, lack of skills, lack of relevant software and limited access to the Internet. Others include knowledge explosion, decreasing interest in, and facilities for, conventional methods of studying, increasing class size, and constraints relating to logistics, physical facilities, and time factor.

The volume of knowledge available in every subject area has continued to increase at an unprecedented rate beyond what conventional study methods can cope with while in many places, more and more people are taking to classroom education thus putting more and more pressure on available financial, logistics, physical and time resources. Besides, disruptions of the academic calendar in some tertiary institutions have created further limitations that the conventional home-study materials cannot remove.

The result is that the tertiary education system could be producing an increasing number of half-baked graduates.

Cost

The price of computer hardware and software continues to drop in most developed countries, but in developing countries, such as Nigeria, the cost of computers is several times more expensive. While a

personal computer may cost less than a month's wages in the United State, the average Nigeria worker may require more than two years' income to buy one.

Nigeria has over 6,000 public secondary schools. Majority are short of books, paper and pencils. Many of the schools lack adequate infrastructure such as classrooms and only few are equipped with television or radio. The schools cannot also afford the exorbitant Internet connection fees.

Weak infrastructure

In Nigeria, a formidable obstacle to the use of information and communication technology is infrastructure deficiencies. Computer equipment was made to function with other infrastructure such as electricity under "controlled conditions". For the past fifteen years Nigeria has been having difficulty providing stable and reliable electricity supply to every nook and cranny of the country without success. Currently, there is no part of the country, which can boast of electricity supply for 24 hours a day except probably areas where government officials live. The few Internet access available in Nigeria is found in urban centres. These environmental realities are difficult to manage because fans, sealed rooms and stable electricity are lacking in many urban homes and rural areas.

Another obstacle to ICT development in Nigeria is inadequate telecommunication facilities.

Though the International Telecommunication Union (ITU) has rated Nigerian's Telecommunication Sector as the fastest growing in Africa, majority of Nigerians have no access to telephone. At the end of 1999, total private investment in telecommunication industry in the country was $50m and there were over 700, 000 lines with 450,000 connected. The government officials and officers acquired more than half the lines connected. On the Global System of Mobile Communication (GSM), Nigeria is also ahead of most African countries with more than 2 million subscribers connected. The telecommunication sector in Nigeria has attracted more direct foreign investment hence the growth rate is faster than any other sector of the economy.

Lack of skills

Nigeria does not only lack information infrastructure, it also lacked the human skills and knowledge to fully integrate ICT into education. To use information and communication technology (ICT) in schools in Nigeria, the need for locally trained workers to install, maintain and support these systems cannot be over emphasized. There is acute shortage of trained personnel in application software, operating systems, network administration and local technicians to service and repair computer facilities. Those who are designated to use computers in Nigeria do not receive adequate training, at worst; do not receive any training at all [9].

In Nigeria also, most school teachers lack the skills to fully utilize technology in curriculum implementation hence the traditional chalk and duster approach still dominates in school pedagogy. Information transfer using ICT is minimal or non-existence in schools in Nigeria [10]. School teachers in Nigeria need to be trained on educational technologies and the integration of computers into classroom teaching.

Lack of relevant software

There is no doubt that the ultimate power of technology is the content and the communication. Though, software developers and publishers in the developed countries have been trying for long to develop software and multimedia that have universal application, due to the differences in education standards and requirements, these products do not integrate into curriculum across countries. Software that is appropriate and culturally suitable to the Nigerian education system is in short supply. There is a great discrepancy between relevant software supply and demand in developing countries like Nigeria. According to Salomon [11], there are clear indications from many countries that the supply of relevant and appropriate software is a major bottleneck obstructing wider application of the computer. Even if Nigeria tries to approach this software famine by producing software that would suit its educational philosophies, there are two major problems to be encountered. First, the cost of producing relevant software for the country's educational system is enormous. Second, there is dearth of qualified computer software designers in the country. To overcome this, people need to be trained in instructional design.

Prospects

There are numerous and good prospects for the use of ICT in teaching and learning in schools in Nigeria. The following major areas suggest the range of applications that computer can serve teachers and learners in Nigeria. Firstly, computer can enhance educational efficiency. The efficiency in teaching various subjects could be improved. For instance, many school teachers are already teaching large classes of students. In this situation, students no longer receive the much desired individual assistance. Furthermore, English language is taught and learned as a second language in Nigeria and many teachers of English are weak. It is possible to use carefully prepared computer programs to ensure that learners are accurately and systematically instructed. Also, the computer can enhance problem-solving skills of the learners by focussing on thinking skills especially in subject such as mathematics.

Secondly, computers can serve administrative functions. They can replace the laborious exercise of filing papers in filing cabinets and shelves where records accumulate dust over a long period of time. Another administrative application of the computers is their use for budget planning, accounting for expenditure, writing correspondences and reports, assigning students to classes, reporting students' progress and testing students and scoring tests which help to reduce paper work. It is true that many of the tasks above are not effectively and efficiently done in Nigeria.

Thirdly, computers can be used for individualized learning in schools in Nigeria. Due to large classes and differences in individual learning style and pace, microcomputers will enable the student to progress at his or her own pace and receive continual evaluation feedback and corrections for errors made. In this way, computers allow the development of partner-like interactive and individualized relations with the user. Computers play the role of the tutor and present the leaner with a variety of contents and symbolic modes.

Fourthly, computers can change current pedagogical practices in schools in Nigeria, which depended heavily on the traditional lecture method. It is universally accepted that computers allow more independent exploration, more personally tailored activities, more teamwork, and more significantly, less didactic instruction. The role of the teacher, therefore, changes from information dispenser to that of information manager, from authoritative source of information to a guide of self-propelled exploration [12].

Fifthly, computers will offer the Nigeria teacher improvement in the techniques of research. The cumbersome exercise of searching by hand through the library's card catalogue or periodical indexes can be made easier by typing few key worlds pertinent to the research topic into a computer and the researcher can receive extensive list of related sources of articles in books and journals in just a matter of minutes.

Summary and Conclusion
There is no doubt that teachers and students in schools in Nigeria will have incredible resources available if they have access to the Internet. By integrating information and communication technology into our school curriculum, a fundamental shift in the way teacher teaches and students learn will be evolved. However, to integrate computer into teaching and learning in Nigeria, there must be proper and adequate funding and financing of education. There has been a steady decline in government's budgetary allocation to education over the past five years, getting to all time low of less than 1% in the 2003 federal government budget. The greatest challenge to the state and federal government is to ensure that budget cuts resulting from dwindling revenue and the need to satisfy other sectors of the economy do not adversely affect education. Nigeria needs to invest heavily in the Internet business and create enabling environment for school students to participate in downloading available and useful knowledge in the Internet.

In spite of limitations imposed by scarcity of ICT facilities in third world countries, it is not only advantageous but imperative that ICT should be used to support teaching and learning in order to keep pace with professional requirements and global trends. The reported effort made in a third world country, Nigeria, to provide offline teaching and learning e packages, has yielded positive results in the area of facilitating ICT-assisted teaching and learning at the tertiary level of the education system. This effort, when sustained will lead to upgrading of teaching skills and improvement of learning outcome within tertiary institutions, particularly in developing countries

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