

# E-Learning and Covid-19: Challenges of Teaching Students during Covid-19 Lockdown in Nigerian Tertiary Institutions

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**Abstract:** *The study assessed the effectiveness of e-learning during COVID-19 lockdown in Nigerian tertiary institutions. The COVID-19 pandemic has widespread aftereffect on education systems all over the world, with Nigeria, not an exception. The lack of the requirements needed for remote education during the worldwide lockdown caused by the COVID-19 pandemic has impeded teaching and learning. In the underdeveloped world, home education worked well for a few students who had adequate resources accessible to them and were adaptable to remote learning. The population of the study comprised of all public tertiary institutions in the six (6) geopolitical zones in Nigeria. The sample size comprised of 123 undergraduate students and lecturers, respectively made up of 67 undergraduate students and 56 lecturers selected randomly from six geopolitical zones of Nigeria. The responses of the respondents were presented in Grand Mean ( $\bar{g}\bar{x}$ ) and Standard Deviation while t-test was used to test the hypothesis, generated at 0.05 level of significance. The study revealed that inadequate funding of public tertiary institutions, inadequate ICT infrastructural facilities, poor implementation of ICT policies in public tertiary institutions, high cost of ICT facilities, poor ICT literacy level of lecturers and students, unstable electricity, unstable Internet Services and inadequate man-power as challenges faced by many tertiary institutions could not switch into e-learning during the COVID-19 school lockdown period. Based on these findings, it was recommended that government and other stakeholders should provide special ICT funding for all public tertiary institutions, provide adequate ICT infrastructural facilities, subsidize ICT facilities for students and lecturers, ensure stable network services in all public tertiary institutions, and implement all ICT policies and ICT capacity development for lecturers and learners.*

**Keywords:** Covid-19 Lockdown, E-learning, Tertiary Institutions, Information and Communication Technology (ICT)

## Introduction

E-learning which stands for electronic learning is also referred to as online through which knowledge is acquired using electronic technologies and media. Simply put, e-learning was defined by T. Sander (2020) as “teaching and learning processes that are carried out using electronic or digital devices conducted on the Internet”. In e-learning, students can access their learning materials online from anywhere and at any time. E-Learning can take the form of online courses, online degrees, or online programs. E-learning has come to stay as many schools reopens online academic calendar after the covid-19 pandemic lockdown globally. In response to this lockdown directive in year 2020 by different country across the World, many tertiary institutions have switched to online education. Olabisi (2020) stated that tertiary institutions around the world are making use of communication technology to ease the effects of the global pandemic on their academic calendars. Huili (2020) observes that as a result of the new coronavirus epidemic most tertiary institutions in China have encouraged their professors to apply online teaching instead of in-class teaching and this is likely to continue for the indefinite future. In Australia, classes have been moved to online, just as in UK and Canada universities that have suspended face-to face teaching. Teachers in France have been working with their students on Zoom.

In Nigeria, precautionary move aimed at containing the spread of the coronavirus (Covid-19) disease in the country, the Federal Ministry of Education, ordered the immediate closure of all educational institutions in year 2020 which includes tertiary, secondary and primary schools nationwide. Before the official announcement by the permanent secretary, most tertiary institutions had already sent their students home (Ogunode, 2021; Ogunode, Ahaotu & Ayisa 2021). Despite the uncertainty of the post covid-19 era, the digital students are eager to access the opportunity of online learning. However, some professors and students have complained about problems with online teaching and lack of confidence in its effectiveness, but many are still new to the whole online experience (Olatunde-Aiyedun, Eyiolorunse-Aiyedun & Ogunode, 2021). The inadequate provision for audio-visual learning aids such as: projectors, computer, screen and power supply/generators to facilitate this learning, as well as shortages of human power/ personnel has led to set back of our educational system in Nigeria (Ojelade, Aregbesola, Ekele & Aiyedun, 2020).

## Statement of the Problem

For good one year, the COVID-19 pandemic shut down all tertiary institutions in the country except for few public and many private tertiary institutions that migrated into e-learning. Many public tertiary institutions in Nigeria could not switch into e-learning due to many reasons. Olabisi (2020) COVID-19 has exposed Nigeria’s unpreparedness for e-learning. But, we can’t afford to remain where we are. That is why it is important for every institution to start thinking of how to deploy available technology in the world for the

good of their students at this critical period. Tertiary institutions should as a matter of urgency migrate online. This shouldn't be another season of waiting and probably wasting for the Nigerian student. There is no reason why any higher institution worth its name should suspend all academic activities until the end of Corona Virus with all the available resources and technology in the world today. Adavbiele (2016) observed that today, many schools in Nigeria are faced with the developmental challenges of the use of Information Communication Technology (ICT) in terms of e-teaching and elearning processes. Jaime, (2020) submitted that we are living amidst what is potentially one of the greatest threats in our lifetime to global education, a gigantic educational crisis. As of March 28, 2020, the COVID 19 pandemic is causing more than 1.6 billion children and youth to be out of school in 161 countries (Aiyedun, & Ogunode (2020) and Ogunode, (2020b). This is close to 80% of the world's enrolled students. The Association of African Universities (AAU) has called upon tertiary institutions in Africa to move "urgently" to implement alternative methods of delivering teaching and learning using technology and other distance learning techniques in the wake of the closures of higher education institutions to limit the spread of COVID-19.

Voanews (2020) the director of World Health Organization urged nations to prepare for inevitable future pandemics, "If we fail to prepare, we are preparing to fail. Last year, the Global Preparedness Monitoring Board published its first report, which concluded, the world remains dangerously unprepared for a global pandemic," . "History tells us that this will not be the last pandemic and epidemics are a fact of life ...All countries must invest in preparedness capacities to prevent, detect and mitigate emergencies of all kinds—whether they be natural occurring epidemics or deliberate events," he said. The WHO chief said the only way to defeat the current outbreak and prepare for the next is for all countries to work together in a spirit of solidarity. This, he adds, means involving and respecting the needs of all nations — rich and poor alike (Voanews 2020).

### **Research Questions**

The following research questions were raised to guide the study:

1. To what extent are funding of Tertiary institutions adequate during the covid-19 lockdown in Nigeria?
2. To what extent are ICT infrastructural facilities and Internet Services in the Tertiary institutions adequate during the covid-19 lockdown in Nigeria?
3. To what extent are ICT Policies implemented during the covid-19 lockdown in Nigerian public Tertiary institutions?
4. To what extent are the ICT literacy level of academic staff and students during the covid-19 lockdown in Nigerian public Tertiary institutions?
5. To what extent is man-power inadequate during the covid-19 lockdown in Nigerian public Tertiary institutions?
6. To what extent is electricity stable during the covid-19 lockdown in Nigerian public Tertiary institutions?

### **Concept of Online Education**

Turoff (2007) in Mangal (2009) sees virtual classroom as a web-based environment that allows you to participate in live training events without the need to travel. According to Anekwe, (2017) E-learning is a system that allow a student listen to lectures, participate in lab exercises, ask questions, and receive feedback just as you would do in a conventional classroom – except you do it from the convenience of your desktop or anywhere you have an internet and phone connection. It saves the hassle, expense, and travel time to a training site. For Anekwe, (2017) and (Mangal and Mangal: 774) virtual classroom is the classrooms, capable of replacing partially or totally the conventional educational, evaluative and administrative functioning of a regular classroom by adopting the advanced computer and ICT technologies like the internet, e-mail, on-line chatting, www, CD-ROMS, DVDs, teleconferencing and video conferencing while Whatis.com, a virtual classroom is, "an online learning environment. It is like the real classroom world where students are participating in virtual classroom in synchronous instruction. That is to say that both the teachers, the student should be logged into the e-learning environment (VLE) simultaneously. Lokie (2011), defined e-learning as expanding the possibility of using internet facilities, platforms, satellite links, and related system to access, analyse, create, exchange, and use data, information, and knowledge in ways which until recently, were almost unimaginable.

Olibie., Ezoem and Ekene, (2014) noted that E-learning is made possible by developments in Information and Communications Technology (ICT) which have been rapid in recent years and have promised improved education and training to an increasingly diverse cohort of students. With the exponential growth of ICT, the higher education environment is expected to have a greater focus on meeting student expectations with more emphasis upon widening students' participation in ICT. The use of ICT in higher education has also necessitated the concern with development of lifelong learning skills, the emergence of new subject disciplines and increased use of technology in learning. The potential for ICT to provide innovative learning approaches such as e-learning is already being widely explored in both traditional and non-traditional educational settings. According to Anekwe, (2017) the merits of virtual classroom include:

- a) It provides the learners the flexibility of getting the learning experiences at the time, place and rate of assimilation.

b) Virtual classroom can help in good class organization. The operational documents, assignments, class notes and other related information in the internet can be readily categorized for easy accessibility for the teachers and students. The information posted on the internet could be easily revised and updated for more effective teaching and learning.

c) Virtual classroom provides the learners with the opportunity of gaining learning experiences 24hours of every 7 week days without tampering with the learners leisure time.

d) The system has the capability of employing the services of most experienced personnel in different areas of need which is not possible in traditional classroom setting.

e) Another educational value is the intellectual and social partnership created by the technology of virtual classroom. Students in their use of technological equipments cultivate the habit of leadership role in relation to other students (Husu, 2000). The implication is that the technology used increases group cohesion and mutual support more especially inn remote classrooms. Besides the virtual classroom enables the students to develop a range of communicative skills that enable them perform creditably in class.

f) Cost effectiveness is a great advantage. Virtual classroom saves money, time and transport for students. The students who are motivated could work on their own at their home environment without wasting time and money to travel to school.

g) The teacher equally enjoys the teaching because everything is digital and these works in general are sent through e-mail typed. The teacher can easily re-use his materials and can easily get materials elsewhere.

i) The system can prove quite advantageous to the students in various ways with regard to its on-line features. It will help in admission, information about the courses and academic activities, assignments and projects, tests and evaluation, grading and results, faculty available for interaction, guidance and needed help, information about the commencement of the public examinations, merit schemes, entry in a vocational and professional streams etc.

Adavbiele (2016) stated that development of new broadband communication services and convergence of telecommunication with computers has created numerous possibilities to use a variety of new technology tools for teaching and learning system. The integration of computers and communications offers unprecedented opportunities to the education systems with its capacity to integrate enhance and interact with each other over a wide geographic distance in a meaningful way to achieve the learning objectives. The growth of these communication and computer systems, their ease of use, the power and diversity of information transfer allow teachers and students to have access to a world beyond the classroom. It has the potential to transform the nature and process of the learning environment and envision a new learning culture. Interactivity, flexibility and convenience have become the order of the day in the ICT supported environment. ICT opens up opportunities for learning because it enables learners to access, extend, transform and share ideas and information in multi-modal communication styles and format. It helps the learner to share learning resources and spaces, promote learner centered and collaborative learning principles and enhance critical thinking, creative thinking and problem solving skills.

## **E-LEARNING AND THE NIGERIAN EDUCATIONAL SYSTEM**

The Nigerian pre-COVID-19 e-learning history could be traced back to the development of telecommunication which began in 1886. E-cable connections were established by the colonial masters between Lagos and the colonial office in London to transmit information and receive feedback (Ajadi, Salawu, & Adeoye, 2008). Thus a means of communication and information sharing was established. The telecommunication industry gradually grew to welcome the Nigeria Telecommunication (NITEL) that was sole telecommunication services provider until sometimes in the 90's when the Federal Government of Nigeria commenced the liberalization policy of telecommunication industry that gave birth to four (4) private telephone service providers (Mtel – NITEL, Econet now Airtel, MTN and Communication Investment Limited – CIL) licensed to provide General System for Mobile Services. CIL license was later revoked and issued to Globacom (Glo) Nigeria. Following this development, more companies were licensed to provide Internet services in Nigeria. Several Internet Service Providers came into the scene and this gave the opportunity for many Nigerians to be connected to the Internet through broadband VSAT connection In the Nigerian educational institutions, e-learning has been adopted to a limited degree in curriculum delivery(Chigozie-okwum, Ezeanyej, & Odii, 2018). The limited degree of adoption does not go without facing challenges. Lecture notes have been delivered on CD-ROM which can be played at the learner's convenience. Some institutions employed the use of intranet facilities for online learning. Few institutions in the country had been able to weather the storms of challenges facing e-learning to a reasonable degree. These institutions include The Federal Polytechnic, Ilaro, University of Ibadan, Obafemi Awolowo University, University of Benin, University of Abuja, University of Lagos, National Open University of Nigeria, Covenant University, Madonna University, among others. These institutions have the facilities for e-learning. It has been shown in the literature that e-learning methods have a very good prospect in Nigerian higher institutions (Nicholas-omoregbe, Azeta, Chiazor, & Omoregbe, 2017; Odegbesan et al., 2019; Yakubu, Kah, Dasuki, & Quaye,

2019). Additionally, e-learning has been adopted for distance education by few educational institutions in the country albeit with various challenges (Adu, Eze, Salako, & Nyangechi, 2013; Ajadi et al., 2008; Nathaniel & Olusola-Adedoja, 2017) that hampered its full adoption. As a measure to make learning continual as the COVID-19 lockdown progressed, the Nigerian Federal Government launched free e-learning portals for all students in primary and secondary schools following the closure of schools nationwide to prevent the spread of COVID-19 pandemic. The Federal Minister of State for Education announced that all students in the country were granted free access to e-learning portals such as schoolgate.ng and mobileclassroom.com.ng (Adedigba, 2020). The e-learning platforms were made subscription-free for Nigerian students in primary and secondary levels during the period COVID-19 pandemic. The Ministry of Education also provided study timetables for the online classes in the 36 states of the country on its website. Many higher education institutions used their institutional portals and other platforms such as Google Classroom, YouTube, emailing and other social media as platforms for e-learning curriculum delivery during the pandemic. Some states in the country also adopted radio and television learning programme for schools' children (EduCeleb, 2020).

With the various level of adoption of pre-COVID-19 e-learning in Nigerian educational institutions, the coronavirus pandemic made the adoption to be much imperative. Thus, the management of many schools, colleges, and higher educational institutions made it mandatory for their teachers and instructors to give online learning during the pandemic. This, to a degree, caused a paradigm shift in the way curriculum had been delivered to learners in many schools and institutions. Further, many students were forced to embrace online learning during the period. Thus, the study was set out to access the learners experience during the lockdown e-learning experience, the general challenges faced by students and staff of various institutions to determine how to improve on the identified lapses

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## **REASONS WHY PUBLIC TERTIARY INSTITUTIONS COULD NOT SWITCH INTO E-LEARNING DURING COVID-19 LOCKDOWN**

There are many reasons why Nigerian many public Tertiary institutions were unable to switch into e-learning during the COVID-19 lockdown period. Some of the reasons include: poor funding of public tertiary institutions, inadequate ICT infrastructural facilities, poor implementation of ICT policies, high cost of ICT facilities, poor ICT literacy level of academic staff and students, unstable electricity and unstable internet services.

### **1. Inadequate Funding of Public Tertiary institutions**

Poor funding of public tertiary institutions in Nigeria is a major problem that has hindered the switch over to online education during the COVID-19 pandemic in Nigeria. The funding allocated annually for the administration and management of public tertiary institutions in Nigeria for long have been inadequate and cannot provide all ICT infrastructural facilities in the public tertiary institutions in Nigeria. Achibong et al (2010) maintained that fund-related challenge is one major factor militating against the effective utilization of computer by academic staff. Victor and Faga (2015) identified problems militating against the effective utilization of the technology among lecturers to include inadequate funds, inadequate power supply, lack of government sponsorship, time constraint, irregular organization of IT programmes, inadequate Internet cafes, too much workload for academic staff and inadequate computer training centers as some of the problems hindering the effective utilization of computer by the lecturers. Kupoluyi, (2015), and Victor, et. al. (2015) acknowledges that inadequate funding is a major problem responsible shortage of ICT facilities in higher institutions.

### **2. Inadequate ICT Infrastructural Facilities**

An inadequate ICT facility is another major reason why many public tertiary institutions in Nigeria were unable to migrate to the e-learning during COVID-19 lock down. Lack of facilities is one of the challenges militating against the deployment of Information and Communication Technology in Nigerian Tertiary institutions according to (Victor, et. al. 2015). Babatunde & Paschal (undated) observed that it is evident in the fact that Nigeria tertiary institutions lack basic office gadgets and technologies like computer, printers, faxing machines, photocopiers, binders, projectors etc. This is appalling compared to other tertiary institutions of the world,

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not to even talk of internet connection. These basic facilities contribute to the challenges facing deployment of information and communication technology in Nigeria tertiary institutions, as no tertiary institution can function effectively in this modern trend of ICT without these facilities. It is important, in that apart from educational training these office gadgets and technologies are needed to equip students for future office and corporate activities after their studies. Adavbiele (2016) examined the gap and challenges facing the use of ICT in university education in Nigeria. Findings revealed that there is a gap between the tertiary institution teachers and students and ICT usage in classrooms and many tertiary institution 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. During the COVID-19 period many public Tertiary institutions in Nigeria do not have the adequate ICT facilities to migrate into e-learning.

### **3. Poor Implementation of ICT Policies in Public tertiary institutions**

In order to enhance e-education in Nigeria Tertiary institutions, National Universities Commission (NUC) of Nigeria, the government agency responsible for registering and regulating universities has prescribed personal computer ownership as follows: 1 PC to 4 students, 1 PC to 2 lecturers below the grade of Lecturer 1, 1 PC per Senior Lecturer and 1 notebooks per Professor/Reader. At the tertiary-level of education, Okhiria (2007) noted that National Universities Commission (NUC) in Nigeria has prescribed that there should be at least one computer to every four students and one PC to every two lecturers below the grade of lecturer I, one PC per senior lecturer and one notebook per reader/professor. NUC has gone further to establish e-learning platforms fitted with twenty smart boards in twelve Federal universities for the promotion of the use of ICT in teaching and learning. (Adavbiele 2016) noted that majority of the Nigerian tertiary institutions have not achieved this recommended system ratio for their faculties, though some have made giant or notable strides in campus wide area networking and e-learning course deliveries. Poor implementations of the ICT policies in the Nigerian tertiary institutions have made it impossible for academic and non-academic staff and students to use ICT within the tertiary institution's campus. Adavbiele (2016) observed that very few of Public higher institutions in the country are capable of meeting the ICT needs of their staff and students. The question now is what happens to the rest institutions? Many tertiary institution lecturers and students have to go to commercial cyber cafés in town before they have access to a computer that is internet connected or at best buy private models with which they are able to connect to the internet. Adewale and,Taiye (2018) discovered that challenges facing the use of ICTs in the tertiary institutions include poor political-will to implement such policies, high cost of ICTs, low computer-literacy among tertiary institution staff and students, epileptic power supply and absence of ICT policies.

### **4. High Cost of ICT Facilities**

One of the challenges of deploying ICT in Nigerian tertiary institutions is the high cost of internet data and electronic services, which is basically the determinant of ICT usage and value. The internet as we know today was created in the United States of America and introduced to the rest of the world. America still has a strong hold of control, as most developing countries pay huge amount of dollars to the US Government for the connection of few megabits per annum. This apparently affects the deployment and full utilization of information and communication technologies in these growing countries, of which Nigeria is one. In Nigeria, the high cost of internet data and fast tariff set by internet providers, mostly international companies doing business in the country with the main interest of making profits is among the challenges of ICT deployment. Over the years, the price of computer has been on the high side. This has been a deterrent to the adoption of computer for instructional purposes in most Nigerian institutions of learning. Coupled with this is the exorbitant price of software; it follows the same pattern as that for the hardware. Where attempts are made to purchase computers for instructional purposes, the costs of installation, maintenance and replacement are unavoidable (Victor, et. al. 2015).

### **5. Poor ICT Literacy Level of Academic Staff and Students**

Poor computer literacy of academic staff and students is another fundamental problem that prevented many public tertiary institutions from migrating into e-learning model during the COVID-19 lock down. Poor computer literacy is the poor knowledge on the operation of computer system. Poor computer literacy is a very big problem in the Nigerian tertiary institutions (Idowu & Esere, 2013). The poor ICT skill and ability is responsible to why many students prefer to contract academic assignment to private business center. Nigerian tertiary institution staff and student prefers to type any official documents at business centres instead of doing it themselves. Victor, et. al. (2015) did a study on the utilization of computer technology for academic work by assessing the computer literacy skills possessed by academic staff members of University of Jos (UNIJOS). The findings revealed that lecturers have average level of computer literacy skills and use it only for typing/printing of lecture notes, computing of students' results, surfing the Internet for information and sending e-mails. However, inadequate funds, inadequate power supply, lack of government sponsorship, time constraints, irregular organization of IT programmes, inadequate Internet cafes, too much work load for academic staff and inadequate computer training centres were discovered to be militating factors. Adavbiele (2016) observed that teacher's barriers to ICT usage include lack of confidence, shortage of time, and resistance to change, or to the institution (school-level barriers) effective

training in solving technical problems and lack of access to resources. Teachers' use of ICT were insufficient number of computers, lack of free time for learning and lack of classroom time for students to use computers. On the ICT literacy level of students in Nigerian universities, Airen (2011) did a study that investigated the availability, use of Information and Communication Technology and the ICT literacy skills of undergraduates in seven Nigerian universities. Results revealed that computer, telephone and the Internet were the three ICT mostly used by the undergraduates, although more on an occasional basis. The undergraduates in the state universities (BSU and IMSU) were found to have poor ICT literacy skills in the use of the three ICT with over 25%, while those with average ICT literacy skills were in the federal universities (ABU and UNIMAID). Three major factors affecting the ICT literacy of the undergraduates were identified as irregular power supply, inadequate ICT and limited duration of the use of the ICT.

## **6. Unstable Electricity**

Unstable electricity also prevented many tertiary institutions to move to online education during the COVID-19. ICT depend on electricity to work. Adavbiele (2016) and Osakwe (2012) submitted that acquisition, deployment and management of information technology resources and services for teaching depend on electricity. Studies have shown that poorly maintained equipment and poor network infrastructure are prominent obstacles to the integration of ICT tools in teaching (Adavbiele 2016). Babatunde & Paschal (undated) and Azuh & Melody, (2014) observed that in Nigeria, the biggest challenge to the growth and development of most industries is poor electricity supply. This is a huge setback to the progress of Nigeria, as it is difficult to boast of one full day without electricity interruption not to talk of a week or one Month. Meanwhile, most countries of the world are beginning to celebrate 100 years and still counting of no electricity interruption. Also, neighboring countries Nigeria supply electricity manages to have better and improved electricity supply than Nigeria. Most public tertiary institutions in Nigeria cannot boast of 24 hour stable electricity and this is affecting the utilization of ICT for teaching, researching and carrying out other academic services. Babatunde & Paschal (undated) outline the cause of unstable electricity to greed of some rich and influential citizens, who manipulate and lobby for non-electricity supply in order to sell their imported electricity generators to frustrated citizens for business and home use on one hand; and the corruption and poor management of the electricity distribution company on the other hand. Ezeji and Mole (2010) discovered that, irregular power supply, high cost of computers, time constraint due to pressure from school academic work among others are some of the problems militating against the use of computers. Babatunde & Paschal (undated) submitted that the poor electricity supply have made some rich tertiary institutions manage to provide private electricity supply for their administrative sections, while other sections of the tertiary institution go without electricity supply. It is so bad that lecture halls and academic offices are expected to run under very hot weather, without electric supply to power air conditioners, fans, projectors and other basic learning gadgets.

## **7. Unstable Internet Services**

Unstable internet service also hindered many public tertiary institutions from going into online education during the COVID-19 (Ogunode 2021; Kwacha 2007; Umar & Rosnaini 2018). Companies providing network services in Nigeria have not cover major rural areas. ICT services are not well planned to have cover all the part of Nigeria. The network services some time are very weak that to connect to internet is a problem. The inability of network provider to cover many parts of the country frustrated many public tertiary institutions from switching into the online platform during the COVID-19. Huili (2020) observed that the network is too busy and network quality is not good enough. Some tertiary institutions require professors to follow their normal schedule. Yet the reality is that thousands, and sometimes even tens of thousands of students, will be on the same platform at the same time, which massively challenges the network. In addition, access to connectivity to internet remains one of the major challenges in many developing countries such as Nigeria. Darkwa and Mazibuko (2000) noted that students would need access to computers that can send and receive messages using web browsers. Lai Oso, professor of mass communications at Lagos State University, said poor public internet infrastructure has meant students are finding it difficult to undertake academic work remotely, including the use of virtual libraries which he noted are absent in many Nigerian tertiary institutions.

## **8. Inadequate Man Power**

To successfully implement online educational system, there is need for professional ICT experts. Research available shows that many public tertiary institutions in the country do not have adequate ICT experts. The inadequacy of ICT experts in the Nigerian educational institutions especially the tertiary institutions is hampering the development of ICT. During the COVID-19, many public tertiary institutions could not move online due to shortage of inadequate manpower in ICT. Ayodeji Olukoju said there is no Nigerian tertiary institution that has the requisite infrastructure to quickly switch over to online teaching. Olukoju, a distinguished professor at the University of Lagos (UNILAG) said the average Nigerian tertiary institution is structured to teach on the conventional platform and distance learning is not as developed as we would have loved. "We can talk of the National Open University of Nigeria (NOUN), or the distance learning institute at UNILAG or its counterpart at UI but unlike South Africa's UNITA, which is very efficient, we haven't got to that level here because of the infrastructure required-online facilities, human resource that is, the technical people that

can handle it and then the trained lecturers that can operate on that platform. So to the extent that we don't have such structures, the physical and the pedagogical on ground, it becomes problematic, we cannot switch over overnight." Source (Guardian.ng, 2020). Adewale & Taiye (2018), Umar & Rosnaini (2018) and Ogunsola (2004) identified shortage of manpower, frequent computer breakdown due to electric power surge, erratic power supply and lack of spare parts as the major problems Nigerian libraries face in the implementation of ICT.

## METHODOLOGY

The descriptive survey research design was adopted for the study. The population of the study comprised of all public tertiary institutions in the six (6) geopolitical zones in Nigeria. The sample size comprised of 123 undergraduate students and lecturers, respectively made up of 67 undergraduate students and 56 lecturers selected randomly from six geopolitical zones of Nigeria. The research instrument used for data collection was a 15 structured questionnaire items rated on a 4-point Likert scale, with response options of Strongly Agree (SA); Agree (A); Disagree (D); and Strongly Disagree (SD). The responses of the respondents were presented in Grand Mean ( $\bar{g}$ ) and Standard Deviation while t-test was used to test the hypothesis, generated at 0.05 level of significance. The selection of test was based on the fact that the variances were homogenous.

## RESULT AND ANALYSIS

**TABLE 1: RESEARCH QUESTION RESPONSES FROM BOTH LECTURES AND STUDENTS**

Q/NO	QUESTIONS	LECTURERES		STUDENTS		DECISION FROM BOTH
		MEAN	STD. DEV.	MEAN	STD. DEV.	
1.	To what extent are funding of Universities adequate during the covid-19 lockdown in Nigeria?	22.55	10.20	27.70	11.13	AGREED
2.	To what extent are ICT infrastructural facilities and Internet Services in the Universities adequate during the covid-19 lockdown in Nigeria?	56.73	54.52	54.52	13.38	AGREED
3.	To what extent are ICT Policies implemented during the covid-19 lockdown in Nigerian tertiary institution?	24.90	10.68	56.65	10.16	AGREED
4.	To what extent are the ICT literacy level of academic staff and students during the covid-19 lockdown in Nigerian public tertiary institution	27.19	9.01	49.44	13.33	AGREED
5.	To what extent are man-power inadequate during the covid-19 lockdown in Nigerian tertiary institution?	29.60	12.45	50.70	13.36	AGREED
6.	To what extent are electricity stable during the covid-19 lockdown in Nigerian tertiary institution?	25.91	9.75	55.45	13.42	AGREED

From the responses as shown in the above table, it shows that both the lecturers and students agree that there are inadequate funding of public tertiary institutions, inadequate ICT infrastructural facilities in Nigerian, poor implementation of ICT Policies in public tertiary institutions, poor ICT literacy level of academic staff and students in tertiary institutions in Nigerian, unstable electricity, unstable Internet Services in public tertiary institutions, and inadequate man-power in tertiary institutions in Nigerian.

## **DISCUSSION OF FINDINGS**

This study assessed the effectiveness of e-learning during COVID-19 Lockdown in Nigerian tertiary institutions. The discussion of the results are done based on the research questions and hypothesis. The findings from research question one showed that lecturers and students agreed that there is inadequate funding of public tertiary institutions in Nigerian. This finding is in line with Olatunde-Aiyedun and Ogunode (2021) that lecturers and students complained of poor funding of virtual classes during covid-19 lockdown in Nigeria.

Research question two revealed the opinion of lecturers and students on research question implies that the respondents agreed that there are inadequate ICT infrastructural facilities in Nigerian. This is in line with the study conducted by Olatunde-Aiyedun, et. al. (2021) that emphasized the need for provision of basic ICT facilities and internet access for a productive teaching and learning outcome.

From research question three, it revealed the opinion of lecturers and students' response agreed that there is poor implementation of ICT Policies in public tertiary institutions in Nigerian.

Research question four revealed the opinion of lecturers and students on research question agreed that there is poor ICT literacy level of academic staff and students in public tertiary institutions in Nigerian. Airen (2011) study agreed to this finding revealed that the ICT literacy skills of lecturers and undergraduates in seven Nigerian tertiary institutions are poor with over 25%, while those with average ICT literacy skills were in just two public tertiary institutions.

Research question five revealed the opinion of lecturers and students agreed that there is unstable electricity, Unstable Internet Services in public tertiary institutions in Nigerian.

Research question six revealed the opinion of lecturers and students agreed that there is inadequate man-power in public tertiary institutions in Nigerian. This is in line with therecommendations by Olatunde-Aiyedun et. al. (2021) that shortages are attributed to inadequate turnout of lecturers to students' ratio in tertiary institutions as should Nigerian Tertiary institutions have ratio of lecturer to student as 1:500. That is one lecturer to over five hundred undergraduate students.

One null hypothesis was formulated to determine any significant difference between responses of lecturers and students in Nigerian Tertiary institutions. This result of hypothesis presented in

## **CONCLUSION AND RECOMMENDATIONS**

In conclusion, this study identified the following: inadequate funding of public tertiary institutions, inadequate ICT infrastructural facilities, poor Implementation of ICT Policies in Public tertiary institutions, high cost of ICT facilities, poor ICT literacy level of academic staff and students, unstable electricity, Unstable Internet Services and inadequate Man-power as reasons why many public tertiary institutions could not switch into e-learning during the COVID-19 school lock down period. It is imperative for the governments at the federal, states and proprietors of private institutions to prepare for the future pandemic. Pandemic have become part and parcel of the human lives. Pandemic should not decide how to manage our educational institutions for us and pandemic should not put our children out of schooling.

To prepare for the future pandemic, the paper suggested the following:

- i. Government and other stakeholders should provide special ICT funding for all public tertiary institutions, provide adequate ICT infrastructural facilities, subsidize ICT facilities for students and lecturers, ensure stable network services in all public tertiary institutions, and implement all ICT policies and ICT capacity development for lecturers and learners.
  - ii. Government should ensure all the educational institutions in the country especially the tertiary institution education are equipped with all ICT facilities to enable them switch at any time to e-learning para-vulture of any pandemic resurface again. This will enable education to continue in the country just like other advance country.
  - iii. To enhance the online education in Nigerian public tertiary institutions, the government should subsidize the cost of ICT facilities for students and lecturers across the country.
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iv. Internet service is essential for a successful online education. The government should ensure that the private companies in charge of provision of internet services provide quality services and also ensure 100% coverage of the country to enable students and lecturers access their materials online and exchange views. Olabisi (2020) observed that this is an opportunity for telecommunications companies like Glo, MTN and the rest of them to make a difference in Nigeria's educational institutions. They can as part of their corporate social responsibility decide to boost internet facilities in tertiary institutions and other educational institutions; or provide data at cheaper rates to help poor students have access to the internet for online learning.

v. The government should ensure that all ICT policies regarding ICT development in Nigeria public tertiary institutions are translated into reality.

vi. The government through its various agencies in charge of public tertiary institutions should provide training and retraining programme for lecturers and students to enable them acquire ICT skills that will allow them use the online education system.

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