INFORMATION AND COMMUNICATION TECHNOLOGY AND THE ENHANCEMENT OF QUALITY AND ACCESSIBLE SECONDARY EDUCATION IN NIGERIA

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Abstract

The role of ICT in enhancing the quality and accessibility of secondary education in Nigeria cannot be glossed over. New and emerging technologies challenge the traditional process of teaching and learning, and the way education is managed. Easy worldwide communication provides instant access to a vast array of data, challenging assimilation and assessment skills. In developing countries like Nigeria, effective use of ICT for the purpose of education has the potential to bridge the 'digital divide'. This paper therefore gives a conceptual insight into the whole web of ICT and secondary education. Obstacles to ICT are identified and then specific effort is devoted to the ways ICT contribute to the enhancement of quality and access in secondary education.

Information and Communications Technology is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries.

Information and communication technologies (ICT) are electronic technologies used for information storage and retrieval. According to Bandele (2006), ICT is a revolution that involves the use of computers, internet and other tele- communication technology in every aspect of human endeavour. ICT is simply about sharing and having access to data with ease. It is regarded as the super highway through which information is transmitted and shared by people all over the world. Ozoji in Jimoh (2007) defined ICT 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 (2007) also refered to ICT 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. From these definitions, ICT could therefore be defined as processing and sharing of information using all kinds of electronic device, an umbrella that includes all technologies for the manipulation and communication of information.

The future of Nigeria will be fashioned in the classroom. If you see the current scenario then you will find that there is a flood of advanced technology all over the globe but our education system is not benefiting from them due to the lack of information and knowledge of teachers, students and the administration. The role of technology in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy (Rosen and Well, 1995). Most experts in the field of education agree that, when properly used, information and communication technology hold great promise to improve

teaching and learning in addition to shaping workforce opportunities. Poole (1996) had 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 personnel 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 (Fitzgerald and Warner, 1996).

Conceptualizing ICT in Nigerian Secondary Schools

Education in Nigeria is an instrument "par excellence" for effecting national development and harnessing the potentials of the citizens. The country's vision is for a complete transformation of all aspects of the nation's life over time. Education should therefore be able to effect inter and intra generational transmission of our cherished heritages and life invention. It should reposition Nigeria's global status in science and technology in all spheres of life. Society is dynamic and education being a micro unit of society has to change in line with social changes . One of such major transformations that have taken place globally is the introduction of information and communication technologies (ICT) into every facet of human endeavor, our educational system has to integrate ICT into all aspects of the schools curriculum from planning to evaluation. There have been several studies on the use of ICT (Computer) in teaching and learning at various levels.

During the last decades Information Communication Technology has become a vital component in schools and schooling and Nigerian institutions should not be left out in this quest for a technologically-driven economy. ICT implementation has affected schools' functioning at multiple levels: new configurations of learning spaces and timetables have been created; innovative teaching methods have been incorporated; autonomous and active learning processes using technology have been adopted; teachers' traditional roles have been expanded, including personal and group tutoring and guidance functions; and new ICT-based curricular solutions have been generated . The field of education has certainly been affected by the penetrating influence of ICT worldwide and in particular developed countries; ICT has made a very profound and remarkable impact on the quality and quantity of teaching, learning and research in the educational institutions . Information and communication Technology has the potential to accelerate, enrich, and deepen skill; to motivate and engage students in learning to help relate school experiences to work practices; to help create economic viability for tomorrow's workers, contribute to radical changes in school; to strengthen teaching and to provide opportunities for connection between the school and the world. Stressing the importance of the use of ICT in schools, Olurunsola (2007) posited that through ICT, educational needs have been met; it changes the needs of education as well as the potential processes.

Teaching and learning has gone beyond the teacher standing in front of a group of pupils and disseminating information to them without the students' adequate participation. With the aid of ICT, teachers can take students beyond traditional limits, ensure their adequate participation in teaching and learning process and create vital environments to experiment and explore. This new development is a strong indication that the era of teachers without ICT skills are gone. Any classroom teacher with adequate and professional skills in ICT utilization will definitely have his students perform better in classroom learning.

For the students, ICT use allows for increased individualization of learning. In

schools where new technologies are used, students have access to tools that adjust to their attention span and provide valuable and immediate feedback for literacy enhancement, which is currently not fully implemented in the Nigerian school system. ICT application and use will prove beneficial in improving Nigeria's educational system and giving students a better education.

A cursory look at the secondary schools in Nigeria has shown that many teachers in the system still rely much on the traditional "chalk and talk" method of teaching rather than embracing the use of ICT. According to Okebukola (1997), computer is not part of classroom technology in over 90% of public schools in Nigeria, thus the chalkboard and textbooks continue to dominate classroom activities. This is an indication that the students are still lagging behind in the trend of changes in the world. This presupposes that there is the tendency for the teachers and students to be denied the opportunities which ICT offers in the teaching-learning activities. There is the need to replace the traditional pedagogical practices that still underpin the educational system in the country, hence the need for the application of ICT in Nigerian Secondary Schools.

The various ICT facilities used in the teaching / learning process in schools according to Babajide and Bolaji (2003), Bryers (2004), Bandele (2006) and Ofodu (2007) 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. It appears some of the facilities are not sufficiently provided for teaching – learning process in the secondary schools. This might account for why teachers are not making use of them in their teaching.

Obstacles Confronting the Use of ICT in Secondary Schools in Nigeria

There are several impediments to the successful use of information and communication technology in secondary schools in Nigeria. These are:

Infrastructure

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. There have been cases whereby expensive household appliances such as refrigerators, deep freezers and cookers have been damaged by upsurge in electricity supply after a period of power outage.

High Cost

The high cost of computer hard and softwares has made it very difficult for people to own computers.

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. Apart from the basic computers themselves, other costs associated with peripherals such as printers, monitors, paper, modem, extra disk drives are beyond the reach of most secondary schools in Nigeria. The schools cannot also afford the exorbitant Internet connection fees.

Lack of Skills

Nigeria does not only lack information infrastructure, it also lacks the human skills and knowledge to fully integrate ICT into secondary education. To use information and

communication technology (ICT) in secondary 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, they do not receive any training at all (Okebukola, 1997).In Nigeria also, most secondary school teachers lack the skills to fully utilize technology in curriculum implementation hence the traditional chalk and duster approach still dominates in secondary school pedagogy. Information transfer using ICT is minimal or non-existent in secondary schools in Nigeria (Anao, 2003)

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. In many countries today, provision of useful software really constitute an obstacle to computer application. 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.

Limited Access to the Internet

There are few Internet providers in Nigeria that provide Internet gateway services to the citizenry. Such Internet providers are made up of Nigerians who are in partnership with foreign information and communication companies. Many of these companies provide poor services to customers who are often exploited and defrauded. The few reputable companies, that render reliable services, charge high fees thus limiting access to the use of the Internet. The greatest technological challenge in Nigeria is how to establish reliable cost effective Internet connectivity. In a country where only about 0.6% of the populace has home personal computers, the few reliable Internet providers who have invested huge sums of money in the business have a very small clientele. They have to charge high fees in order to recoup their investment in reasonable time. Nigeria has about 500,000 Internet subscribers.

Secondary schools in Nigeria are not given adequate funds to provide furniture, requisite books, laboratories and adequate classrooms let alone being given adequate funds for high-tech equipment (computers) and Internet connectivity.

Again, due to lack of adequate electricity supply, especially in rural areas in Nigeria, secondary schools located in those areas have no access to the Internet and are perpetually isolated and estranged from the world's information superhighway. Nigeria is lagging behind other African countries such as Uganda, Senegal and South Africa who are already helping secondary school students in those countries to become better information users. All Internet service providers in Nigeria are based in the urban areas.

Information and Communication Technology and the Enhancement of Quality and Accessible Secondary Education in Nigeria

Okebukola (1997) stated that computer is not part of classroom technology in over 90% of public schools in Nigeria. Thus the chalkboard and textbooks continue to dominate classroom activities in most secondary schools in Nigeria.

If a country such as Uganda which has less than a-fifth of Nigeria's resources, is now using information and communication technology to help secondary school students to become better information users, why is Nigeria lagging behind? The answer is simply the mismanagement of the huge resources of the country and inability of political leaders to prioritize Nigeria's developmental needs.

The application of ICT in the Nigerian secondary education would greatly enhance its quality and access. There are developments in the Nigerian education sector which indicate some level of ICT application in the secondary schools. The Federal Government of Nigeria, in the *National Policy on Education*, recognizes the prominent role of ICTs in the modern world, and has integrated ICTs into education in Nigeria. To actualize this goal, the document states that government will provide basic infrastructure and training at the primary school. At the junior secondary school, computer education has been made a pre-vocational elective, and is a vocational elective at the senior secondary school. It is also the intention of government to provide necessary infrastructure and training for the integration of ICTs in the secondary school system. It should be noted that 2004 was not the first attempt the Nigerian government made to introduce computer education in schools. In 1988, the Nigerian government enacted a policy on computer education. The plan was to establish pilot schools and diffuse computer education innovation first to all secondary schools, and then to primary schools. Unfortunately, the project did not really take off beyond the distribution and installation of personal computers (Okebukola, 1997).

The Federal Ministry of Education has launched an ICT-driven project know as School Net (www.snng.org) (Adomi 2005), which was intended to equip all schools in Nigeria with computers and communications technologies. In June 2003, at the African Summit of the World Economic Forum held in Durban, South Africa, the New Partnership for African Development (NEPAD) launched the e-Schools Initiative, intended to equip all African high schools with ICT equipment including computers, radio and television sets, phones and fax machines, communication equipment, scanners, digital cameras, and copiers, among other things. It is also meant to connect African students to the Internet. The NEPAD capacity-building initiative will be executed over a ten-year period, with the high school component being completed in the first five years. Three phases are envisaged, with fifteen to twenty countries in each phase. The phases are to be staggered, and an estimated 600,100 schools are expected to benefit. The aim of the initiative is to impart ICT skills to young Africans in primary and secondary schools, and to harness ICT to improve, enrich, and expand education in African countries.

The Nigerian Federal Government has commissioned a mobile Internet unit (MIU) operated by the Nigerian National Information Technology Development Agency (NITDA). The MIU is a locally-made bus that has been converted into a mobile training and cyber centre. Its interior has ten workstations, all networked and connected to the Internet. The MIU is also equipped with printers, photocopiers, and a number of multimedia facilities. Internet is provided via VSAT with a 1.2m dish mounted on the roof of the bus. It is also equipped with a small electric generator to ensure regular power supply. The MIU takes the Internet to places, areas and various primary and high schools . The number of buses is so small; however, that most rural areas and schools have not yet been covered.

Nevertheless, it should be noticed that although efforts have been made to ensure that ICTs are available and used in Nigerian secondary schools, the level of uptake is still low. It has also been realized that most schools,

both private and government, do not offer ICT training programmes.

However, ICT can contribute in enhancing quality and access in secondary education in the following ways-

- access to variety of learning resources

1. immediacy to information
2. anytime learning
3. anywhere learning
4. collaborative learning
5. multimedia approach to education
6. authentic and up to date information
7. access to online libraries
8. teaching of different subjects made interesting
9. educational data storage
10. distance education
11. access to the source of information
12. multiple communication channels-e-mail, chat ,forum ,blogs, etc.
13. access to open courseware
14. better accesses to children with disabilities
15. reduces time on many routine tasks
16. It induces scientific, economic, technological, information and multicultural literacy and global awareness.

Conclusion

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. Already, Nigeria is on the wrong side of the international digital divide, as it has not made significant effort to totally integrate ICT into secondary school curriculum. A great deal of instructional and administrative work in secondary schools in Nigeria is still carried out manually. There is no doubt that teachers and students in secondary schools in Nigeria will have incredible resources available if they have access to the Internet.

Recommendation

To improve the use of ICTs in secondary education, the following recommendations are hereby put forward:

1. -Adequate resources and enabling infrastructure should be made available in schools to facilitate the use of ICTs in the entire schools' instructional programmes
2. All stakeholders in the school system should be adequately equipped to utilize ICT for teaching and managing activities in the system.
3. Regular in-service training programmes should be available to teachers and school managers on how to integrate ICTs in schools.
4. Teacher educators and training institutions should review their programmes to include comprehensive ICT training programmes and utilization
5. Government should ensure that ICT policy statements are translated into reality. An ICT policy implementation commission should be created. This commission should be funded and given the power to provide ICT facilities in the schools and monitor their use.
6. All secondary schools should be made beneficiaries of ICT projects.

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