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INFORMATION COMMUNICATION TECHNOLOGY NEEDS FOR TEACHER EDUCATION AND PROFESSIONAL DEVELOPMENT IN NIGERIA

John NWOKOCHA

Department of Educational Management
Faculty of Education
Ignatius Ajuru University of Education, Nigeria

Ebere Agatha ODOEMENAM

Department of Educational Management
Faculty of Education
Ignatius Ajuru University of Education, Nigeria

ABSTRACT

This paper examined information communication technology needs for teacher education and professional development in Nigeria. This paper positioned Information and Communication technology as the hub of the pre-service training and continuing professional development of the teacher needs for education professional development in Nigeria. Undoubtedly, ICT has impacted positively on the quality and quantity of teaching, in primary, secondary and university institutions of learning. Meeting ICT needs in teacher education has provided concreteness for teachers-in-training and teaching needs and therefore has enhanced dynamic teaching, learning through its interactive, engaging content and further provided real opportunities for individualised instruction. This paper therefore concluded that even though Nigeria came late into the ICT spot, the adoption of information communication technology for teacher education professional development in Nigeria is the right step towards teacher education professional development and for the development in Nigeria's economic life. This paper therefore suggests that Nigeria as a nation should recognise the strategic importance of ICT through developing and inculcating ICT teacher education for professional development and also ensure its successful application in every aspect of teacher education. Through this the Nigeria educational system will provide intervention in bridging ICT gaps in teacher education in the 21st century through the involvement of important stakeholders in education.

Keywords: Information Communication Technology, Teacher, Education, Professional Development.

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INTRODUCTION

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and modern technologies are demanding teachers to learn how to use these technologies in their teaching. While new technologies increase teachers' training needs, they also offer part of the solution. For successful technology integration, there needs to be a shift in pedagogical approaches and reform of teacher education programs. Information and communication technology (ICT) can provide more flexible and effective ways for professional development for teachers, improve pre- and in-service teacher training, and connect teachers to the global teacher community. Information communication technology education is generally acknowledged as one of the crucial allies of the development process.

According to Bakia, et al (2011) no nation can be great or rise above the quality of its educational system and no educational system can rise above the quality of its teachers thus, the role of quality education and teachers in promoting literacy and raising a high class of intellectuals and work force, who tackle problems, cannot be overemphasised. As a result of this, the Oludipe and Oludipe (2010) unequivocally stated that teacher education will continue to be given attention in all our education planning. Teachers are therefore the focal point education because of the important and roles they play in the educative process, particularly in developing countries. However, the challenge of teacher training appears to be the most overwhelming challenge facing the education system in Nigeria.

This has been observed by researchers who have reiterated that out of all the educational problems that beset the African continent today, none is as persistent or as compelling as the one relating to the training of competent teachers who directly and indirectly is bound to influence the quality and quantity of services provided by all other teachers and professors, as poor teachers tend to produce their own kind. This observation is supported by Faizi, et al (2013) who presented that teacher education has been severely criticized on the grounds of quantity and quality. Despite this, education system in Nigeria is still characterized by too few teachers, and for some subjects, there are none at all. In terms of quality of teachers in Nigeria, experts have submitted that there is only modest evidence of the effectiveness of the Nigerian teacher education system (Abrami et al, 2010).

The curriculum has been criticized as often not well matched with students' own background and culture of the society that the would-be teachers are expected to teach. With the effective use of information communication technology, teacher training system in Nigeria, will be successful to adhere to the provisions of the National Policy on education that teacher education shall continue to take cognizance of changes in methodology and in the curriculum, and that teachers shall be regularly exposed to innovations in their professions and become key to educational development, for without adequately trained teaching cadre Nigeria cannot hope to expand her educational facilities (Udofia & Ikpe, 2012). Furthermore, this will also improve the pre-service training and in-service professional development of Nigerian teachers reflecting the attention and focus of these observers of our education system.

CONJECTURAL CONTEXT

Information Communication Technology Needs of the Teacher Education

The scenario of the teaching profession is changing. There is a technological gap between the progress of the society and instructional activities of the teacher in the classroom. If we see in our society on the one hand technology has revolutionized our society and on the other hand the teaching learning activities at school level have remained so far away from technology. In our classroom the knowledge is imparted by the teacher in a traditional way, a teacher-centric mode which is most of the time boring and not to gain interest to the student. According to Ross et al (2010) posits that present contemporary education is student-centric education. Students learn from multi sources and for this reason use of ICT & Multimedia are very much essential in educational field and simultaneously, teacher's knowledge of ICT and Multimedia also required.

Information communication technologies and other aspects of digital culture have changed the ways people live, work, play, and learn, impacting the needs, construction and distribution of knowledge in teacher education. Teachers and trainee teachers who are less familiar with digital culture are increasingly at a disadvantage in their career and professional development. Information communication technologies literacy skills of searching for, discerning, and producing information, as well as the critical use of new technology-based teaching for full participation in society has therefore become an important consideration for curriculum frameworks and teacher education (Bingimlas, 2009). In many Nigeria as well as other developing countries, information communication technology needs and digital literacy is being built through the incorporation of information and communication technology (ICT) into teacher education. Some common ways these information communication technology needs are met include:

- ***The use of laptops:*** Less expensive laptops have been designed for use by manufacturers considering costs for developing countries. These laptops which are personally and institutionally owned have features like lower power consumption, a low cost operating system, and special re-programming and web network functions. Despite efforts to reduce costs, however, providing one laptop per child may be too costly for some developing countries.
- ***Tablets:*** Tablets are small personal computers with a touch screen, allowing input without a keyboard or mouse. These inexpensive learning devices can download onto tablets, making them a versatile tool for teacher education. The most effective applications develop higher order thinking skills and provide creative and individualized options for trainee teachers to express their understandings and learn teaching.
- ***Interactive White Boards or Smart Boards:*** These are interactive white boards which allow projected computer images to be displayed, manipulated, dragged, clicked, or copied. Simultaneously, handwritten notes can be taken on the board and saved for later use. These interactive white boards are associated with whole-class instruction rather than student-centred activities. Teaching and learning engagement is generally higher when information communication technology needs of the teacher education are provide and utilized.
- ***E-readers:*** E-readers are electronic reading devices that can hold hundreds of books in digital form, and they are increasingly utilized in the delivery of reading material. Trainee

teacher both skilled readers and reluctant readers have had positive responses to the use of e-readers for independent professional development. Features of e-readers that can contribute to positive use include their portability and long battery life, response to text, the ability to define unknown words and speed or fastness. Additionally, many book and titles which could have been difficult to get hard copies available for free in e-book form.

- ***Flipped Classrooms:*** The flipped model classroom, involves lecture and practice at home via computer-guided instruction and interactive learning activities in class which can allow for an efficient and effective teacher education trainer-trainee experience. Even though these seem to be new and gradually accepted, the results have been positive, as cooperative learning activities proffered over class lecture.

Meeting ICT needs in teacher education

Meeting information communication technology needs in teacher education and professional development require extensive, on-going exposure to information communication technology to be able to evaluate and select the most appropriate resources. However, the development of appropriate teacher education pedagogical practices is seen as more important than technical mastery of information communication technology. Teacher education technical mastery of information communication technology skills is not a sufficient precondition for successful integration of information communication technology in teacher education.

According to Nwatu (2012) experience, the use of technology in everyday teaching and learning activities appears to be more important than specific instruction in meeting ICT needs in teacher education. While meeting information communication technology needs in teacher education seems to have a role in the teaching and learning process, it is more important as an enabler of other teaching and learning practices, and not too important in and of itself. Teacher training institutions like faculties of education, institutions of education, colleges of education and national teachers institutes report the highest levels of teacher education information communication technology-related skills and experience are often not those with heavy computer course requirements, but rather ones that made use of information communication technology on a routine basis throughout the teacher professional development and the teaching and learning process (Sosa et al., 2010).

Role of ICT in Teacher professional development in Nigeria

Information and communication technologies are generally accepted as modern instrumental tools that enable the educators to modify the teaching methods they use in order to increase the students interest. The role of ICT in teacher professional development in Nigeria have driven the Nigerian economy into a new knowledge based from where technology plays an important role teacher professional development (Akporehe, 2011). The successful implementation of information communication technology into teacher training address five interlocking frameworks for change in the infrastructure, attitude, staff development, technical as administrative support and also sustainability and transferability (Mueller et al, 2008).

The effective integration of information communication technology into the educational system is a complex, multifaceted but worthwhile process. Information communication technology greatly facilitates the acquisition and absorption of demonstration, drill and practice, interaction, and collaboration. Accordingly, Aladejana (2012) posited that effectiveness, cost,

equity, and sustainability are four broad intertwined issues which must be addressed when considering the overall impact of the use of information communication technology in education. The use of technology require clear and specific objectives, guidelines and time bound targets, the mobilization of required resources, and the political commitment at all levels to see the initiative teacher professional development in Nigeria through.

Application and Prospect of ICT to Teacher's Professional Development in Nigeria

The teaching career need specific application of professional development opportunities in order to increase their ability to use ICT for teacher trainee assessments, individualized instruction, accessing online resources, and for fostering interaction and collaboration. Such training in ICT should positively impact general teacher education attitudes towards ICT in while in practise, but it should also provide specific guidance on ICT teaching and learning within each discipline (European Commission, 2013). To support teachers as they pursue their teaching career, it is also essential for education managers, supervisors, teacher educators, and decision makers to be trained in ICT usage.

The way ICT is used in lessons is influenced by teacher's knowledge about their subjects, and how ICT resources can be utilized and related to it (Fraillon et al., 2014). The evidence shows that when teachers use their knowledge of both the subject and the way student understand the subject, their use of ICT has a more direct effect on student achievement. Effective ICT utilization in education improves teachers' training and professional development needs. However, ICT can be an important tool to help meet such increased needs, by helping to provide access to more and better educational content, aid in routine administrative tasks, provide models and simulations of effective teaching practices, and enable learner support networks, both in face to face and distance learning environments, and in real time or asynchronously (Nwazor, 2012). Successful on-going professional development models can be divided into three phases:

- **Pre-service:** This focuses on initial preparation on pedagogy, subject mastery, management skills and use of various teaching tools including information communication technology.
- **In-service:** This includes structured face-to-face and distance learning opportunities building upon pre-service training and directly relevant to teacher needs.
- **On-going:** These are formal and informal pedagogical and technical support, enabled by information communication technology, for teachers, targeting daily needs and challenges.

Effective teacher professional development should approximate the classroom environment as much as possible as hands-on instruction on ICT use is necessary where ICT is deemed to be a vital component of the teaching and learning process. According to Adenike (2012) professional development activities should model effective practices and behaviours and encourage and support collaboration between teachers. Professional development at the school level, using available ICT facilities, is seen as a key driver for teacher's professional development, especially when focused on the resources and skills directly relevant to teachers' everyday needs and practices. Professional development should include methods for evaluating and modifying pedagogical practices and expose teachers to a variety of assessment methods. This was

buttressed by Ogbonaya (2011) that information communication technology needs for teacher education and professional development in Nigeria assessment should precede the creation of and participation in teacher professional development activities, regular monitoring and evaluation should occur of these activities, and feedback loops should be established, if professional development is to be effective and targeted to the needs of teachers.

Integrating Information and Communication Technology with Pedagogy

Integrating information and communication technology with pedagogy will ensure that teacher education is made with ICT to benefit students. Institutional policies will be shaped to provide the minimum acceptable infrastructure for ICT, including stable and affordable internet connectivity and security measures such as filters and site blockers. Teacher education policies need to target basic ICT literacy skills, ICT use in pedagogical settings and discipline-specific uses, thus a successful integrating information and communication technology with pedagogy (Khan et al, 2015). Digital content needs to be developed in local languages and reflect local culture alongside ongoing technical, human, and organizational supports on all of these issues are needed to ensure access and effective use of ICT for teacher education and professional development in Nigeria.

The existence of ICT does not transform teacher practices in and of itself. However, integrating information and communication technology with pedagogy teaching practices, given a set of enabling conditions. The use of ICTs as presentation tools through overhead and LCD projectors, television, electronic whiteboards, guided web-tours, where students simultaneously view the same resources on computer screens is seen to be effective. Aubusson (2014) argued that while it may promote class understanding of and discussion about difficult concepts (especially through the display of simulations), such uses of ICTs can re-enforce traditional pedagogical practices and divert focus from the content of what is being discussed or displayed to the tool being utilized. For effective integration of information and communication technology with pedagogy, types of usage of ICT should correlate with teacher pedagogical philosophies. Teacher education which uses ICT the most and the most effectively is less likely to use traditional transmission-method pedagogies (Ertmer et al, 2012).

Information Communication Technology Use and Teacher Performance

The most significant factor for teacher's professional development ICT-related skills is for them to have regular access to functioning and relevant ICT equipment. Shifting pedagogies, redesigning the curriculum and assessment, and providing more autonomy to the schools help to optimize the use of ICT. With sufficient enabling factors in place, teachers can utilize ICTs in as 'constructivist' a manner as their pedagogical philosophies would permit (Tamin et al, 2011). Teachers must have adequate access to functioning computers, and be provided with sufficient technical support if they are to use ICTs effectively. Adequate time must be allowed for teachers to develop new skills, explore their integration into their existing teaching practices and curriculum, and undertake necessary additional lesson planning if ICTs are to be used effectively. Information Communication Technology use and teacher performance includes:

- Enhancement of the teachers productivity in the classroom
- Arousal of the interest of the learner(s) in the learning/ teaching process

- Effective planning of school work by administrators

Challenges and Solutions of Information and Communication Technologies in Teacher Education

Aladejana, (2012) the following are some of the challenges of meeting the needs for teacher education and professional development in Nigeria

- ***Non-cooperative attitude of teachers:*** In Nigeria, the educational system is often faced with non-cooperative attitude of teachers. Teachers' non-cooperative attitude in the form of non-adoption and non-usage of ICT facilities in the teaching/learning process even when they are provided in the school, in order to counter for the educational needs of the learners is seriously observable in the less developed countries. Trainee teachers should therefore cultivate co-operation and open-mindedness towards new innovation to ensure that the information communication technology needs for teacher education and professional development are met.
- ***Lack of supervision and implementation of ICT projects:*** Relevant agencies set up by the government or Ministry of Education in Nigeria often show apathy in the process of supervision of ICT usage in most institutions of learning, to ensure that ICT is embedded in the educational system. Lack of supervision has over time made some ICT facilities and equipment in most institution of learning to lie waste. The light of the forgoing has often hindered ICT to make a substantial success in the third world countries. Stakeholders and relevant authorities should provide regular and routine supervision check and balance apathy in the process of supervision.
- ***Insufficient funding:*** In Nigeria, trainee teachers are still faced with mostly audio and quasi method of teaching in which teachers use verbal expression and chalk to write/draw with low learning eagerness to yield to the teaching/learning process. Through the use of ICT audiovisual material, learner interest will be aroused by improved performance in the short-run and in the long-run will successfully compare with educational systems of developed countries. Government should endeavour to provide adequate funding for acquisition of ICT devices.
- ***Inadequate knowledge of the teacher of ICT equipment:*** With the help of ICT the classroom teacher(s) can perform better through the use of various ICT materials available at his disposal. Although in recent time, were teacher(s) performance is not only measured by student academic achievement, but also by effective use of materials which the ICT serve as a catalyst for that optimum goal. Government and education stakeholders should provide manpower to effectively train users.
- ***Political instability:*** Due to frequent change of government, ICT in the education of the third world countries is experiencing a serious set-back. This is often due to the fact that as new government comes into power new policies are to be implemented, without considering the policies of their predecessors most time, which may have a little bearing with the adoption of ICT related devices or facilities for educational institutions. Due to political instability, government is often faced with unresponsive attitude to implement of stated ICT project.

CONCLUSION

Informational communication technology (ICT) is a tool of global educational development. The use of information communication technology in Nigeria countries has witness a number of pitfalls, despite relevant educational stakeholders' effort to savage the situation. Some of the possible solution insight as exaggerated in this paper will serve as benchmark for ICT needs for teacher education and professional development to be fully optimized Nigeria educational system. This paper upholds that teachers cultivate and utilize the ability to utilize a variety of computer applications, will have a higher and their professional development will also be optimized.

Suggestions

In light of the presentations of this paper, this paper therefore suggests that:

- Nigeria as a nation should recognise the strategic importance of ICT through developing and inculcating ICT teacher education for professional development and also ensure its successful application in every aspect of teacher education.
- On-the job training is an avenue for teachers to upgrade their skills and knowledge of information communication technology to satisfy their needs for teacher education.
- Stakeholders and relevant authorities of teacher education and professional development should organize awareness programmes such as workshop, seminars, and for the efficiency and effectiveness in the use of ICT and related facilities in the process of teaching.
- Proper supervision of ICT projects/programmes the Ministry of education.
- Provision of ICT for teacher education and professional development by the government alongside projectors, computers, internet connector and smart-boards.
- Adequate budgetary provision should be made by the government as this will help in building of ICT laboratories, acquisition and dispensation of ICT facilities to teacher education training institutions.
- Proper remuneration should be made available for trainee teachers which will motivate them to be committed in using ICT facilities for teaching of the anticipated learners.
- Government should adopt suitable policies that will favour ICT for and in teacher education with the purpose.

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