AJAMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.6, May-August, 2022 https://ajemates.org

CHALLENGES TO UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) IN NIGERIAN TERTIARY EDUCATIONAL INSTITUTIONS

Akudo, Florence Ukamaka (Ph.D.) & Eziuzo, Gloria Olachukwu (Ph.D.)
Mobile Phone N0: 08036661864; Email: makudos@yahoo.com
Email: gloriaeziuzo@gmail.com; Mobile Line: 07030555694
Department of Educational Management and Policy
Faculty of Education, Nnamdi Azikiwe University, Awka, Anambra State

ABSTRACT
The role of the Information and Communication Technologies (ICTs) towards effective administration, coupled their efficiency in the management and promotion of teaching and learning activities in the Nigerian Tertiary Educational Institutions (TEIs) cannot be overemphasized. Different ICTs have continued to pave their way in the Nigerian TEIs which is significant towards the achievement of educational goals and objectives. Never minding the important role of ICT in the administration of the Nigerian TEIs, reports from quite a few scholars and researchers have continue to show that utilization of ICTs in the Nigerian TEIs has become one of the greatest challenge facing the Nigerian TEIs. Therefore, this paper examined issues surrounding the challenges to utilization of ICTs in the Nigerian TEIs. The concept of ICT was described in the paper and the different components and types of ICT were equally discussed in the paper. Further discussions in the paper focused on the benefits of utilizing ICT in the TEIs, including the challenges to the utilization of Information and Communication Technologies (ICTs) in Nigerian tertiary educational institutions. Also, suggestions and way forward for improvement in the utilization of ICT in Nigerian tertiary institutions were indicated in the study.

Keywords: Challenges, Utilization, ICT, Nigerian, Tertiary, Educational, Institutions

Introduction

The Nigerian Tertiary Educational Institutions (TEIs) are important citadels of learning known for manpower training, skills empowerment and human capacity development. They offer educational programmes given after Post Basic Education in various disciplines or fields of studies in order to produce professionals in different fields of endeavour for sustainable national development. These Tertiary Educational Institutions (TEIs) as indicated by the Federal Republic of Nigeria (FRN, 2013) in the National Policy on Education (NPE) incorporate higher educational institutions such as the Universities and Inter-University Centres, Monotechnics, Polytechnics, Colleges of Education and other specialized institutions like the College of Agriculture, National Teachers' Institutes (NTI), among others. All these educational institutions provide a variety of flexible learning modes including full-time, part-time, block release, day-release and sandwich programmes for human capacity building and development in the society. Therefore, the contributions and benefits of TEIs towards sustainable development in Nigeria cannot be overemphasized. The benefits of TEIs have equally been enlisted further in their goals by FRN (2013) which are to contribute national development through high level manpower training; and provide accessible and affordable quality learning opportunities in formal and informal education in response to the needs and interests of all Nigerians. The TEIs also provide high quality career counselling and lifelong

learning programmes that prepare students with the knowledge and skills for self-reliance and the world of work. They reduce skill shortages through the production of skilled manpower relevant to the needs of the labour market; and promote and encourage scholarships, entrepreneurship and community service, among others. To achieve these goals which leads to national development requires that the Nigerian TEIs promote quality education through effective service delivery. One way by which the Nigerian TEIs could achieve quality education and effectiveness in service delivery is through effective and substantial utilization of the Information and Communication Technologies (ICTs). The use of information and Communication Technologies (ICTs) in education can been seen as the application, deployment or accessibility of hardware and software devices, online technologies, mobile technologies, electronic texts, and communication technologies, in order to achieve educational goals and objectives. Pratt (2021) refers to the use of ICT in education as the infrastructure and components that enable modern computing. Examples of these ICTs as identified by Melendez (2018) includes the use of hardware and software technologies, mobile technologies, multimedia technologies, online social networking, and digital cellphones. Others encompass a wide variety of technologies such as remote controls, keyless entry devices, walkie-talkies, Bluetooth earpieces, GPS satellites, cash registers and credit cards. ICT also covers store digital data on many types of physical media, including CDs, DVDs, flash drives, tape and compact memory chips, external hard drive, among others. Various ICTs however have benefits while using them in the TEIs.

The ICT promotes and improves participation in the learning process. It promotes all aspects of educational administration, management and including teaching and learning. The United Nations (2020) noting the importance of ICT to both human and economic development, considers one of its Sustainable Development Goals (SDG) to significantly increase access to information and communications technology and strive to provide universal and affordable access to the internet in less developed countries by 2020 (Pratt, 2021). Notwithstanding the importance of ICT to educational development in the country which positively impacts on national development; yet in pandemic many TEIs failed to incorporate ICT into school administration and management which include the teaching and learning practices because of some challenges. These challenges which ranges from inadequate funding, poor ICT policy implementation, lack of manpower training and development on the use of ICT, among others, have been discussed in different subheadings in the paper. This paper discussed matters surrounding the challenges to utilization of Information and Communication Technologies (ICTs) in Nigerian Tertiary Educational Institutions.

ICT: Components and Types

The ICT as observed by Melendez (2018) is an abbreviation for information and communication technologies. It is generally the combination of information technology, which focuses on computers and related devices, and digital telecommunications, including cellphones, the internet and other digital networks. ICT encompasses all technologies that allow individuals and businesses to interact in the digital world. Internet connectivity, online transactions, hardware, software and cloud computing are just a few to mention. Information and Communication Technology (ICT) refers to one's ability to converse with people through various technologies. Similar to information technology (IT), ICT refers to technology used for regular, everyday tasks: sending an email, making a video call, searching the internet, using a tablet or mobile phone, and more (Doyle, 2020). Pratt (2021) explained that ICT encompasses both the internet-enabled sphere as well as the mobile devices,

usually powered by wireless networks. It also includes antiquated technologies, such as landline telephones, radio and television broadcast – all of which are still widely used today alongside cutting-edge ICT pieces such as artificial intelligence and robotics. Some components, such as computers and telephones, have existed for decades. Others, such as smartphones, digital TVs and robots, are more recent entries. Therefore, the list of ICT components is exhaustive, and it continues to grow. The components of ICT have further been illustrated using a diagram in figure 1.

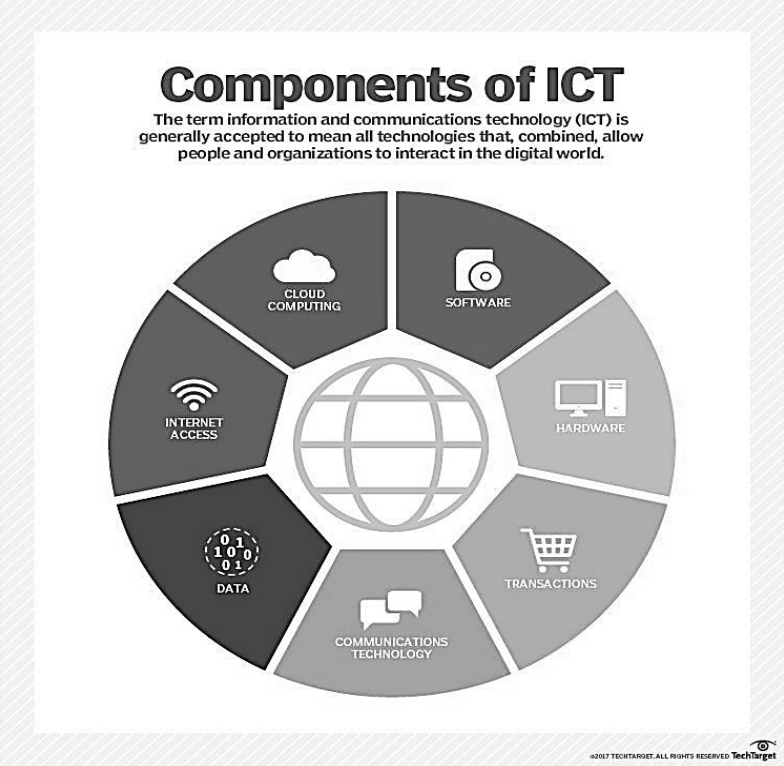


Figure 1: Components of ICT
(Source: Pratt, M.K. (2021).

The above diagram showcases that the components of ICT include cloud computing, software, hardware, transactions, data, and internet access. Given these components, Melendez (2018) noted that the different types of ICT include; Digital cellphones, including smart phones and traditional feature phones, which have become ubiquitous in many countries Communications software from social networking tools to encrypted messaging apps have exploded in popularity. Examples of communication technology related to the internet include the dial-up modems of the 1990s and the more modern wireless routers and cable internet modems now found in many homes and businesses. Modern cellphones and many computers can connect with either built-in WiFi modems or cellular modems that let them connect to phone carrier networks. Wi-Fi routers let them connect to

a locally installed, usually hardwired modem and on to a larger network. Many offices, TEIs like the universities and other environments also have internal networks, known as intranets, used for secure internal communication. ICT also covers the use of social media tools and platforms such as Facebook, LinkedIn, Pinterest, Instagram, YouTube, Twitter, Reddit and Social Media Groups. It also incorporates online collaboration tools such as: Video Conferencing Software, Skype, GoToMeeting, Instant Messaging, Google Docs, File Sharing, Drop Box Pro, Slack, Google Hangouts, and Zoom, among others. ICT includes all of the tools and resources used to create, store, process and exchange information. These include but are not limited to: Mobile phones and tablets, Video conferencing, Storage devices, Broadcasting technologies, Websites and blogs, Email, Computer hardware, Interactive digital whiteboards, E-readers, Social networks, VoIP services, Instant messaging, and Intranet.

Melendez (2018) further classified the various types of ICT according to educational networking, web-based learning, mobile learning and classroom equipment. Educational networking according to Melendez, is online learning platforms that connect learners using social networking technologies, exhibiting similar functions to site like Facebook or Myspace. Examples are Ning, Classroom 2.0, and Elgg. Web-Based learning is a set of online applications or services that expand learners' abilities to interact and collaborate with each other in the process of searching, receiving, organizing, and generating educational contents. Examples are Wiki, blog, Podcasting, social bookmarking, virtual worlds. Mobile learning are mobile devices or technologies used for educational purposes that support different aspects of instruction or make new educational activities and examples include Smartphones, PDA, GPS (for augmented reality games), interactive response pads. Classroom equipment are stand-alone devices that are used in traditional classrooms to facilitate the interaction between teachers and students in different class activities. Examples include Whiteboard, Touchscreen computer, Kiosk, etc. All these ICT tools are beneficial in one way or the other leading to the achievement of educational goals and objectives. The benefits of ICT have been further discussed under the next section.

Benefits of Utilizing ICT in the TEIs

The use of information and communication technologies in education especially TEIs can play a crucial role in providing new and innovative forms of support to teachers, students, and the learning process more broadly. Oliver (2014) pointed out the benefits of utilizing different ICTs in TEIs as that technology has the capacity to promote and encourage the transformation of education from a very teacher directed enterprise to one which supports more student-centred models. Evidence of this today is manifested in: the proliferation of capability, competency and outcomes focused curricula; and moves towards problem-based learning; increased use of the Web as an information source, Internet users are able to choose the experts from whom they will learn. The use of ICT in educational settings, by itself acts as a catalyst for change in this domain. ICTs by their very nature are tools that encourage and support independent learning. Students using ICTs for learning purposes become immersed in the process of learning and as more and more students use computers as information sources and cognitive tools. The influence of the technology on supporting how students learn will continue to increase (Oliver, 2014).

Just as technology is influencing and supporting what is being learned in schools and universities, so too is it supporting changes to the way students are learning. Moves from content-centred curricula to competency-based curricula are associated with moves away from teacher-centred forms of delivery to student-centred forms. Through technology-facilitated approaches,

contemporary learning settings now encourage students to take responsibility for their own learning. In the past students have become very comfortable to learning through transmissive modes. Students have been trained to let others present to them the information that forms the curriculum. The growing use of ICT as an instructional medium is changing and will likely continue to change many of the strategies employed by both teachers and students in the learning process (Oliver, 2014). Generally, the utilization of ICT has improved the administration of TEIs in several aspects of their research and development, teaching and learning activities, and in their consultancy services. Adeoye, Oluwole and Loto (2013) opined that the benefits of ICT are that majority of them are able to provide strong support for students learning in the TEIs through access to a variety of information sources; access to a variety of information forms and types; student-centred learning setting based on information accessed; learning environment centred; problem centred and inquiry-based activities; authentic settings and teachers as coaches and mentors rather than content experts. ICT is supporting changes to the way students are learning as they move from content-centred curricula to competency-based curricula; associated with the move from teacher-centred form of delivery to students centred forms (Adeoye, Oluwole & Loto, 2013). Through the use of ICT, facilitated approaches, competency learning setting now encourage students to take responsibility of their own learning. However, in the past students had become very comfortable to learning through transmissive modes. Students have been trained to let others present to them the information that forms the curriculum. Moreover, with the emerging of ICT as an instructional medium many of the strategies employed by both teachers and students in the learning process would be susceptible to rapid changes. Technology has the capacity to promote and encourage the information of education from a very teacher directed enterprise to one which supports more student centred models (Adeoye, Oluwole & Loto, 2013).

With the application of ICT, many options and choices are being provided as many institutions as possible and students are creating competitive devices for themselves through the choice adopted by them. These choices now extend from when students can choose to learn to where they can learn. Many educational institutions have been offering programmes at a distance for many years. Also there has been a vast amount of research and development associated with establishing effective practices and procedures in off-campus teaching and learning. Distance learning is a method of learning at a distance rather than in a classroom situation. The use of ICT has extended the scope of this activity, as the off-campus delivery has been an option for students who could not afford regular programmes. Today, many more students are able to make this choice through technology-facilitated learning setting (Adeoye, Oluwole & Loto, 2013). Quaye, Ametepe and Annan (2015) attested that the integration and utilization of ICT can help revitalize lecturers and students by reducing the amount of effort they put in either teaching or learning. This can help to improve and develop the quality of education by providing curricula support in difficult subject areas. To achieve these objectives, lecturers need to be involved in collaborative projects and development of intervention change strategies, which would include teaching partnerships with ICT as a tool. Lecturers' attitudes are major predictors of the use of new technologies in instructional settings. Lecturers' attitudes toward ICT shape not only their own ICT experiences, but also the experiences of the students they teach (Quaye, Ametepe & Annan, 2015). The World Bank Group (2021) highlighting the benefits of ICT opined that technologies or different ICTs play essential role to deliver education to the students outside of school. Commendably, all countries were able to deploy remote learning technologies using a combination of TV, Radio, Online and Mobile

Platforms. However, many children in low-income countries like Nigeria, did not participate in remote learning with about a third of low-income countries reporting that 50% of children had not been reached in a joint UNESCO-UNICEF-World Bank survey. The pandemic has also led to significant losses in learning. School closures and limited access to remote learning means that Learning Poverty is likely to worsen from 53% to 63% especially in low-income countries if no remediation interventions are taken. To close the digital divides in Education and leverage the power of technology to accelerate learning, reduce learning poverty, and support skills development a focus must be placed in bridging the gaps in: i) digital infrastructure (connectivity, devices and software); ii) human infrastructure (teacher capacity, student skills and parental support); and iii) logistical and administrative systems to deploy and maintain tech architecture (World Bank Group, 2021). However, the challenges to utilization of ICTs in Nigerian TEIs has been discussed in the next section.

Challenges to the Utilization of Information and Communication Technologies (ICTs) in Nigerian Tertiary Educational Institutions

Scholars and researchers such as Adeoye, Oluwole and Loto (2013), Oliver (2014), Quaye, Ametepe and Annan (2015) and others have proven that use of ICT have made significant and positive impacts in educational institutions. Although the benefits and significant impact of ICT on the general school administration, couple with teaching and learning has been proven by these scholars and researchers, including, efforts made to integrate ICT in schools, yet, not many TEIs in the country persistently utilize various ICTs because of some challenges inhibiting the process. Oliver and Short cited in Adeoye, Oluwole and Loto (2013) maintained that efforts have been strengthened to adopt ICT into classroom and learning settings. Such concerted efforts include a growing need to explore efficiencies in terms of programme delivery; the opportunity for flexible delivery provided by ICTs; the capacity of technology to provide support for customized educational programmes to meet the needs of individual learners and growing use of the internet of World Wide Web (www) as a tool for information access and communication. All these efforts seem not enough to promote utilization of ICT in the TEIs because of the challenges hindering the administration of this process (that is, ICT) in TEIs. Adeoye, Oluwole and Loto (2013) indicated the challenges affecting utilization of ICT in Nigerian TEIs as follows: inadequate funding to support the purchase of the ICT facilities, lack of training in the use of ICT facilities, teaching personnel's lack of motivation and the need among teachers to adopt ICT as teaching tools (Starr cited in Adeoye, Oluwole & Loto, 2013). However, in Nigeria, the political conditions in the past thirty years give no room for continuity in ICT utilization in schools. Over the years, political situations in Nigeria have been used to entrench mediocrity, corruption in high places, misplace of priority and poor consumer culture have affected the use of ICT all-round the Nigerian education sector. Generally, the challenges inhibiting effective utilization of ICTs in TEIs are enormous and the ones which have been discussed in the paper include poor/inadequate funding, poor implementation of ICT policy, low proficiency in use of ICT by school personnel like administrators, lecturers and students, poor utilization of ICT in TEIs lecture halls and classrooms, lack of adequate ICT facility provision in TEIs, inadequate ICT training and retraining programme for staff of TEIs, over dependency and reliance on conventional/traditional method with accepting changes, electricity challenges, natural causes in relation to weather and institution's location, among others. These challenges are discussed as follows:

Poor/Inadequate Funding: Funding has been one of the major challenges hindering execution of

projects in TEIs in the country. It is no more a hidden secret that Nigeria is facing serious economic crisis. Adeoye, Oluwole and Loto (2013) attested that the overall educational system in the country is underfunded. Therefore, available funds are used to solve more urgent and important needs of the institutions. Low level of funding has resulted into inadequate ICT facilities in schools. This situation has been a major constraint to making Nigerian educational institutions ICT compliance. Supporting the above statements, Fasiku (2014) asserted that the greatest challenge of integrating ICT into education system is the finance, and ICTs in education programmes require large capital investment and developing countries need to predict the benefit of using ICT and balance the cost relative to the existing alternatives. In most developed and some developing countries, the potential sources of money and resources for ICT are grants, public subsidies, fund-raising for ICT programme, kind support from volunteers, community support, revenues earned from core business, and revenues earned from ancillary activities. Unless the issue of poor educational financing and funding is resolved, only then, would ICT be fully integrated and diffused into the administration of TEIs.

Poor Implementation of ICT Policy: Although the ICT policy has existed for quite some time now in the country but this has not made significant changes and impact in the use of ICT in TEIs. Fasiku (2014) gave a remark that poor implementation of the ICT policy is one of the issues hindering the utilization of ICT in education. Other challenges of ICT policy implementation are identification of stakeholders and harmonization of efforts across different interest groups, the piloting of chosen ICT-based model, and specification of existing sources of financing and the development of strategies for generating financial resources to support ICT policy implementation over the long term.

Low Proficiency in Use of ICT Facilities: Mustapha, Mohammed, Egigogo, Kutiriko and Dokoro (2020) highlighted that low proficiency and competences of the administrator and teachers coupled with students' interest has been a challenge to the utilization of ICT. Fasiku (2014) opined that the limitation of using ICT in education is also related to student behaviour. It is very common to observe limitations related to student behaviour. Students tend to misuse the technology for leisure time activities and have less time to learn and study. Mustapha, Mohammed, Egigogo, Kutiriko and Dokoro further opined that a set of factors affecting the utilization of technology in education is linked with the school administrator and teacher. School administrators and teachers' attitude coupled with their proficiency with technology have regularly been acknowledged as the key factor connected with the utilization of technology. Thus, if there is no a strong reliable support, both school administrators and teachers may opt out to the use of ICT in their teaching (Mustapha, Mohammed, Egigogo, Kutiriko & Dokoro, 2020).

Poor Utilization of ICT in TEIs Lecture Halls and Classrooms: ICTs are not provided for lecturers in the lecture halls and classrooms, and this ugly situation has hindered the utilization of ICT in the TEIs in the country. Adeoye, Oluwole and Loto (2013) asserted that the absence of trained teachers in computer to teach practical aspects of computer skills militate against proper utilization of ICT in Nigerian higher institutions. Many lecturers are not ICT proficient. These lecturers find it extremely difficult to utilize ICT in teaching.

Lack of Adequate ICT Facility Provision in TEIs: Lack of adequate provision of many ICT facilities and infrastructure have become a big challenge for their utilization in TEIs. Salomon cited in Adeoye, Oluwole and Loto (2013) observed that many TEIs lack adequate hardware and software infrastructure such as computers, desktops

and monitors, ups, well-furnished computer laboratory with updated equipment, internet connectivity, broadband, multimedia technologies, communication tools, among others that will positively impact on utilization of ICT in the institutions. Also, the high cost of many of these ICT devices have become one of the major challenges to utilization of ICTs in TEIs. Supporting the statements of Adeoye, Oluwole and Loto (2013), Fasiku (2014) observed that in developing countries like Nigeria, computers and internet connections are very expensive and limited, and this has constrained many educational institutions from purchasing most of these ICT devices or gadgets. Fasiku further added that the high cost of technological devices and maintenance of the computer and internet facilities, high cost of spare parts, virus attack of the software, interruptions of internet connections, high cost of bandwidth and poor supply of electric power in developing country like Nigeria were among the technology related limitations of using ICT in education.

Inadequate ICT Training and Retraining Programme for Staff of TEIs: Lack of/inadequate constant training and retraining programmes organized for administrators, lecturers and students in the TEIs also hindered the effective utilization of ICT in the TEIs. Leadership and the management of these TEIs has persistently complained about inadequate funds in the institutions; and this situation has continued to inhibit utilization of ICT in TEIs. Fasiku (2014) noted, with respect to challenges of capacity building that we have to develop competencies of teachers and school administrators for the successful integration of ICT in the education system. In fact, one impeding factor of ICTs integration in education systems is the skill gap of people implementing it (Tinio, 2003). For instance, teachers need professional development and constant ICT training and retraining programmes to gain skills with particular applications of ICT, integration into existing curricula, curricular changes related to the use of Information Technology (IT), changes in teacher role, and on underpinning educational theories such as constructivism or student-centred learning. Because of this, any attempt of ICT integration in education must be parallel with teachers' professional development.

Over dependency and Reliance on Conventional/Traditional Method: The over dependency and reliance on conventional/traditional method of teaching with accepting changes by many of the TEIs institution personnel have continued to hinder the utilization of ICT in many of these institutions. Bingimlas (2009) stated that the resistance to change to new ways of pedagogical teaching methods hinders ICT utilization in TEIs. This resistance can be orchestrated by or linked to lecturers' low interest, poor commitment, poor attitude and lack of acceptance to ICT usage in institutions.

Electricity Challenges: Electricity challenges have become a challenges towards utilizing ICT in many TEIs. Imagine in one of the TEIs which have been without electricity since the past two years, how would ICT be effectively utilized in such institution. Sometimes constant power eruption and interruption hinders the use of ICT in many TEIs and there is also no generator set to effectively run the process as well. Adeoye, Oluwole and Loto (2013) observed that power supply all over the country is epileptic. If electricity supply is not stable and constant, it is difficult to keep ICT equipment and facilities such as computers and their accessories functioning properly. This problem also denies the rural dwellers the benefit of using ICT. Adomi, Omodeko, and Otole, (2004), Adomi, Okiy, and Ruteyan, (2003) and Ashang (n.d.) discovered in their studies that electricity failure has been a persistent problem militating against ICT application and use in Nigeria. This

makes the few universities with ICT facilities unable to use them regularly.

Natural Causes: Natural causes in relation to bad weather and the institution's location in remote, can also hinder utilization of ICT in most TEIs. Chigona and Chigona (2010) observed that some environmental factors can cause poor integration of ICT in education. Other challenges hindering ICT utilization in TEIs as indicated by Adomi, Omodeko, and Otole, (2004), Adomi, Okiy, and Ruteyan, (2003) and Ashang (n.d.) include the following: inadequate educational software, limited school budget, poor information infrastructure, poor ICT policy and project implementation strategy, lack of physical and technical infrastructures, poor telecommunication links, lack of maintenance culture, non-integration into the TEIs curriculum, among others.

Suggestions/Way Forward

Below are suggestions for improvement in the utilization of ICT in Nigerian tertiary institutions:

1. The government should encourage the utilization of ICT in TEIs through sufficient funding.
2. The government through the support of the TEIs regulatory agencies such as NUC, NBTE and NCCE, should ensure effective implementation of the ICT policy. It was stated by the Federal Republic of Nigeria (FRN, 2013) in the National Policy on Education, section 2, pg.15 that "in recognition of the advancing knowledge and skills necessary for effective functioning in a knowledge driven world, government shall provide and develop capacity for effective utilization of ICT to enhance the delivery of education in Nigeria".
3. In order to solve the challenges associated with school personnel low proficiency in use of ICT in the TEIs, there is the need for adequate and constant ICT retraining and development programmes to be regularly organized by the government, regulatory agencies of TEIs including the management of the TEIs so as to promote and improve school personnel's utilization of ICT in the institutions.
4. Adequate ICT facilities and infrastructure should be deployed in the TEIs and old ones replaced or upgraded in order to ensure utilization of ICT in the institutions. Also, the private sector, financial institutions, international agencies, NGOs and individuals such as businessmen and women, philanthropists and wealthy individuals in the society should be encouraged to support the financing and funding of ICT facility provision and infrastructural maintenance in TEIs. There should be constant checks and good ICT facility maintenance culture by TEIs administrative heads in order to ensure effective utilization of ICTs in the institutions.
5. TEIs should be encouraged through constant retraining programmes and thorough supervision to depend less on the old conventional teaching methods. The use of emerging technologies such as online collaborations, social media or networking technologies, artificial intelligence and Web 2.0 should be integrated in the TEIs to ensure effective utilization of ICTs in the TEIs. Also, there should be change in teaching methodologies and strategies in order to strengthen the utilization of ICTs in TEIs in the country. Skilled manpower in computer need to be employed, to manage available systems and ensure frequent training of teachers, students and school administrators on how to apply ICT in teaching, learning and management process in the schools (Fasiku, 2014).
6. Government should ensure adequate/constant power supply in higher institutions for effective utilization of ICT facilities.

Conclusion

The use of Information and Communication Technologies (ICTs) is becoming more inevitable in educational delivery in Nigeria. Despite the important role of ICTs, many of the Nigerian TEIs are yet to extensively utilize them in the areas of teaching and learning activities,

research and consultancy services in their institutions. Efforts geared towards accessibility and integration of ICTs into the various TEIs' system have not had much impact due to several challenges, which includes poor/inadequate funding, poor implementation of ICT policy, low proficiency in use of ICT by school personnel like administrators, lecturers and students, poor utilization of ICT in TEIs lecture halls and classrooms, among others. There is need to improve on utilization of ICT in TEIs by curbing these challenges which will lead to excellence in educational delivery in TEIs.

References

Adeoye, Y.M., Oluwole, A.F. & Loto, A.B. (2013). Appraising the role of information communication technology (ICT) as a change agent for higher education in Nigeria. *International Journal of Educational Administration and Policy Studies, 5* (8), 177-183. Retrieved from https://files.eric.ed.gov/fulltext/EJ1084266.pdf.

Adomi, E.E., Okiy, R.B. & Ruteyan, J.O. (2003). A Survey of cybercafés in Delta State, Nigeria. *The Electronic Library, 21* (5), 487-95.

Adomi, E.E., Omodeko, F.S. & Otole, P.U. (2004). The use of cybercafé at Delta State University, Abraka, Nigeria. *Library Hi Tech, 22* (4), 383-88.

Ashang, M.U. (n.d.). *Causes of low level of ICT application in university education in Nigeria*. Retrieved from https://www.academia.edu/.

Bingimlas, K.A. (2009). Barriers to successful integration of ICT in teaching and learning environments: A review of literature. Retrieved from https://www.ejmste.com/download/.

Chigona, A. & Chigona, W. (2010*). An investigation of factors affecting the use of ICT for teaching in the Western Cape schools*. Retrieved from https://www.researchgate.net/publication/.

Doyle, A. (2020). *Information and communications technology (ICT) skills*. Retrieved from https://www.thebalancecareers.com/information-and-communications-technology-skills-4580324.

Fasiku, A.I. (2014). A review on implementation of ICT-based education in Nigeria: Limitation and challenges. *International Journal of Scientific & Engineering Research, 5* (10), 685-691. Retrieved from https://www.ijser.org/.

Federal Republic of Nigeria (FRN, 2013). *National policy on education* (6th edition). Abuja: NERDC.

Melendez, S. (2018). *Types of ICT communication*. Retrieved from https://www.techwalla.com/articles/types-of-ict-communication.

Mustapha, A., Mohammed, A., Egigogo, A.R., Kutiriko, A.A. & Dokoro, A.H. (2020). *Factors affecting the utilization and adoption of technology in education*. Retrieved from https://www.intechopen.com.

Oliver, R. (2014). *The role of ICT in higher education for the 21st century: ICT as a change agent for education*. Retrieved from https://www.researchgate.net/publication/228920282.

Pratt, M.K. (2021). *ICT (information and communications technology, or technologies).* Retrieved from https://searchcio.techtarget.com/definition/ICT-information-and-communications-technology-or-technologies.

Quaye, F. Ametepe, W. & Annan, N.K. (2015). *The impact of ICT on teaching and learning in tertiary institutions: A case study of Wisconsin International University College, Ghana*. Retrieved from

https://core.ac.uk/download/pdf/234677215.pdf.

Tinio, V.L. (2003). *ICT in education*. Paper presented by UNDP for the benefit of participants to the World Summit on the Information Society, Asia-Pacific region. Retrieved from www.eprimers.org.

Vergnaud, S. (2021). *What is coronavirus (COVID-19)?* Retrieved from https://www.goodrx.com/covid-19.

Vergnaud, S. (2020). *What does covid-19 stand for?* https://www.goodrx.com/blog/what-does-covid-19-mean-who-named-it/.

United Nations (2020). *Policy brief: Education during COVID-19 and beyond*. Retrieved from https://www.un.org/development/desa/dspd/wp-.pdf.

World Bank Group (2021). *Digital technologies in education.* Retrieved from https://www.worldbank.org/en/topic/edutech#1

AJAMATES