

The Role of Information and Communication Technology in Enhancing Instructional Effectiveness in Teachers' Education in Nigeria.

R.O. ASUBIOJO, J.A. AJAYI
College of Education, Ikere-Ekiti, Ekiti State, Nigeria

Abstract. Information and Communication Technology (ICT) have been recognized as an important tool for advancement of any nation especially in the era of globalization. This has led to the inclusion of ICT education into the National Policy on Education (NPE 2004) of which the Nigerian Tertiary education is one of the beneficiary. Tertiary education is approaching the point at which, science and technology particularly Information and Communication Technology (ICT) will be playing vital roles in nearly all phases of the educational process. This paper takes a look at the roles of ICT in Teachers' Education in Nigeria toward ensuring instructional effectiveness. ICT provides opportunities for teacher's professional development, transform teaching, provide network opportunities for teachers and enhance the quality of students learning amongst others. However the paper identifies some of the problems toward the effective use of ICTs in teachers' education programme in Nigeria to include poor funding, poor power supply, low level of technical education and inadequate supply of ICTs facilities. Finally, it recommended that government and all the stakeholders in the educational system should wake up to their responsibilities by providing ICTs facilities for effective instructional delivery system in teacher education in Nigeria.

Keywords: Education, Pre-Service Teacher, Teacher Education and ICT.

1. Introduction

The concept of education has been seen as the activities and experiences put together to assist the all-round development of the learner as an individual and as member of society. In other words, education is a major tool of change, an instrument per excellence for effecting national development. Education should stimulate in each person a compelling urge to explore the unknown and to exercise to the fullest degree the vast possibilities of his mind (Isyaku, 2000). Indeed, it is worthy of note that education is the stepping stone to development. No wonder the Nigerian National Policy on Education (NPE) asserts that no nation can rise above the quality of its teachers (FRN, 2004).

A teacher is a pathfinder, a motivator, a local pastor, an agent of change in a society, all these attributes need to be learnt and inculcates into the blood vein of the pre-service teacher through a well-defined teacher education programme. Teacher education is conceptualized as a specialized type of education that prepares the recipients to acquire necessary knowledge, skills and professional competency defined as appropriate for their professional responsibility (Anikweze, 2008). The formal responsibility of the teacher is concerned with influencing

learners toward desirable changes in their behaviours.

Teacher education programme in Nigeria basically seek to endow entrants with training in methodology, what to teach, how to teach it and practice of internship. Infact, the National Policy of Education (NPE, 2004) captures the goals of teacher education in Nigeria to include the following:

- (i) Produce highly motivated conscientious and efficient classroom teachers at all levels of our education system.
- (ii) Encourage further the spirit of inquiry and creativity in the life of teachers
- (iii) Help teachers to fit into the social life of the economy and society at large and enhance their commitment to national objectives, provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to any changing situation not only in the life of their country, but in the wider world.

From the above it can be inferred that teachers' education is aimed at helping the child to study and identify his needs through an organized educational programmes. The aim and objectives of teachers' education may not be freely realized if information and communication technology is not fully integrated into teacher curriculum. The use of Information and Communication Technology (ICT) is a recent technology in Nigeria which is aimed at improving the teaching and learning process at all levels of educational system.

1.2 Concept of Information and Communication Technologies (ICTs)

In recent years, there has been a groundswell of interest on how computers and the internet can best be harnessed to improve the efficiency and effectiveness of education and training in both formal and informal settings. As a result many schools of thought see the meaning of ICT from different perspective especially in its impact to

reduce the world to a global village. For instance, Obeta (2008) defines information and communication technology as a company of diverse sets of technological tools and resources used to communicate, create, disseminate, store and manage information. In another development, Bluton (2002) views ICT to include computers, internet, broadcasting technologies (radio and television) and telephony. Information and communication technology therefore refers to electronic means of capturing, processing, storing and disseminating of information. It encompasses the computer hardware and software, the network and several other devices (video, audio, photography, camera and other convert information (text) images, sound, motion etc (Akpgurene, 2008).

Anuoye and Osuji (2011) also described ICT as a 'means of accessing or receiving, storing, transferring, processing and sending ideas, perception or information through computer and other telecommunication facilities. He further added that ICT enable large quantities of information to be handled quickly and economically. ICT encompasses all that is involved in modern communication technologies so that the output generated can reach the users at reasonable costs and in good-time to the overall benefit of mankind.

Job (2006) opined that Information Communication Technology (ICT) has not generated much controversy in terms of definition, since it is generally believed to be concerned with four key words-transmission, reception, processing and retrieval of information from an electronic machine. This definition becomes an inclusive one, which accommodates, radio, television and films.

Still in search for definitional perspectives Akude (2010) posits that ICT "as a systematic process of gathering, processing, storage, retrieval and spreading information through the print, broadcast, capturing and telecommunication media". Obviously ICT permeates the business world; it underpins the success of modern cooperation and establishment and provides governments with

sufficient infrastructure. At the same, ICT add value to the process of learning and in the organization and management of learning institutions.

ICT is an indispensable tools and has been accepted as part of the contemporary world especially in the industrialized societies. Cultures and societies have adjusted to meet the challenges of the knowledge age. The pervasiveness of ICT has, brought about rapid changes in technology, social, political and global economic transformation. However, the field of education has not been unaffected by the penetrating influence of ICT. Unquestionably ICT has impacted on the quality and quantity of teaching and learning.

ICT has a wide spectrum of applications with enormous relevance to teachers' Education institutions and therefore provides opportunity for students, teacher and non-teaching staff to communicate with one another more effectively during formal and informal teaching and learning (Yusuf, 2005). In the same vein, teachers and pre-service teacher in the educational institute need training not only in computer literacy but also in the application of various kind of educational software in teaching and learning (Olobube, 2006).

Apart from this, teachers and pre-service teachers need to learn how to integrate ICT into their classroom activities and school structure. The quality of instructional service delivery in teacher education therefore encompasses the extent of effectiveness of lecturers and even the pre-service teacher in carrying out their classroom teaching and learning process.

Instructional delivery refers to those human interactive skills that facilitate learning in face-to-face instruction, as well as those skills in using various forms of instructional delivery mechanisms, (Wiki Educator, 2007).

Effective instruction delivery in teacher training institution refers to the extent to which teachers in training institute carry out his instructional duties given the necessary instructional materials so that learners will benefit optimally from the

learning experience in which he is exposed to. In order to help the teacher to achieve this effectiveness, they need to taps to the ICT worlds.

2. ICT Pedagogy Approach and Current Mode of Instruction in Tertiary Institution in Nigeria

FME (2007) sees tertiary Education as Post-Secondary section of the nation education system which is given to universities, polytechnics, College of Education, College of Technology. According to the National Policy on Education (2004), the higher institutions in the country have their aims which include:

- (a) The development of the intellectual capacities of individuals to understand and appreciate other environments
- (b) The acquisition, development and inculcation of the proper value-orientation for the survival of the individual society.
- (c) The acquisition of both physical and intellectual skills which will enable individuals to develop into useful member of the community.

The tertiary institution in our country is therefore saddled with a lot of responsibilities. For we cannot afford to toy with this level of our educational system, hence the need to use most effective form of instruction to tutor and bring out the best out of pre-service teachers in the country.

Unfortunately what we observe in our tertiary institutions going on as regards to instructional mode is an eye sore. The main methods of teaching up till now remain the chalk and talk in spite of curricular changes, scientific and technological inventions including ICT (Salau, 2003).

The situation is almost the same in universities and the colleges of education, instruction is mainly through dictation of notes and giving out handouts a situation whereby many pre-service teachers copy lots of notes from their lecturers both in their teaching subjects, general studies as

well as education. This tends to make our tertiary institutions to operate at a lower technological level than the society in which they are cited. There is therefore the need for the lecturers and the pre-service to key into the new pedagogical approach of using ICT to facilitate the instructional activities in the classroom setting.

The ICT pedagogy approach is one of the new teaching approaches that have proven to be effective in the area of learners' active interaction with the learning materials (Ogunlade, 2014). It provides learners the opportunity to work with people from different cultures, thereby helping them to enhance learning and communication skills as well as their global awareness. While the need to make students skillful in ICT is important, skill alone is not enough to encourage students to confidently integrate ICT into their classroom programmes. The intention of this approach is that teachers skilled in ICT would confidently integrate it into their classroom practices. This is currently the approach adopted by some institutions outside Nigeria (Ogunlade, 2015). Students are required to complete two compulsory ICT units within their first two years; one skill-related, and the other emphasizing the integration of ICT in the curriculum.

This approach is very useful to the extent that the skills improve ICT literacy skills and the pedagogy allows students to further develop and maintain these skills in the context of designing classroom based resources. In this approach, there is need for present day teachers to view technology as an effective tool to be used while planning, delivering and assessing instruction, not just being compelled to meet specified technology standard.

3. Role of ICT in Enhancing Effective Instructional Delivery

The potentials for information and communication technology to improve the quality of instruction, transform the school, improve school management among other cannot be overemphasized.

ICT has the potential for enhancing the tools for learning as it allows materials to be presented in multiple media, motivates and engages students in the learning process through the following modes.

(i) **Use of Digital Literary:** This is an important skill required to prepare the students for the entry into new technology through related expression like computer literacy. It is a phase in which one uses ICT and internet in new, creative reflective ways leading to active participation and reflection of individual and communal identity (Dabesaki, 2005).

(ii) **Using Software for Reading:** interactive books in internet bring books to life for students who find reading boring. They can be asked to use such programme while they are still non-readers, as the computer will read the story for them, highlighting each word as it being read.

(iii) **Teachers' Professional Development:** ICT can also be relevant in the teachers' professional development to make them guides to sources of knowledge. Teachers in contemporary knowledge society require large, rich and easily accessible knowledge base which can be provided through ICT technologies that support teachers' professional development (Gallimore & Stigler, 2003). Teachers need to be lifelong learners to keep abreast of new knowledge, pedagogical ideas and technology (World Bank, 2003) relevant to successful implementation of Nigerian educational reforms; hence the need for them to be competent in the use of ICT.

(iv) **Reinforcement Software:** Through the use of ICT tools many software programs have been developed to help develop literacy skills and reinforce concepts through repetition and practice. Programs are available that target the following areas; early child literary skill, sight word recognition, phonological skills etc.

(v) Computer-Based Presentation Technology

Interactive White Board (IWB): This has to do with the same properties as computer. In this case, the teacher books up to a data projector, (you can present visual materials, into pages in a magnified way for everyone to see, teachers and students can write on the board which the images are being projected and can manipulate images on the board with the use of special pens.

(vi) **Conversion of Oral to Written Text:** This is made possible through the use of voice recognition programs. This will type a document as one speaks. It will assist students with oral language exceeds their written language abilities. Using a microphone, the user can dictate written assignment, letters, notes onto a computer which converts the oral language to written text.

(vii) **Greater Collaboration:** ICT technology tools make collaboration among students much easier since many projects involve collaboration learning, the online environment is far easier to work since learners do not have to be face to face (Agbetuyi and Oluwatayo, 2012).

ICT provides new frontiers for providing access to basic education for disadvantaged children and youth excluded from the formal school system. As modern ICTs are attractive to children and youth, they provide unmatched learning opportunities for them to learn within and outside the formal school system. They are powerful motivational tools for learning through games, exploration, collaboration and learning work-related skills (Fillip, 2002). This is to say that ICT can provide opportunities for individuals with disabilities to have access to quality education in conventional and distance education settings.

Information and Communication can assist in evaluation at both Macro (national objectives) Meso/Intermediate (Institutional or school level) and micro (classroom) levels of the Nigerian education system. Through ICTs research results of educational institutions can be centralized and disseminated for national or specific contextual application.

A research carried out by Yusuf (2005) found out that ICT provides variety of tools to support and facilitate teachers' professional competence. ICTs transform teaching and helps teachers to be more efficient and effective thereby increasing their interest in teaching. The use of ICTs can assist in the organisation and structure promoting rethinking and revision of curriculum and instructional strategies.

4. Challenges to Effective Utilization of ICT Facilities in Teacher Education in the Way Forward

Despite the numerous useful contributions of ICT to instructional delivery system in educational system, there are some constraints that militate against full actualization toward lessen the abstraction in instructional delivery in teacher education.

(i) **Low Level of Technology Education:** Teacher are the key factors in the teaching-learning process, therefore it is important to develop their competence in the use of ICT. Unfortunately studies have shown in Nigeria teacher education programme that many end users of ICT potentials and opportunities especially lecturers are far from being literate in ICT and therefore cannot enjoy the full benefit offered by the modern technology (Salau, 2003). To overcome this menace, there should professional development in ICT skills and applications, also the professional development should focus on how to integrate ICT into curriculum, instructional design etc. These can be addressed through pre-service teacher training, workshops and in-service teacher training programmes.

(ii) **Poor Power Supply:** In most of the teachers' training institute in Nigerian epileptic power supply is still very rampant. This has rendered ICT equipment less reliable. Most important information in the software cannot run/display without the availability of Electricity. To overcome this problem, the government and all stakeholder in the educational process should collaborate in provide stable electricity supply.

(iii) **Inadequate Technical Supportive Staff.** Technical support is important to the sustenance of ICT programmes in Colleges and teachers' training institute. These personnel require competence in ICT installation, operation, maintenance and network security. Unfortunately due to proliferation of ICT development and rapidity of change, it has become impossible for developing nations like Nigeria to educate and train commensurate number of ICT technicians and personnel necessary to cope with the need of the nation to compete favourably in ICT driven global

resolution. To overcome this challenge more technical staff need to be employed and trained in various ICT operations, installation and maintenance because their lack of technical breakdown can cause loss of money and time.

(iv) **Educational Administrators:** Teachers play a key role in the success of ICT integration. Undermining attitude of the administrators affects the integration process of ICT. Therefore administrators must be competent in the use of ICT, have broad understanding of technical, curricular, administrative, financial and social dimension of ICT in education.

(v) **Shortage of Content Developers:** These are specialists in content development such as instructional designers, scriptwriters, audio and video production specialists, programmers, multimedia, course authors and web developers. These professionals are highly needed in planning the curriculum and teaching materials to match the national curriculum requirement as well as make the curriculum have local meaningful content.

(vi) **Low Quality Service Provider:** Internet service providers depreciate in the quality of their services due to congestion of the information highway as a result there is a low level of inter-connectivity and dysfunctional telephone lines. Government should enact a policy to improve on this segment of ICT.

(vii) **Low level of funding.** The cost of ICT equipment to which references have been made as a problem need to be considered.

5. Conclusion

Information and communication technology interpretation as learning tools has brought about many opportunities and challenges in all spheres of life as a result of globalization. It is a veritable tool for ensuring the success of instructional delivery in any Educational system. If the society is operating in an age of electronics, nuclear energy and space travel, there is no way the teacher training institute that is supposed to be serving as an agent of change should be operating at the level of graphs, chalk and talk and even charts methods of instruction. To guarantee the effectiveness of the instructions and to ensure that pre-service

teachers benefit fully from the learning experience, the teacher should avail himself of the opportunities for the utilization of ICT for instructional delivery.

6. Recommendations

Despite the role of ICT in enhancing effective instructional delivery system, teachers' education in Nigeria is yet to fully adopt this innovation for teaching and learning. Effort should be made toward integrating ICT in our Teacher training institute in the country through the following measure:

- (a) Government should wake up to her responsibility by ensuring that ICT Policy statement are translated and necessary funding provided.
- (b) All teacher training institute in Nigeria should be made to benefit from the ICT project regardless of location and ownership through procurement of ICT facilities and providing the enabling environment for ICT integration.
- (c) Lecturers in the teacher training Institute should be encouraged to go for ICT training and capacity building workshops rather than just possess the qualification on paper for promotion sake.
- (d) The government should work towards stabilizing power supply in Nigeria rather than paying lip service to it to fast track ICT facilities installation in most of the teacher training institute so as to function effectively.

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