ICT AND NIGERIAN EDUCATIONAL DEVELOMENT DURING PANDEMIC: PROBLEMS AND PROSPECTS

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ABSTRACT
This study examined role of information and communication technology (ICT) in education development in pandemic outbreak by focussing specifically on the problems and prospects of ICT in Nigeria. It a library type of research. Secondary source of information was employed and these were obtained from text books, journal articles, seminars and conference papers. Having conceptually examined related extant studies, the study found that role of ICT in educational development in terms of problems entail several issues like inadequate funding, poor infrastructure facilities, inexperience of teachers and lecturers in the use of ICT etc. It also revealed prospects of ICT in educational development to include fostering distant teaching and learning, internet usage, computer and software application usage etc especially during pandemic outbreak when students are confined at home due to lockdown. It concluded that ICT plays crucial role in educational development in pandemic outbreaks with a lot of prospects despite its associated problems. The study recommended that government should adequately fund ICT and facilities, training and development of teachers. Also, strategies and good experiences found that have been implemented by different international educational communities during pandemic outbreaks confinement like Covid-19 and Ebola should be replicated in Nigeria.
Keywords: Information and Communication Technology, Educational development and Pandemic

1 INTRODUCTION

In recent time, ICT as an acronym for information and communication technology has attracted considerable attention in the educational development especially during pandemic outbreak by academic researchers and practice. The need for ICT in educational development is necessitated following the difficult periods of pandemic outbreak (Covid,19) such that all institutions closed. The most encouraging projections forecast for a possible return to normality, in no less than eight months to a year, producing an economic, environmental and social impact that affects all countries (Yanez, 2020). Educational processes at all levels of education have been affected, causing a reorientation regarding the strategy of transmitting knowledge to students, where the use of ICT has an essential role to play in pandemic outbreak (Basilaia & Kvavadze, 2020; Moreno -Correa, 2020). ICTs encompass a set of digital tools available both for information management and for the development of various forms of educational training. Among the many advantages is the possibility of interacting dynamically and innovatively, allowing the carrying out of didactic activities that

integrate the visual, novel, and interactive (Garcia, Reyes, & Godínez, 2017; Hernandez, Orrego, & Quinones, 2018). The incorporation of these ICT tools in educational system can without a doubt generated changes in the educational field. This cannot only been noticed in the methodologies use in the teaching and learning process, but also in the possibilities of innovation and skill development for adaptation to the changes that educational institutions have had to undergo from the current pandemic (Moreno, Rodriguez, Gomez, & Ramos, 2020).

New technologies have crucial prospect in educational development such have greatly helped to fulfil substantive functions in higher education, under exceptional conditions arising from the impact of pandemic (like COVID-19), with its virtual applications greatly improving education reaching university students in most developed countries (Mendoza, Rodriguez & San Andres, 2020). The modality of e-learning is chosen in difficult times of a pandemic and brings with it modifications in teaching-learning strategies, logically based on the use of ICT tools (Torrecillas, 2020). It also leads to educational innovations (Falco, 2017) and the search for information to find out what other national and international educational institutions have done in this new stage of education to offer a quality teaching process to students based on the construction of a new paradigm (Hernandez, et al., 2018). Atiqah, Na, Kim, and Oh (2020) have valued the ICT sectors in educational development and are critical in this time of change of where these ICTs can be introduced in different areas. Thus, this study conceptually investigates the role of ICT in educational development in pandemic out break with emphasis on the problems and prospects in Nigeria.

Statement of the problem

Deficiency in ICT in the nation educational development encouraged closure of schools at all levels when there is out-breaks of pandemic. Veleza, Marcos and Gamezc, (2020) noted that the worldwide emergency caused by COVID-19 has led the authorities of the educational centres to reflect on their practices and can be a great challenge, not only because the transition has been abrupt but also because there are teachers who do not have the basic digital skills required for this migration. Educational development in Nigeria is bedeviled with a lot of challenges in the modern day technology of imparting knowledge in the teaching and learning process (Gbadegesin, Alabi & Omodun, 2018) especially in this time of serious pandemic outbreak. Information and Communication Technology (ICT) is relatively a very new development in Nigerian educational development. 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 Colleges of Education, Institutes of Education and Faculties of Education in Nigerian universities are not fully exposed to the use of ICT in the acquisition of skills and practical teaching (Owolabi, Babatope & Oke, 2013). Many universities may not have the resources to acquire advanced information technologies, such as the Internet, intranets, extranets, browsers, data warehouse, data mining techniques, and software agents since government funding is inadequate

However, related studies on ICT and educational development in term of problems and prospects with link to pandemic out breaks were mostly from developed countries (Basilaia & Kvavadze, 2020; Moreno -Correa, 2020; Veleza, etal., 2020; ; Yanez, 2020). Closely related studies from Nigeria for instance, Daramola (2006), Kasimu, (2015), Owolabi, Babatope and Oke (2013) conducted studies on education and information and communication technology in different perspectives in Nigeria. To the best of the researcher's knowledge, there is no study from developing countries like Nigeria that conducted study on role of ICT in educational development by linking it to pandemic outbreak. This is the gap in knowledge this study desires to bridge by

conceptual review of literature. Thus, the specific objectives of this study are to conceptually examine problems and prospects of ICT in educational development in Nigeria.

LITERATURE REVIEW

Educational Development

Educational development is seen in different perspectives by authorities and researchers. According to Stefani (2003), educational development is about facilitating positive change in teaching and learning in post-secondary institutions at the individual, program/department and institutional levels. Felten, Kalish, Pingree and Plank (2007) defined educational development as a growing and vibrant field for helping colleges and universities function effectively as teaching and learning communities. It is viewed as actions aimed at enhancing teaching (Amundsen & Wilson, 2012). Educational development is defined as a key lever for ensuring institutional quality and supporting institutional change (Sorcinelli, Austin, Eddy & Beach, 2005). Little (2014) stated that educational development encompasses the breadth of work we do, including levels (individual, program, and institutional) and key audiences (graduate students, faculty, postdoctoral scholars, administrators, organizations) served. Cruz (2018) noted that educational development, particularly in the physical form of centres for teaching and learning (CTL), provides an explicitly symbolic function and central significance of teaching and learning to the university community, even in the midst of a "garbage can" of constituents, agendas, and challenges. Educational development as a centre for teaching and learning are intended to provide safe havens for the exploration of teaching and learning practice; to emphasize teaching and learning as ongoing—and very much intellectual—processes; and to recognize and reward multiple pathways of development(Lee, DeZure, Debowski, Ho, & Li, 2013).

The educational development programmes and strategies that work at a small, liberal arts educational development acknowledges and occasionally indulges this multiplicity, the field is founded on the belief that teaching and learning have universal value, regardless of these prevailing differences (Cruz, 2018). Educational development shares burden of accountability such that private and public institutions are obligated to show that the resources invested in their activities constitute time and money well spent (Schumann, Peters, & Olsen, 2013). Educational development has always possessed an improvisational aspect (Albon, Iqbal, & Pearson, 2016), a consequence of our inherent liminality, as well as our focus on fostering innovation and creativity in teaching and, by extension, learning across the institution (Rossing & Hoffmann-Longtin, 2016). Rather, the idea of educational development continues in the shared scholarly and practical interest in the interdisciplinary and trans-disciplinary tools and perspectives of organizational learning and development (Cruz, 2014). To foster a community of teaching and learning implies the production of social capital (Carpenter, Coughlin, Morgan, & Price, 2010). In effect, educational development relates to create new knowledge, organize a field, mobilize momentum, build trust and to understand teaching and learning.

Information and Communication Technology in Nigeria education System

ICT stands for "Information and communication technology". Fisseha (2011) defined Information and Communication Technologies (ICT) as computer and internet connections used to handle and communicate information for learning purpose. It refers to technologies that provide access to information through telecommunication (Ratheeswari, 2018). It is similar to Information Technology (IT) but focuses primarily

on communication technologies. This includes the internet, wireless networks, cell phones and other communication mediums (Ratheeswari, 2018).

The Federal Government of Nigeria, in the National Policy on Education (Federal Republic of Nigeria, 2010), recognizes the prominent role of ICTs in the modern world, and has integrated ICTs into education in Nigeria. To actualize this goal, the document states that government will provide basic infrastructure and training at the primary school. At the basic school, computer education has been made a pre-vocational elective, and is a vocational infrastructure and training for the integration of ICTs in the school system. Nigeria started implementing its ICT policy in April 2001 after the Federal Executive Council approved it by establishing the National Information Technology Development Agency (NITDA), the implementing body. The policy empowers NITDA to enter into strategic alliances and joint ventures and to collaborate with the private sector to realise the specifics of the country's vision of making Nigeria an IT capable country in Africa and a key player in the information society by the year 2005 through using it.

However, Damkor, Irinyang and Haruna (2015) outlined below some of the objectives of Nigeria's ICT policy: (i) To ensure that ICT resources are readily available to promote efficient national development; (ii) To guarantee that the country benefits maximally, and contributes meaningfully, by providing the global solutions to the challenges of the Information Age; (iii) To empower Nigerians to participate in software and ICT development; (iv)To encourage local production and manufacture of ICT components in a competitive manner; (v) To establish and develop ICT infrastructure and maximise its use nationwide; (vi) To empower the youth with ICT skills and prepare them for global competitiveness; (vii) To integrate ICT into the mainstream of education and training; (viii) To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life; and, (ix) To create an enabling environment and facilitate private sector (national and multinational) investment in the ICT sector.

Problems of ICT in Educational Development

Problems of ICT in educational development vary in developed and developing countries. Lim and Khine (2006) noted that the manner teachers observe ICT can decide how well and effective use ICT in class. Becta (British Educational Communications and Technology Agency) (2004) analysed few problems of ICT implementation in schools in some developed countries, like UK, USA, Australia, Canada, Netherlands, and Hong Kong such as teachers are afraid of embarrassment in front of their students when machine or technology suddenly failed; teachers feel incompetent because of rigorous technological training or technophobic, insufficient access to technological resources (like hardware, bad management of resources, unsuitable software, low quality of hardware), overload work etc.

However, in some developing countries like Nigeria, Owolabi, etal.,(2013) and Haruna (2005) stated that ICT service in Nigeria education system are hindered by human and materials factors such as expensive and unaffordable nature by private and some government establishments; epileptic power supply; inadequate trained manpower in use of ICT infrastructure compare to demand of ICT services in Nigeria; Poor remuneration for the few trained ICT personnel in Nigeria; lack of total commitment by the government towards the development of ICT sector; Inadequate funding; and, indifferent attitude of most teachers especially at the primary and secondary school levels. Akpan (2008) noted low perception of the role of ICT in the management of university education for sustainable development and that ICT training programmes should be organized for lecturers to make them ICT compliance. Adedeji

(2011) identified low level of usage of ICT gadgets; non availability of ICT equipment and sluggish use and integration of ICT in education system. Garba (2014) showed that Nigerian teacher training institutions as not yielding the desired result due to technical issues relating to curriculum arrangement, pedagogical practices and infrastructure. Damkor, Irinyang and Haruna (2015) posited that ICT challenges in Nigeria educational development include poor policy, project implementation strategies and poor information infrastructure militate against these efforts.

Prospects of ICT in Educational Development

ICT can provide considerable benefits in supporting educational development. Huffaker, (2003) noted that using technology learning students can be active learners and that an active learning allows the students to decide when they require a particular information and whether they have already understood that information or not. By having access to internet in their school the students will not totally depend on the teachers or lecturers. Self-managed learning allows the students to be self-motivated and self-directed learners who will be able to readily, efficiently, and quickly respond to the quick change of information. As noted by Uhomoibhi (2006) e-learning allows the students to get information faster from everywhere and anytime. ICT also can provide a way for dynamic and collaborative learning. Students can access internet anytime and anywhere. Technology also enables us to cross the demography limits. Rural students can access information from urban areas, get information and share knowledge with other students or teachers in the same area or even different countries.

Besides dynamic learning, ICT allows all the human components of schools; the principals, administrators, teachers, IT coordinators, and the students to get involved in the collaborative learning and forming learning communities. Moodiel (2000) stated that by working together we can do what we cannot do individually. The most important learning aspect in collaborative learning that we want to achieve using ICT is interactivity and communication. Rodrigues (2002) pointed out that effective learning happens when students are interactively engaged in a learning task. Learning using ICT is more than learning through memorization. It allows the learners to experience their learning processes, being interactive, enjoy and have fun with technology. As stated by Rodrigues (2002) by using technology to support collaborative learning, there will be not only human-machine interaction but also human-human interaction. Web-based learning context, for instance, allows the students to interact with teachers or other students mediated by machine. ICT can lead us to meta-cognitive learning. As noted by Monteith (2002) by using ICT in our learning we can learn how to learn rather than learn a particular skill. By this we can be realize that learning new technology and new knowledge is not more difficult than learning old knowledge/skills. Adonis (2006) the effective use of ICT can upgrade the students' literacy and numeracy such as Microsoft word which not only can support the cognitive development of the students but also increase their motivation to learn and their interaction in learning.

REVIEW OF THEORIES

Innovation Diffusion Theory

The innovation diffusion theory was credited by Rogers in 1995. The theory proposes five attributes like relative advantage, compatibility, complexity, trialability and observability (Matevu, & Kerongo, 2015). Relative advantage refers to the degree to which an innovation such as ICT in educational development is perceived as providing more benefits than its predecessor (Monyoncho, 2015). Compatibility, according to Matevu and Kerongo (2015) is the degree to which an innovation fits with the existing values, past experiences, and needs of potential adopters. Complexity is the degree to

which an innovation is perceived as difficult to understand and use (Matevu, & Kerongo, 2015). When key players perceive innovations as being simple to use the innovations will be more easily adopted (Greenhalgh et al., 2004). Trialability is the capacity to experiment with new technology before adoption.

Matevu, and Kerongo, (2015) stated that it is the degree to which an innovation may be experimented with on a limited basis. Because new innovations require investing time, energy and resources, innovations that can be tried before being fully implemented are more readily adopted. Observability of an innovation describes the extent to which an innovation is visible to the members of a social system, and the benefits can be easily observed and communicated (Rogers, 2003). This theory is related to this study in the sense that when an innovation like ICT is introduced in education system, confinements or lockdowns will not affect teaching and learning. Institutions or schools could enjoy benefits of innovation like ICT adoption when they are fully implemented in the educational system.

Technology Acceptance Model

Technology acceptance model was originally developed by Davies in the year 1986. The theoretical perspective proposes the connection between users' acceptance of any innovation and the users' perceived ease of use and usefulness of such technology like ICT is towards development(Mulwa, 2017).The aim of the model was to forecast the user's acceptance of information technology and usage in an organizational setting (Monyoncho, 2015).Technology acceptance model deals with perceptions as opposed to real usage, the model suggest that users , the key factors that influence their decision on how, where and when they will use it (Davis, 1989). The factor to considered are: The factors to consider are: firstly, the perceived usefulness (PU) which according to Davis, it is the degree to which a person believes that using a particular system will lead to improved performance (Britton & McGonegal, 2007) while the second issued identified is the Perceived ease-of-use (PEOU) which shows the extent to which individuals believe that making use of certain technology is not difficult (Davis 1989). This theory is related to the study such that when innovation like ICT is perceived ease of use and usefulness and adopted for teaching and learning could assist educational development.

These theories seek to explain how new ideas or innovations like information and communication technology is adopted and how can be used to solve situations like educational development for the good of the society.

EXTANT EMPIRICAL STUDIES

Kasimu (2015) assessed the effects of ICT on educational development with reference to senior secondary schools in Kaduna state. The study used primary source of data, while qualitative and quantitative instruments were used to present and analyse the data. Among the findings of the study was that, both urban and rural students are virtually the same in terms of knowledge and usage of ICT, whereby, more than 80% of them have the knowledge and are using it. The study recommended among others that, a careful plan should be made by the state ministry of education in collaboration with the schools' authorities to systematically devise a means of guidance and control of students‟ attitude towards ICT. Ajegbelen (2016) examined the gap and challenges facing the use of ICT in university education in Nigeria. The study is a descriptive survey that assessed five universities for the most urgent solution. The population of the study was 120 respondents and this is made up of university lecturers and the students. Findings revealed that there is a gap between the university teachers and students and ICT usage in classrooms and many university lecturers and students

have to go to commercial cyber cafés in town before they have access to a computer that is internet connected, teachers are faced with some challenges and barriers of availability of facilities which prevent them to employ ICT in the classroom, the solutions proffered include funding, provision of facilities and technical expertise in Nigeria universities. Ezugwu, Ofem, Rathod, Agushaka and Haruna (2016) investigated into the role of Information and Communication Technology in promoting efficiency in teaching, using Federal University Lafia as a case study. Data was collected via a questionnaire and analysed using mean and standard deviation, while the statistical too was T-test. The results from the sample survey of fifty (50) lecturers show that Information and Communication Technology plays a vital role in promoting efficiency in the teaching process. The T-test analysis show no significant difference between the opinions of Male and Female lecturers for most items that were considered in the course of the study. Also, Olowoyeye (2016) examined the role of ICT in Teachers 'education in south West Nigeria. The design for the study was combination of interview and questionnaire. Data collected were analyzed using simple percentage. The result shows that 35% of pre-service teachers have their personal computer and 45% of the lecture rooms have ICT facilities. Based on results of the findings it is recommended that effort should be made by the Government and stakeholders in the education sector to make ICT facilities available for pre-service teachers training. Apart from this, adequate workshop training and seminars for teachers should be organized in the colleges of Education on the operation of ICT facilities. Gbadegesin, Alabi and Omodun (2018) examined the adoption of Information and Communication Technology (ICT) in ECCE in the Nigerian context. Data were generated through interviews and classroom observations. Result showed that ICT usage in Nigeria is basically tripartite classification: (i) tool to achieve innovative and creative thinking in children; (ii) effective instrument for dissemination of information about globalised ideas; and, (iii) as distortions to socio-cultural values. It recommended that the use of ICT should remain a veritable instrument for learning in children's formative periods and its usage should be monitored for values' security in Nigeria. Adi (2020) carried conceptual review on ICT in education: Benefits, difficulties, and organisational development issues. It is a library survey. The study found that there are many issues that needed to be addressed ranging from the school culture, teachers barriers, finance, leadership, curriculum, and ethical issues which are experienced by both developed and developing countries. This also refutes a widespread assumption that developing countries experience more barriers for implementing ICT than developed countries.

CONCLUSION

The thrust of this study is on ICT and educational development in pandemic outbreaks in Nigeria with emphasis on problems and prospects. The relevance role of ICT in educational development towards improving the quality of teaching and learning in schools cannot be over-emphasized in pandemic outbreaks. These can be fully achieved through full integration of the nation into the global highway which is ICT oriented in every aspect of education system. Implementing ICT in schools/education has many benefits and difficulties. To successfully implement ICT in schools need to consider many aspects. It will waste a lot of time, energy, and money if before implementing it, we do not consider those aspects. Theoretical framework of innovation diffusion theory and technology acceptance model have proved that adoption of innovation like ICT in educational development is as result of its benefits and motivation in solving today's societal challenges like. Extant studies have showed divergence in views and opinion on use of ICT on educational development, but not in pandemic outbreak. Nevertheless, the pandemic affected Nigeria education system

because of closure of schools at all levels and most schools if not all could not make use of ICT infrastructure to teach pupils or students during the eight months of lock down. It is therefore concludes that ICT plays crucial role in educational development in pandemic outbreaks era with a lot of prospects despite its associated problems.

Thus, this study recommends as follows:

(1) ICT should be introduced and be made compulsory for lecturers and students in the school curricular at all levels of nation educational system with emphasis on practical application. Students should be encouraged to be self-managed and self-directed in ICT. Students should be encouraged in use of ICT facilities in schools without depending much on teachers and lecturers to enable them self-reliance during pandemic outbreaks (Ebola and Covid 19) especially when students are confined at home and schools closed during lockdown.

(2) Funds should be released by government for financing ICT in the nation educational system at all levels. Supportive infrastructures such as electricity and telecommunication services should be improved and adequately enhanced for effective services in the educational system such that when there is outbreak of pandemic lockdown, students and pupils can receive normal lectures at home with directives from various institutions keeping to the pandemic protocols.

(3) ICT facilities should be made available at affordable price to be procured by teachers at government subsidized rates and can be used to impart knowledge during pandemics outbreak.

(4) There should be regular training and retraining of teachers and lecturers of tertiary institutions in use of ICT in areas of teaching like zoom, Youtube, internets, Instalgram, telegraph, WhatsApp messages in line with global standards for schools. Government should stop paying lip-service to ICT but rather make frantic efforts to develop and sustain ICT policy in the nation's educational programme in preparation of any unpredicted pandemic outbreaks in Nigeria

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