INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION: IMPLICATION FOR NTI OPEN AND DISTANCE LEARNING PROGRAMMES IN NIGERIA

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Abstract

Teaching in Open and Distance Learning Programmes in Nigeria like any other human endeavor requires continuous improvement to move along with current technological advancement to be able to tackle new challenges. Information and Communication Technology (ICT) have continued to transform the economy and Society. The role of ICT in the transformation of Nigeria is immense. Efforts at integrating Information and Communication Technology (ICT) into the Nigerian educational system started in 1987 at the 32nd Ministerial Council Meeting of the National Council on Education. This led to the inauguration of a National Committee on Computer Education which later drafted a policy on computer education. This paper therefore traces the integration of ICT in Education: Implication for NTI Open and Distance Learning Programmes in Nigeria.

Keywords: Information and Communication Technology, National Teachers Institute, Open and Distance Learning Programmes.

Introduction

Open and Distance Learning (ODL) has been considered as one of the educational innovations rapidly growing in Nigeria. Open and Distance Learning has provided opportunities to Nigerians who would have previously been denied access to educational opportunities based on their work, where they live, poor-economic circumstances and social status to attend to full time conventional educational system. It has a lot of benefits over conventional education which includes accessibility, flexibility, cost effectiveness, uninterrupted studies and freedom from cultism. The use of Information and Communication Technology (ICT) in Open and Distance Learning in Nigeria remains a major role for easy implementation of Open and Distance Learning (ODL).

Open and Distance Learning is very significant in today's knowledge-based and global world of education. It is a field of education that focuses on Open and Distance method of teaching with the aim of delivering teaching often on individual basis, to students who are not always physically present in a traditional educational setting (Isyaku, 2015). Teaching is carried out through self-driven learning among the students through different platforms, vis-à-vis learner – learner, tutor – learner and instructional – media interactions.

National Teachers' Institute (NTI) is however one of the most widespread Institute for which ODL has been adopted for training, retraining and upgrading of existing teachers. Such teachers have the opportunity to be re-trained in their schools, save on resources and bring immediate benefits to their classrooms (OECD, 2007). One of the major factors which have given rise to this type of learning is that most people do not have access to training in conventional Institutions in Nigeria.

They also lack adequate time to undergo such a programme in the conventional way. Thus, teachers have seen ODL programmes as viable ways of acquiring education even in a more convenient environment (Dabu & Jem, 2016). Due to the unconventional methodologies adopted in ODL, the printed medium is basic, supported by ICT. Therefore, the complex nature of the ODL form of education should be ICT-driven. Thus, NTI which is mandated to continually train and re-train teachers for effectiveness through ODL, integrated ICT into her programmes.

Integrating Information and Communication Technology (ICT) into classrooms has been an important aspect of preparing teachers for an ever-changing educational environment. In fact, an increasing acceptance and use of information and communication technology (ICTs) by the population occurred in the last decades (Hopkins, 1998). In particular, a great acceptance of using e-learning is seen as the use of ICTs to deliver a broad range of learning opportunities to enhance knowledge and performance (Beadle & Santy, 2008). But one goal of using ICT for the professional development of teachers is to help them prepare students to become productive members of the dynamic society and help teachers build skills that prepare students to become productive members of the workforce in a technologically advanced world (Osisoma & Ogunsola-Bandele, 2009).

Information and Communication Technology and Open and Distance Learning

The term Information and Communications Technology (ICT) came into broader light in the early 1990s to replace Information Technology (IT) as a result of the communicating abilities and facilities offered by the computer (Akudolu, 2007), Clarke (2006) states that ICT covers a wide range of applications, techniques and systems such as Word processing, Internet, Email, Spreadsheets, File navigation, Presentation packages, Database, and Curriculum Manager as well as work with teaching aids like camera, television, radio, projector etc. ICT therefore became relevant in teacher education to keep the contemporary teacher abreast with the dynamics of knowledge in the 21st Century (Otuka, 2012). Lallana and Margaret (2003) affirms that ICT refers to a broad field encompassing computers, communications equipment and the services associated with them. Clarke (2006) went further to state that ICT is not just considered as applications and systems but also as skill for life. It is in line with literacy and numeracy as a fundamental skill which every individual need so as to live "confidently, effectively and independently in a modem society (Akudoiu, 2007).

There are different definitions of Open and Distance Learning (ODL). Abrioux (2009) defined ODL as the type of education that takes place outside the conventional school system; it is imparted without necessarily having personal interaction with students or learners. According to UNESCO (2000), ODL is one of the most rapidly growing fields of education, and its potential impact on all education delivery systems has been greatly accentuated through the development of Internet-based information technologies, and in particular the World Wide Web (WWW) presenting approaches that focus on opening access to education and training provision, freeing learners from the constraints of time and place and offering flexible learning opportunities to individuals and groups of learners.

The Federal Ministry of Education (2004) defines ODL as any form of learning in which the provider enables individual learners to exercise choices over any one or more of a number of aspects of learning and distance learning as an educational process in which a significant proportion of the teaching is conducted by someone removed in space and/or in time from the learner. It can be deduced from these definitions that open and distance learning aims at increasing access and provides educational opportunities needed by anyone, anywhere and at any time. It provides increased educational opportunities to a larger population in different situations and needs. Both students and employees with distance problem can benefit because it is more flexible in terms of time and can be delivered anywhere.

Training Teachers in Nigeria Through the Use of Information and Communication Technology

No meaningful development can take place in any country without well-trained teachers who will, in turn, produce adequate workforce for the nation. The National Policy on Education (2004) addressed this by the following statement, among others. The goals of teacher education shall be to:
- produce highly motivated, conscientious and efficient classroom teachers for all levels of our educational system
- provide teachers with the intellectual and professional background adequate for their assignment and make them adaptable to changing situations

The National Teachers' Institute play great roles in teacher education in Nigeria. A holistic overview of how ICT training is carried out in the Institute no doubt provides a picture of ICT and ODL in Nigeria. This has revolutionized the equipment, materials and strategies for teaching. Emphasis has shifted from the teacher and the textbooks to ICT materials that call for the learner to be responsible for his or her own learning where the teacher serves as a facilitator, moderator or assistant. Though ICT tools and resources may be expensive when compared with the chalk and chalkboard of today in Nigeria, they are no luxury items but a necessity for teacher effectiveness. Fully integrating technology into teaching and learning requires well qualified teachers that is ICT complaint and are able to use the following ICT applications: Word processing, Internet, Email, Spreadsheets, File navigation, Presentation packages, Databases, and Curriculum Manager as well as operate a host of other items like camera, television, radio, projector, etc.

Otuka (2012) states that the uses of ICT in teacher training are as follows: -
➢ It promotes the competence of the teacher.
➢ The teacher develops interest and confidence in his/her work.
➢ It improves the teachers handling of large classes.
➢ Teachers studying by distance or long vacation programmes have access to information from their course facilitators e.g. the Internet.
➢ It enhances the quality of teacher education by exposing in-service teachers to resources and information beyond their immediate horizon.
➢ It provides opportunities for teachers who might want to combine work and learning to do so at their own pace.
➢ It sustains life-long learning.
➢ As a social process it enhances interaction and collaboration not only among institutions but also teachers either trainees or serving.
➢ Trained ICT school heads and managers will appreciate ICT knowledge.
➢ It promotes the teachers' capability to carryout meaningful research.
➢ Trainees have the option to select learning materials that meet the level of their knowledge and interest.
➢ It helps the teacher to develop computer and other interest skills that are transferable to other facets of the trainees' lives.
➢ It promotes effective and efficient education administration.

The Status of Information and Communication Technology in Teacher Education In Nigeria – Impact Of National Teachers; Institute

The teacher in the 21 Century faces a challenge of having to update his/her knowledge to be able to make appropriate use of ICT either as a teacher who uses ICT in the classroom or as an e-teacher or e-moderator of open and distance learning. Teacher educators and teachers are concerned more with efficiency rather than effectiveness when they adopt ICT in Education. Thus, ICT is used to make their jobs easier instead of making learning more effective. As a result, the teaching/learning process is embracing current educational paradigm which emphasizes student-centered instruction with the teacher as the facilitator rather than teacher as the source of knowledge. At all levels in Nigeria, lecturers/teachers have generally been polarized in their acceptance of the new technologies, while some have enthusiastically integrated technologies into their classrooms, others have totally rejected it. Otuka (2012) has observed that over 80% of teachers at the Post-basic and Basic levels who attended the Science Teachers Association of Nigeria's (STAN) ICT Annual Workshops (2004-2010) had no knowledge of the basic applications of the computer. No wonder teachers act as roadblocks against the implementation of new technologies and often not ready to accept any changes in their roles.

The NTI included ICT among other subjects like teaching methods and techniques, classroom management skills, language communication skills in the SDGs, produced manuals for the subjects and followed up with facilitation of these subjects during the SDGs retraining of Teachers.
The reason for these was for the teachers to benefit from the latest technological advancement in both subject matter, content knowledge and innovative best practices in pedagogical skills.

Information and Communication Technology Education and Information and Communication Technology in Education

ICT has three positions in curriculum and these are:
- learning about ICT,
- learning with ICT and
- ICT in education.
- Learning about ICT refers to ICT concept as a subject of learning in the school curriculum while learning with ICT is concerned with the use of ICT as a medium to facilitate instruction. This implies that one can learn ICT as any other subject in the curriculum. It can also be an instructional medium or a source for learning. This leads us to the need to clarify the differences and intersections between ICT in Education and ICT Education.
- ICT in education involves a comprehensive approach to innovative education systems, methods and management through ICT.

ICT		
Learning About ICT	Learning With ICT	ICT In Education
ICT concept as a subject of learning in the school curriculum	The use of ICT as a medium to facilitate instruction	A Comprehensive approach to innovative education systems, methods and management through ICT

According to Kim (2009), the scope of ICT in education among others includes:
➢ ICT as a tool to innovative teaching - learning practice (i.e. digital content, multimedia, teaching-learning methods, learning environments)
➢ ICT as an administrative tool (Education management information systems)
➢ ICT as an expanding learning opportunity (Distance Learning, e-learning)
➢ ICT as a facilitator of higher order thinking skills (learner-centered, self - directed learning, tailored learning)

Again, ICT education refers to ICT conceptual and functional skills needed to prepare learners to further participate in work and society in the future. There is a symbiotic relationship between ICT education and ICT in education as the latter foster's ICT skills and competence among learners. In learning with ICT, students indirectly acquire ICT competence. It should be noted that basic ICT skills are needed to integrate ICT into education thus, ICT education is the foundation of ICT in education.

Education Related Policies of Information and Communication Technology in Nigeria

Four education related ICT policies exist in Nigeria:
• The National Computer Education Policy had the objective to bring about a Computer literate society in Nigeria and, to enable school children to appreciate and use computers in various aspects of life and future employment. The Policy further proposed the teaching of computer studies and computer aided Instructions at Junior Inferior School (JSS) level.
• The National Information Technology Policy had as its vision statement 'to make Nigeria an Information Technology (IT) community in Africa and a key player in the information society using IT as the engine for sustainable development and global competitiveness". The policy's mission statement had the catch phrase "USE IT" and also necessitated the use of IT in education among other sectors. Even though the policy was not formulated solely for the educational sector, some of its objectives included empowering youths with ICT skills and preparing them for global competitiveness and, integrating IT into the mainstream of education and training.
• The National Policy on Education is the first to include ICT components in ICT policy. ICT was introduced into primary, secondary, science, technical and vocational education. Computer education became a pre-vocational elective in JSS and a vocational elective in SSS.
• The National Science, Technology and Innovation Policy objective is to build a strong Science, Technology and Innovation capability and capacity needed to evolve a modern economy. In relation to the educational sector, strategies were proposed to facilitate national ICT innovation competition at all levels of education, encourage and support collaborative Research and Development activities among industry, higher educational institutions as well as private and public research institutions for software and hardware development.

Information and Communication Technology Integration in Teacher Education: National Teachers' Institute Experience

The National Teachers' Institute, Kaduna was established in 1976 by the Federal Government to produce qualified teachers for Nigerian Schools. The Institute's enabling law National Teachers' Institute Act, CAP N79 LFN 2004 (originally Decree **No. 7 of 10th April 1978)** established the Institute, charged it, to among other things; provide courses of instruction leading to the development, upgrading and certification of teachers as specified in the relevant syllabus using Distance Education Techniques. With the launching of the Universal Basic Education (UBE) programme by the Federal Government in 1999, the Institute was further tasked to produce qualified teachers to meet the new challenges posed by the acute shortage of teachers to implement the programme.

The Institute's Act (Ibid) further mandates it in section 3 (a-j) to carry out the following functions:

(a) Upgrade under-qualified and untrained teachers;
(b) Provide refresher and other upgrading courses for teachers;
(c) Organize workshops, seminars and conferences, which would assist in the improvement of teachers;
(d) Conduct examinations;
(e) Carry out research in conjunction with other bodies on any matter relevant to educational development in the country;
(f) Formulate policies and initiate programmes at all levels of education designed to improve by way of research the quality and content of education in Nigeria;
(g) assess from time to time the training programmes offered by institutions controlled by or associated with the Institute, with a view to ascertaining the professional competence of those institutions;
(h) offer such assistance, either alone or in co-operation with other educational bodies as may be requested by the institutions controlled by or associated with the Institute;
(i) foster and enhance international co-operation in the education of teachers; and
(j) perform such other functions as necessary or expedient for the full discharge of all the functions of the Institute under the Act.
    In addition, in *section 7(2),* the enabling Act states "without prejudice to the generality of the provisions of the Act, the Institute's Governing Council shall have and exercise the powers to":
(a) Establish and maintain such schools, extra-moral departments and other teaching units within the Institute as the Council may from time to time decide.
(b) Provide such courses of instruction either alone or in association with such Universities and other Institutions whether in Nigeria or not, as the Council may determine, and to conduct examinations, and award Diploma and Certificate to those reaching a certain standard as a result of those examinations as may seem appropriate to the Council;
(c) Institute and award fellowships, medals, prizes and other titles;
(d) Mount exhibition and displays designed to foster an appreciation of trends in, and the scope of the requirement for education.
(e) Create lectureship and other academic posts and offices and to make appointments there to,
(f) To encourage and make provision for research in the Institute and
(g) Erect, provide, equip and maintain such educational, recreational and residential facilities as the Institute may require.

Teachers teach the way they are taught and not in the way they are told to teach. Teachers that will use ICT to assist instruction must have first of all experienced ICT based curriculum in their initial teacher preparation (Jegede, 2006). In other words, student teachers need to experience ICT use in their own learning before such technologies will be adopted for use with the children they teach. This idea is underpinned by the Social Learning Theory otherwise known as observational learning. Absolute learning comes from observational learning and instruction. Underwood (1996) underscored this when he opined that the bane of ICT education for teachers is that of poor role models for student teachers. This placed the primary responsibility at the door step of teacher education and educators. In a situation whereby teacher educators themselves cannot teach with computers; it then becomes difficult to envision an ICT integrated classroom with the teachers they produce.

Training till now has focused on application i.e. how to use Word, excel, PowerPoint etc. Trainings that are now needed must include ICT integration into teaching and learning. This is the beginning of transformation.

❖ The National Teachers' Institute does not compromise quality in her programmes and had integrated ICT in her course books for students and facilitators in all the programmes – B.Ed., PGDE, NCE and SDGs.
❖ The NTI Radio station is also airing the courses books.
❖ The Institute's application for admission and registration is done and processed on-line.
❖ The Institute's Café, manages the official e-mail of NTI info@nti.edu.ng.
❖ The Institute's on bi-monthly basis published her news in the news bulletin which is uploaded to the Institutes' website.
❖ The Institute's E-Learning centre conducts e-examinations for example the TRCN and JAMB e-examinations.
❖ The NTI has introduced free on-line course on Environmental Education and this is called 'Waste To Wealth (WTW).
❖ The Institute has an on-line Advanced Diploma Programme in Environmental Education (Green teacher).
❖ The Institute uploaded her course materials on the newly introduced Science Courses viz: Physics, Chemistry, Biology, and Agricultural Science.
❖ The Institute is also updating her portal to ensure that students check their results on-line.
❖ The Institute offers technical support on ICT in teacher and teacher education to all that needs their services.

Benefits of Information and Communication Technology in Teacher Education

Information and Communication Technology has changed the role of the teacher. Twenty years ago, the teacher was basically limited to providing class notes, showing a video, and using a limited variety of other tools to try and make learning fun and interesting. Thus, teachers were expected to reach a variety of learning styles simultaneously without the proper tools to help them accomplish this task. Today, a teacher's role has changed to facilitator and supporter as students collaborate and use apps that suit their learning style. This enables the teacher to be more proactive about providing individual help when needed without having to worry about hindering other students in the classroom that are ahead in the learning process. Otuka (2010) list the benefits of ICT to teacher education as follows:

➢ It enhances and promotes the competence of the teacher.

➢ It makes the teacher to have interest and confidence in his/her work.
➢ Teachers access teaching and learning material through internet.
➢ Teachers' quality is enhanced, hence their exposure in pre-service and in-service training to resources and information beyond their immediate reach.
➢ Teachers who wish to combine work and learning do so at their pace and convenience.
➢ The teachers' life-long education through training and retraining is sustained.
➢ It enhances interaction and collaboration among teachers and school heads administration.
➢ Teachers are better equipped and enhanced to carry out meaningful research.
➢ Teachers are better placed to select teaching and learning materials suitable for the level of students/pupils under them.
➢ Teachers are able to develop good ICT skills which are translated to their students.

Conclusion

Judging from the above, it can be deduced that the relevance of ICT in the classroom represents a win-win situation for educational Institutions. This paper has revealed the steady growth of ICT in this regard. Thus, teachers now have the tools they need to reach each student and students can choose the way they wish to consume lesson content. The Nigeria's government are hereby appreciated for encouraging the NTI ODL Institute by making ICT study materials and equipment available so that teacher trainees will be updated with the 21st Century ICT classroom skills. This in essence will go a long way in improving the standard of education in Nigeria.

Recommendations

It is worthy of note to recommend the following:
1. Mandatory supply of a prescribed number of computer systems by the local government to primary schools in their area.
2. Special budgetary allocation by Federal and state governments for ICT in ODL teacher and teacher education.
3. Encouraging private ownership to invest in ICT for ODL teacher and teacher education.
4. More importantly as strategized in National IT Policy (2000), encouraging IT companies with appropriate incentives and compelling them to invest in ODL teacher education and re-training of teachers by the NTI.
5. Connecting the schools with information superhighway by grouping schools.
6. Providing safety for the provided gadgets.
7. Encourage the development of indigenous software that are compatible with Nigeria's educational system.
8. Teacher education and development by the following strategies:
✓ In-service training for serving teachers.
✓ ICT-immersed training for In-service teachers.
✓ Re-training of teachers from time to time.
✓ Laptop loans and rebate for primary and secondary school teachers.
✓ Training and re-training of teacher educators.
✓ Training to focus more on teaching with computers rather than on mere technicalities

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