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INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) USAGE IN TEACHER EDUCATION: A REFLECTION FOR CURRICULUM INNOVATION

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Abstract

This paper investigated information and communication technology (ICT) usage in teacher education: A reflection for curriculum innovation. In the preparation of teachers at all levels of our educational system, ICT has a lot to offer in this direction. The usage of ICT in facilitating teacher education is still a myriad in Nigeria as many of the teachers are not ICT literate and those under training in respective institutions of higher learning are not fully exposed to the use of ICT in the acquisition of skills and practical teaching. Concepts of teacher education and ICT were defined separately. The write - up also examined the objectives of teacher education. ICT as an innovation in teacher education was further discussed. Among others, the challenges of ICT in teacher education includes that ICT facilities are expensive and unaffordable, necessary infrastructures such as electricity and telephone for the operation of ICT components are lacking or grossly operated at epileptic level, lack of adequately trained manpower, poor remuneration, lack of total commitment on the part of government towards the development of ICT, inadequate funding and lack of adequate knowledge. Recommendations put forward includes that there is urgent need to review our educational policy strategies and techniques as well as the teaching methodologies of developing our teachers. There is need to introduce the teaching of ICT in the school curricular at all levels of our educational system with emphasis on practical application. ICT as a course should be made compulsory for lecturers and students of teacher education programme as these students will graduate to teach our school children in schools.

Keywords: Innovation, Teacher education, Utilization and Information technology

Introduction

Education across all countries of the world is seen as a process of transmitting the cultural heritage, stabilizing the present and improving or changing the future of the people. To get this done, the school system plays a significant role in this direction especially at actualizing the visions of the society and people. In essence, the school system could be regarded as a major agent of change and socialization in every human society. In order for the schools to function well, teachers and other support staff are the engine room that impacts knowledge and transformed the inputs from the society into a finished product. This makes the factor of the teachers central in the task of education (or nation building). Today, teacher education is considered to be the foundation for quality and relevance in education at all levels. Historically, the origin of teacher education dated by 1859 when the first teacher training institution in Nigeria was founded by the Church Missionary Society.

The main concern of the mission teacher training institution then was to produce school masters who are to graduate to classroom teachers, catechists, deacons and priests (Osoba & Fajana, 1980). Therefore, the subjects taught in the teacher training at the period included: the New Testament criticism, Christian faith, school method and management, preaching and theology, hygiene, geography, history, English among others (Fafunwa, 1991). The operation of teacher education in the period was heavily criticized by the Phelps Stokes Commission Report of 1922 for its irrelevant and poorly conceived curriculum, inadequate supervisory system and the high rate of teacher-pupil ratio. In discharging its responsibilities, teacher training colleges engaged the use of traditional tools to facilitate teaching and learning in schools devoid of technology as it is today. The original intention of ICT is to enhance education process and the delivery of content knowledge (Curriculum) in the classrooms (Jones & Knezek, 1993).

Furthermore, information communication and technologies can be used in education for different purposes such as, for memory retention, skills acquisition, understanding of the subject matter, independent study and motivation (Dede, 1998). It is imperative to note that information and communication technology (ICT) is assumed to be recently embraced in the 21st century to train would - be - teachers by most institutions saddled with these responsibilities. It was in the light of all these, that the writer of this paper considered it essential to examine information and communication technology (ICT) usage in teacher education: A reflection for Curriculum Innovation.

Concepts of Information and Communication Technology

It is not an understatement if anyone says that information and communication technology (ICT) has become life wire for modern development today. According to Anagba cited by Ibrahim (2016), encompasses computer and telecommunication. It is concerned with technology used in handling, acquiring, processing, storing and dissemination of information. Thus,

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information and communication technology is any technology used in producing, organizing and passing information through. Evey in Ibrahim (2016) observed that ICT is innovative device that can carry out such functions as relieving, storing, computing, analyzing, transmitting and retrieving information presented to them and allowing for one to one or group communication among humans. Obashoro (2007) identify ICT infrastructure to include multimedia, CD ROM, MP3 players, websites, discussion boards, email, computer aided assessments, learning management software, blogs among others. In the same vein, Folorunsho, Longe and Ijere (2003), identified ICT infrastructure to include internet world wide network (www), electronic data interchange (EDI), local network area (LAN), wide area network (WAN), and protocols contact management and metal data standard (MDS). Technologies available in the classrooms today ranges from simple tools - based applications (such as world processors) to online repositories of scientific data. Others are primary historical documents, held computers, closed circuit television channels and two - way instance learning classrooms. Prensky (2005) asserts that even the cell phones that many now carry with them can be used to learn.

According to Leo and Zhao (2006) each technology is likely to play a different role in students' learning. Rather than trying to describe the impact of all technologies as if they were the same, researchers need to think about what kind of technologies are being used in the classroom and for what purposes. Two general distinctions could then be observed from the literature. Students can learn from computers where technology are used essentially as tutors and serve to increase students' basic skills and knowledge. Moreover, they can learn with computers where technology is used as tool that can be applied to a variety of goals in the learning process. It further serves as a resource to help develop a higher order thinking, creativity and research skills (Ring Staff & Kelly, 2022). ICT influences the delivery of lesson to students in class. This process is students driven and not teachers. ICT usage and integration and the standard of teacher education programme. Information and communication technologies (ICTs) are indispensable and have been accepted as part of the contemporary world especially in the industrialized societies. In fact, cultures and societies have adjusted to meet the challenges of the knowledge age. Information and communication technologies (ICTs) are indispensable and have been accepted as part of the contemporary world especially in the industrialized societies. In fact, 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 information and communication technology.

Without much ado, information and communication technology (ICT) are indispensable and have been accepted as part of the contemporary world especially in industrialized societies. In fact, cultures and societies have adjusted to meet the challenges of knowledge age. The pervasiveness of ICT had brought about rapid changes in technology, social, political and global economic transformation. Progress and development in information and communication technology are considered as positive elements of change in education sector, and internet and network technology are used extensively in educational fields on the Earth (Hawkins 2005, Newpher 2006). Studies have shown that in spite of the rapid progress of information and communication technologies, these technologies are not used effectively in classrooms (Albin 2006, Okojie, Olinzock, Okojie & Tinukwa, 2006). Sahin & Thompson (2006) found out that while technology is mostly used in administration and researches, it is rarely used in education

Teacher Education and ICT

In the field of education today, teaching vis-à-vis what should be taught has taken a new dimension as some persons are vested with the rights and responsibilities to carry out this specific tasks. This class of people are otherwise regarded as a teacher. Clearly, such individuals must pass through some specific and specialized training via designated platforms and specialized programmes and process called Teacher Education. In essence, teacher education is the training given to the would-be-teacher in an educational institution to prepare him or her for the challenges of imparting knowledge through teaching and learning. Invariably, if the nation aspires to produce the quality of teachers who are skillful for the challenges of imparting knowledge to the younger ones, then the quality of our teacher education needs to be-improved upon. It includes training and or education occurring before commencement of service (pre-service) and during service (in-service or on - the - job).

Every society requires adequate human and material resources to improve its social organization, preserve the culture, enhance economic development and reform the political structures. This could be achieved if the instrumentality of ICT is utilized adequately for effective curriculum delivery. It therefore emphasized that training is so important because the role of teachers in the 21st century must definitely change if dynamism of ICT is anything to go by. Activities in the classroom have changed from what it used to be since the advent of ICT. Modern gadgets are now being installed in the classrooms. Teacher educators have to be familiar with these changes if they want to be relevant. Take for example, the use of overhead projector as against chalk board; teacher educators must be able to prepare a power point note for presentation. The power point must not be verbose and must be succinctly relevant to the content knowledge to address the expected learning outcomes and to meet the aspiration of the learners. It does not stop here as the sitting arrangement is expected to change so that all the students will benefit from the power point presentation. To this end, teacher educators need to have different orientation and be more

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committed to adjust to these changes. Accessibility and availability of these facilities is very essential as well. All these will help achieve the objectives of teacher education as stated in the national policy on education (2014) are as follows:

a) To produce highly motivated conscientious and efficient classroom teacher for all levels of our educational system;
b) To encourage further the spirit of enquiry and creativity in teachers;
c) To help teachers to fit into social life of the community and the society at large and enhance their commitment to national goals;
d) To provide teachers with the intellectual and professional background adequate for their assignment and make them adaptable to changing situations; and
e) To enhance teachers' commitment to the teaching profession. To achieve the above objectives of teacher education, the national policy on education (2004) emphasizes that all teachers in our educational institutions shall be professionally trained, and that teacher education programmes shall be structured to equip teachers for the effective performance of their duties. In doing this, ICT were provided and teacher trainers able to use these tools effectively would in - turn produced other technology driven future teachers.

Teacher education is the process of training that deals with the art of acquiring professional competencies and professional growth. It is an essential exercise that enhances the skills of learning and teaching. Teacher education is designed to produce highly motivated, sensitive, conscientious and successful classroom teachers who will handle students effectively and professionally for better educational achievement (Ololube, 2005a; 2005b). According to Amedeker (2005, pp. 99-110), inadequate teacher preparation programs result in majority of teachers' inability to demonstrate adequate knowledge and understanding of the structure, function and the development of their disciplines. Therefore, an effective teacher education program is a prerequisite for a reliant education which leads to a good level of confidence to both the teachers and their students as a result of which learning is coordinated effectively and professionally, and problems inherent in the teacher education rectified and solved (Lawal, 2003). Nwachukwu Prince Ololube University of Helsinki, Finlan. Teacher educators have to update their computer skills in order to be in charge during the dissemination of their professional duties in class. Educators need to be able to accommodate modern technologies with intervention of content pedagogical knowledge while interacting with the learners. The dynamism of technology requires new method of teaching, assessment, evaluation and student tracking. Therefore, teacher educators must be aware of the roles played by ICT on their preparation so as to understand the implications for 21st century classroom-based practice.

ICT as Innovation in Teacher Education

Innovation in education has been a subject of public debates for years but is nevertheless obscure of nature and vague in reality (Smith, 2009). According to Hare in Fuad, Musa & Yusof (2020), before innovation in education can be affirmed to be so, it must make a desirable and valuable change to be called innovation in itself. Most of the time, this innovation will face disapproval from various groups of people within the school system including teacher - trainers. Innovation is being conceived to improve the current situation from the previous one. Innovation always based on experimentation and knowledge improvement; it is a changing process and practice. Its objective is to improve the services, product, or process quality and productivity. However, the main challenges associated with innovation in education generally is the lack of reliable data before been embarked upon (Foray & Raffo, 2014). According to Foray and Raffo (2014), the difficulty of defining innovation is because it was challenging to describe and measure innovation when the objectives and activities involve are not define accurately.

OECD (2016) also differentiate innovation from reformation and change. Innovation is defined as the execution of new and better ideas, practices, and bits of knowledge. In contrast, reformation organized and attentive process in delivering changes. Therefore, change is the transformation or modification that could be planned or unintentionally phenomenon. Smith (2009) define innovation in education as a new product, new process, new ideas that are shifting the way people view an issue or question by redefining our sense of what is possible, and innovation at the platform level. Notably, the entry of information and communication technology (ICT) in teacher education has changed the narrative in how teaching and learning takes place in recent times. Technology is the main driver for innovation to happen (Serdyukov, 2017; OECD; 2016). Findikoglu & Ilhan (2016) stated that innovation does not necessarily mean the adoption of the latest technology. According to them, innovation and technology adoption are two different terms that are interchangeably. Thus, innovation in education is viewed as the use of the technology in itself. According to Serdyukov (2017), innovation is not merely about adopting the latest technologies but using an existence one. It must be accepted as a process to deliver engaging learning to students through the use of technology in their training. Using only ICTs in teaching and learning is not entirely mere innovation and it is not the primary goal in education (Findikoglu & Ilhan, 2016). It will facilitate the learning processes or make the structure of the conveyed content to students much more presentable and easier to understand, and it surely will save more time and resources compared to the traditional way. It will also give teachers more time to plan other activities in the classroom for revisions and enforcement.

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Seymour (1999) said that the introduction of computers in education in the early 90s would make significant changes in schools' performance. However, the educational system still not progress much. The OECD (2016) report also agrees with this statement even after seventeen years later. According to OECD (2016) report, the adoption of new technology in schools has not achieved the required outcome at a lower rate. These advancements of technologies that drive innovation in education do not come with only a positive impact on education. Sousa (2014) stated that the users of the technology widely would have both negative and positive impacts on student's memory systems and attention. Maurer et al. (2013) also mentioned that the introduction of the modern media in education, particularly computers would endanger the thinking capacity, to remember clearly, to write or read with concentration because all these activities required creativity. Grant et al. (2012), in his book "Who Killed Creativity?" mentioned that the new technology would surely promise us with faster communications technology and faster response time expected, but it will distract us from opportunities for creative thinking.

Challenges in the Use of ICT in Teacher Education in Nigeria

In Nigeria today, teacher education is bedeviled with a lot of challenges especially with the modern day technology which has become the new trend for imparting knowledge in the future teachers. As rightly observed by Ojo quoted by Owolabi, Oyewole & Oke (2013), the corps of teachers who are expected to initiate reforms into Nigerian education system went through the traditional 'old' system even till date without any exposure to ICT. It has thus become a difficult problem for these set of teachers to acquire adequate mastery of skills and content that are embedded in ICT to help them in their respective classes. Specific among these challenges are:

1. ICT facilities are expensive and unaffordable to many individuals, private and some government establishments including teacher colleges. Instructional facilities in quantity and quality are required to prepare the teacher for skills acquisition for effective performance of their duties are often in short supply. As a result of this shortcoming, teaching and learning in most teacher education institutions has become more of theoretical than practicals.
2. Necessary infrastructures such as electricity and telephone for the operation of ICT components are lacking or grossly operated at epileptic level. Lack of other infrastructures like roads, constructions and transportation has barred the extension of power grid to remote rural schools. Even where these schools have access, actual power use is unreliable, especially if not accompanied by a generator. In such schools, the idea of implementing ICT will require more financial backing from the government and donors. In recent studies done in Kenya (Aguyo, 2010,) it is apparent that providing electricity is a major challenge to implementing ICT in schools.
3. Lack of adequate trained manpower for the development, maintenance and operation of ICT facilities to service the increase demand of Information Technology service in Nigeria.
4. Poor remuneration for the inadequate personnel in ICT which consequently keep them away from labour markets in Nigeria.
5. Lack of total commitment on the part of government towards the development of ICT sector.

Recommendations

The following recommendations are advanced as the way forward.

1. There is urgent need to review our educational policy strategies and techniques as well as the teaching methodologies of developing our teachers.
2. There is need to introduce the teaching of ICT in the school curricular at all levels of our educational system with emphasis on practical application.
3. ICT as a course should be made compulsory for lecturers and students of teacher education programme as these students will graduate to teach our school children in schools.
4. Supportive infrastructures such as electricity and telecommunication services should be improved and adequately enhanced for effective services.
5. The ICT professionals should be encouraged through good remuneration based on improved salaries and conditions of service.

Conclusion

The importance of ICT in teacher education to improve the quality of teaching and learning process in schools cannot be over-emphasized. ICT should always be seen as a tool for teachers to use and no as a substitution for teachers. Nigerian government should therefore stop paying lip-service to ICT but rather make frantic efforts to develop and sustain ICT policy in the nation's educational programme. This will go a long way to effectively implement the use of ICT in teaching and learning process in all spheres of our educational system. More also, this will help to guarantee the success of the new teaching technology and teachers will be forced to be abreast with the modern development in the global educational standard, of which ICT plays a vital role.

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