

# E-Learning and E-Teaching in Nigeria: A case of Akwa Ibom State University

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**Abstract**— There has been a growing recognition of e-learning and e-teaching in educational development, in particular, the ways in which e-learning has become an emerging mode of dissemination of knowledge in the current information age. This study highlights a further educational implication of e-learning and teaching, namely how it can foster ‘inclusive education’ and how it shapes the broader context of digital education. The study examined e-learning and e-teaching in Nigeria drawing on the case of Akwa Ibom State University. It builds on recent Afrobarometer data on e-learning in Africa and original data from Student’s Perception of E-Learning and Teaching in University (SPEN) project, developed for the study which included field surveys and interviews with 335 respondents drawn from students across the eight (8) faculties of Akwa Ibom State University. The data were analyzed using the SSPS statistical package. The findings show that despite the rise of ICT revolution, e-learning is poorly implemented in Akwa Ibom State University like other Universities in Africa. There is insufficient electronics, lack of skills to teach online, limited access to computers and the internet, frequent electricity blackouts and poor technological innovation. These have serious implications for inclusive education and particularly, SDG 4: Quality Education. In the alternative, policy guidance was proffered.

**Index Terms**— E-learning, E-teaching, Inclusive Education, Revolution, Educational Development.

## I. INTRODUCTION

Education has experienced a revolution in the 21<sup>st</sup> century following technological innovation and rise of digitization. One of such innovation is electronic learning otherwise known as e-learning. The term “e-learning” is used to describe several related processes such as online learning, computer-based learning (CBL), web-based training (WBT), online resource-based learning (ORBL), and computer-supported collaborative learning (CSCL) (Ng’ambi, 2006).

E-learning as Salawudeen (2010) highlights is that type of learning, which uses network technologies to create, deliver and facilitate learning any time, and anywhere. Following “the advent of the Internet, the World Wide Web came into existence and the web became valuable for research. Consequently, online learning or web-based learning came onto existence” (Iloañosi 2007: 47).

The implementation of e-learning has become an important objective of university education in Nigeria as provided by the National Policy on Education (FRN, 2004), that “the Government shall provide facilities and necessary infrastructure for the promotion of ICT and e-learning”. The policy also targets production of high level manpower for national development through impactful teaching, learning and research.

Nigeria is the most populous country in Africa and a leading country in Africa with the largest number of internet users according to statistics (O’Birba, 2012; Alemna, 1999), as some universities in Nigeria use the internet to promote distance education (DE) and lifelong learning.

With the recent educational challenges of the COVID-19 pandemic in most developing countries of the Global South,

which gave rise to the use of zoom platform and similar remote means of teaching and learning, alongside insufficient electronics, lack of skills to teach online, limited access to computers and the internet, frequent electricity blackouts and poor technological innovation (Afrobarometer, 2021), it appears that the realization of educational objectives of e-learning and e-teaching seems less feasible.

Such problems have led to an outpouring of scholarly discourse on e-learning and teaching in the developing countries (Ng’ambi, Brown, Bozalek, Gachago, & Wood, 2016; Jantjies, 2020; Krönke, 2020). Many of these responses, however, have tended to overlook the longer-term relevance of e-learning and e-teaching in fostering inclusive and quality education in post pandemic university education in the low income countries such as Nigeria—a research gap which is evident in mainstream discourse on e-learning, which emphasize its importance in educational transformation without adequate attention to the basic facilities needed to promote e-learning.

A recent data by Afrobarometer (2021) show that there is digital divide across Africa, which has implications for e-learning and teaching. Krönke (2020) writes that this is especially true among African countries, where despite recent progress, traditional education has faced infrastructural challenges and struggled to develop the human resources necessary to address students’ educational needs.

The case for e-learning as a model to overcome educational restriction in the era of pandemic has received recent scholarly attention (Afrobarometer, 2021). However, Jantjies, (2020) and Nyerere, (2020) argue that Africans’ ability to make use of e-learning varies significantly across the continent. Nyerere, Gravenir, & Mse, (2012) identified instructors’ lack of skills to teach online, insufficient

electronic content, limited access to computers and the Internet, and frequent electricity blackouts as common obstacles to distance and remote learning as some of the factors inhibiting e-learning in countries like Kenya.

In South Africa and in most African countries, approaches to e-learning in higher education have been slow as students have to play catch-up with emerging technologies used in e-learning (Ng’ambi, 2013; Ng’ambi, Brown, Bozalek, Gachago, & Wood, 2016).

Despite the broader use of information and communication technology in university teaching, research on e-learning adoption suggests that it has not reached its full potential (Zemsky et al., 2004). This implies that a lot more needs to be done for university teaching to be improved via ICT. E-learning adoption is hampered when there is absence of improved technology in any university system. Certain criteria such as the acquisition of adequate technological infrastructure and adequate educational content of persons with university skills and a developed culture, which encourages learning and sharing among others are considered essential for the successful implementation of e-learning in an educational system (Egolum, 2021).

In the recent times, many developed countries of the world have adopted the use of various multimedia to deliver and receive knowledge. This has infused and injected efficiency and effectiveness in their curriculum implementation. At the University education level, Laurillard, (2013) suggests the need to rethink university teaching for effective use of learning technologies. In more specific terms, Dhilla, (2017) emphasized the various roles of faculty in supporting successful online learning enterprises at the higher educational level.

In Nigeria, a number of recent study point out several constraints in implementing e-learning. For instance, Iloański (2007) explored some of the challenges in implementing e-learning in the higher institutions in Nigeria. Among others, Iloański (2007:47) identified personal computer (PC) as the necessary component for e-learning. “In other words, without a PC there can be no e-learning”.

Against this backdrop, this study provides a new perspective on the educational implications of e-learning and e-teaching in the Global South drawing on the particular case of Akwa Ibom State university- a citadel of higher education in the South -South Nigeria. The study builds on recent Afrobarometer data on e-learning in Africa and original data from Student’s Perception of e-Learning and e-Teaching in University (SPEN) project developed for this study. It further follows on the heels of a number of scholars who have emphasized the relevance of e-learning in educational transformation at the university level and makes a new contribution on post pandemic transformation of education at the university level through e-learning and e-teaching. It demonstrates that first, while a new kind of teaching and learning has emerged through e-learning, higher educational institutions in the poor countries are missing out. The study

argues that this educational disparity has obscured the links between inclusive education and e-learning outcomes in ways that make the technological context for improving e-learning and e-teaching challenging.

Some of the scholarly contributions to the debate highlight the relevance of e-learning and teaching as key drivers of quality education (Mac-Ikemenjima, 2005; Iloański, 2007), It draws attention to the relevance of e-learning and teaching in evolving a distinct *technology*-based learning integral to the making of a transformed educational system. This emphasis on the linkages between e-learning and inclusive education in Africa not only underscores some neglected aspects of e-learning but also better accounts for the specific contexts SDG 4: Quality education could be achieved and more importantly, how the African university system can benefit from ICT revolution to transform education.

We draw on some of these arguments and, in many respects, share their perspectives on the centrality of e-learning and e-teaching in post pandemic order. Thus, by focusing on the *constitutive* dimension of e-learning within the wider educational transformation debate in the Global South), we aim to make a new contributions to the literature that is relevant to both an understanding of the challenges of e-learning at the university level, how to overcome such challenges and approaches to e-learning in general—one that also speaks to the contemporary context of quality education enshrined in SDG: 4. The rest of the study is organized as follows previous research on e-Learning and e-teaching in Nigeria, e-learning and e-teaching towards inclusive education theory, research aim and objectives method, results and discussions, conclusion and recommendations.

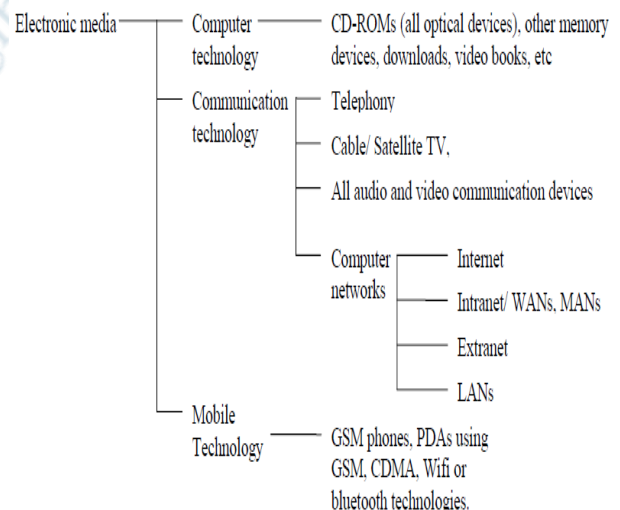


Fig. 1: Illustration of the various forms of electronic media employed in e-learning

Source: Iloański (2007) E-learning: Its Implementation in Higher Institutions in Nigeria.

## II. PREVIOUS RESEARCH ON E-LEARNING AND E-TEACHING IN NIGERIA

There are a number of previous studies on e-Learning and e-Teaching (Keegan, 1993; Rosenberg, 2001; Hedge and Hayward, 2004; Ravichandra, 2005; Sharma and Ng, 2009; Arvidsson and Delfanti, 2019). Similarly, recent studies in the literature have identified digital divide in e-learning. For instance, Afrobarometer Round 7 (2016/2018) shows a substantial digital divide both across and within countries, evident in uneven access to facilities such as electricity and unequal access to and use of smartphones and computers. The report suggests that government efforts to redress widespread inequalities need to be increased drastically to avoid the widening of an education gap among the citizens.

To this end, what specific roles can e-learning and e-teaching play in tertiary educational development and in particular, to bridge digital divide? Importantly, there is need to draw on key studies, which highlight the societal response and role of e-learning. In other words, e-learning is not simply school-bound; they could be socially informed and motivated.

UNESCO, (1994) suggests the need to understand learning as a tool for inclusive education, stressing that education systems and programs should be designed and implemented to take into account the wider diversity of learners' characteristics and needs.

UNESCO, (1994) highlights that e-learning and e-teaching must promote critical thinking that allows the learner to think critically, challenge texts, assumptions, and debate critical issues. They further observe that 'deserving of attention is the need for a wide range of themes to be covered in e-learning such as sports, drama, theatre, and art to stretch imaginations, promote critical thinking and strategizing, build team spirit and collaboration, and develop cultural knowledge to challenge extremist narratives'.

In 2020, UNESCO published its flagship report, which provided a groundbreaking insight on the relevance of eLearning. UNESCO discussed e-learning as essential for educational development of students and offered an analysis of the broader social and educational role of e-Learning in a modern society. It further demonstrates how existing educational curriculum could be strengthened to advance the prospects of e-learning in modern societies. However, a key concern raised is the need for availability of the internet (Egolum, 2021). For instance, UNESCO (2020) posits that while there are several collaborative platforms for remote learning that do not require an Internet connection, Internet access vastly increases the range of tools that schools, educators, and students can use to study and share knowledge. Kronke (2020) identified limited access to the internet as a key factor limiting learning and teaching.

Beyond the constraints of such technological infrastructure the successful implementation of e-learning by an educational system should fulfil certain criteria such as the acquisition of adequate technological infrastructure and

adequate educational content of persons with university skills and a developed culture, which encourages learning and sharing (Iloański, 2007) .

Following identified criteria, the links between e-learning and educational development need not only to be rooted in a whole school approach consistent across different areas of curriculum and pedagogy; rather they need sustained funding and coordination beyond the school setting. In particular, educational structure within e-learning, arguably, is central to strengthening young people by building their capacities, which makes for inclusive society. Thus, e-learning and e-teaching design is central to inclusive educational development, which is the focus of the arguments of the present study.

From a pedagogical perspective, De Silva (2021:8) makes a case for utilizing technology in the classroom and argued that "the use of modern pedagogical technologies makes it possible to solve educational problems and form a child's readiness for independent knowledge of the world around him". A related account holds that building a pedagogy of e-learning could provide "mutual impact of educational and information technologies" (Christie and Ferdos, 2004). Kwan, Chan and Tsang (2008) have emphasized the need to enhancing learning through technologies as a pedagogical model. Such pedagogical perspective led Egolum,(2021:48) to highlight that, "in learning, curriculum content in the form of texts, visuals such as pictures, posters videos audio/sound, multicolor images, maps and graphics can simultaneously be presented online to students in both immediate locations (Classroom Model of E-learning) and various geographical distances (Distance Education Model of E-learning)".

Matthias Krönke (2020) examines Africa's digital divide and the promise of e-learning emphasizing that it is important to understand dynamics of e-learning among adults for at least two reasons, stressing that the first, is that adults are likely to shape children's access to and experience with technology, second, that understanding current levels of access to devices and levels of digital literacy among adults provides a baseline against which future assessments can measure progress". However, identified a number of challenges associated with e-learning in Nigeria such as poor access to the internet, non-compliance to the use of technological facilities, limited availability of smartphones etc.

Despite the complexities and challenges, UNESCO (2020), upholds the relevance of e-learning especially in times of crisis and emergencies such as the global pandemic where approximately 1.2 billion students and youth worldwide were affected by school and university closures. To overcome such challenges, UNESCO (2020) points out that governments must develop innovative solutions to ensure inclusive learning opportunities during such period of unprecedented educational disruption. A number of studies have corroborated that such scenario is particularly true in African countries, where despite recent progress, traditional



education has faced infrastructural challenges and struggled to develop the human resources necessary to address students' educational needs (Krönke & Olan'g, 2020; United Nations, 2019; UNESCO Institute of Statistics, 2016). To overcome such constraints informed the need for e-learning and e-teaching.

Similarly, Suleiman (2011) found out that, eLearning is essential and in a productive way may involve students who could maximize their potentials and new ideals to develop their IT skills through technological innovation. Following the rise of ICT, Pew Research Center, (2018) demonstrates that internet access vastly increases the range of tools that schools, educators, and students can use to study and share knowledge. Previous research has shown that Africans see increasing levels of Internet connectivity as beneficial to education). Hedge and Hayward, (2004) discuss eLearning as a life-long learning tool. Such view-points suggest the need for developing countries to introduce learning policies that place education at the forefront of their national policy. These are useful strides in educational development. In South Africa, Ng'ambi, et al; (2016) emphasize the need for technology enhanced teaching and learning in higher education.

In Nigeria, the literature on e-learning and teaching is vast and covers a wide range of themes (Iloañusi 2007; Eteng and Ntui, 2009; Egolom, 2021). Iloañusi (2007) reinforces the relevance of e-learning in educational development of both the teacher and the learner and discusses the implementation of e-learning in higher institutions in Nigeria. Iloañusi (2007:47) made a distinction between e-learning and online learning, stressing that "the term e-learning refers to the technology used in learning whereas online learning refers to the web or network utilized in learning. Online learning or web-based learning as it is sometimes called is just a subset of e-learning".

The National Policy on Education (FRN, 2004), states that "the Government shall provide facilities and necessary infrastructure for the promotion of ICT and e-learning". Such policies emerged as a result of the need for more collaborative and multidimensional approaches to promote education through e-learning and e-teaching. Eteng and Ntui (2009) in their study on access to E-learning in the Nigeria university system (NUS) examined the case study of University of Calabar and identified a gap in access and use of the internet.

Similarly, in a recent study on e-learning in Nigeria's tertiary institutions as panacea to quality education for national development, Egolom (2021) found out that e-learning is averagely implemented in the Nigerian Universities as the facilities available are in short supply.

To this end, recent scholarship and literature on e-learning in Nigeria has emerged from various perspectives yet a point of convergence and consensus is the various constraints to e-learning such as poor internet access, poor funding, limited PCs etc. pointing to the need to reinvigorate e-learning

(Ekeocha, 2007; Mac-Ikemenjima, 2005; Ololube, Ubogu, & Egbezor, 2007; Olugbenga et al, 2008; Salawudeen, 2010; Egolom 2021). For instance, Egolom (2021) argues that the unprecedented increase in students' enrolment at all levels in the tertiary institution in Nigeria has exposed the poor infrastructural situation and also dearth of trained teachers for e-learning. Such argument reinforces the need for effective modalities to implement learning and teaching in the tertiary institutions in Nigeria.

As part of inclusive development framework, Kronke (2020) provides a useful analysis of the need for e-Learning, emphasizing that despite its relevance Africa's ability to catch up with technology-based learning has been slow. Similar observations have been made in previous studies as African countries have been slow in adopting e-learning even among wealthy African countries such as South Africa (Ng'ambi, 2013; Ng'ambi, Brown, Bozalek, Gachago, & Wood, 2016).

However, despite the previous studies reviewed, there is scant studies discussing post pandemic learning and teaching in most Nigerian universities to understand the dynamics of ICT development and student's response to eLearning and similar online base education. To fill this analytic gap informed the study of Akwa Ibom State University in the South –South Nigeria. Thus, the present study demonstrates that academics and researchers, as well as practitioners from governmental bodies and civil society groups could collaborate to create more healthy and inclusive environment for e-learning.

### **III. E-LEARNING AND E-TEACHING: TOWARDS INCLUSIVE EDUCATION THEORY**

The theory of inclusive education is framed with the idea of "education for all" especially the less privileged, learners with special educational needs and in particular, the girl child (UNESCO, 1994). The fundamental thrust of inclusive education is to remove obstacles to education such as geographical impediment, poverty, technological, religious and economic, etc in essence, make teaching and learning accessible and all encompassing. For instance, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has been active in consolidation of the idea of inclusive education particularly for children with special educational needs in schools (UNESCO, 1994).

As a theoretical model, inclusive education has been adopted as a rights-based theory to ensure both equality and protection of right to education for all learners. Both Subotić & Anđić, (2014) and United Nations Convention on the Rights of Persons with Disabilities, (2016) posit that inclusive education is now a contemporary educational approach recognized globally. Rapp and Corral-Granados (2021) argue that empirical research on inclusive education is often normative since it is based on terms such as 'justice' and 'democracy'. However, they argued that theorization of inclusive education is not very easy they link Luhmann's

theory of inclusion and exclusion with the institutional theory of the social construction of reality and discuss how policy, management, teaching, student relationships, and issues within the context of education that involves communication can create institutionalized systems with mechanisms that form persistent exclusion for some students (Rapp & Corral-Granados, 2021).

Beyond theorizing, Al-Shammari, Faulkner, and Forlin, (2019) highlight that implementation of inclusive education requires a change in the mindset of school administrators and teachers. Although, overall, teachers are said to support inclusion, the inclusion of different groups of children, especially those with social, emotional or behavioral difficulties, continues to be considered as problematic (Hornby, 2014).

In the context of our study, we seek to create possible link between e-learning and e-teaching and inclusive education. The exploration of e-learning and e-teaching has a substantial body of recent theoretical analysis (Potter & McDougall, 2017; Henderson, 2018; Reyna, & Meier, 2018; Krönke, 2021; Falola, et al 2022). What has remained largely unknown is how eLearning and teaching has been inclusive especially among the low-income countries of the South.

With specific reference to the developing countries and, in particular, Africa, the rise of digitization and in particular, the internet across the advanced world, has revolutionized education. A number of theoretical perspectives have sought to theorize the connections between technological innovation and e-learning and teaching (Kim, Smith, & Maeng, 2018; Dhull, & Arora, 2019). Some of the relevant theoretical contributions to the debate highlight the importance of e-learning as a key driver of new learning (Iloañusi 2007; Iroaganachi, 2016), which reflect a technological drive in education through which both teachers and learners realize their respective educational objectives (Iroaganachi, & Izuagbe, 2018).

Our primary focus here concentrates on the developing countries particularly Africa. A recent theoretical perspective of Arobarameter posits that e-learning personal computer is a foundational tool to e-learning.

Further, many technology-based educational theories have been criticized for shortcomings in their analyses of what constitutes inclusive education (UNESCO, 1994), as well as their failure to address the role e-learning can play to foster inclusive education that have undermined educational development of the poor, the physically challenged and the girl child in some cases, help overcome cultural or religious barriers to education in the Global South.

We draw on some of these theoretical arguments and, in many respects, share their debates on the centrality of inclusive education theory. For instance, Botha and Kourkoutas, (2016) highlight that one of the key issues faced by teaching staff includes the practical feasibility of inclusion, classroom teacher demands, the quality of support for students, and the degree of knowledge, understanding,

and expertise required by classroom teachers. In terms of the later, the concern is to understand the level of computer literacy of teachers and in particular, their knowledge of online education and skills. This theory will guide our argument in exploring e-learning and e-teaching in Akwa Ibom State University.

#### IV. RESEARCH AIM AND OBJECTIVES

The aim of this study was to identify evidence of E-Learning and E-Teaching in Nigeria. Specifically, the study inquiries into the case of Akwa Ibom state University (AKSU) as non- inclusive mode of learning will adversely affect online education and advancement of information communication technology at the university educational level. The study builds on recent Afrobarometer data and field survey specifically designed to draw on data provided by the Student’s Perception of E-Learning and E-Teaching in University (SPEN) project in order to explore the levels of student’s use and familiarity with e-learning and e-teaching and in particular, how non- adoption of e-learning and e-teaching facilities account for educational marginalization of university students

The SPEN project was set up to map the response of AKSU students to e-learning and e-teaching against the widely held notion of ICT revolution and the claim that Nigeria is a leading country in sub Saharan Africa (SSA) with the largest number of internet users , (O’Birba, 2012; Alemna, 1999), employing qualitative methodologies. The qualitative approach was shaped with a particular concern to explore the linkages, between field survey and existing secondary data as well as the consequences of the SPEN. The study addressed three specific objectives as follows, to;

- (i) Identify evidence of E-Learning and E-teaching in Nigeria and the specific causal factors that inhibit the process. Drawing on extant literature, the following seven causal factors were included in the survey, lack of computers, limited smart devices, low computer literacy, poor access to the internet, poor power supply, poor funding, unavailability of internet facilities.
- (ii) Ascertain how the seven causal factors inhibiting e-learning and e-teaching cohere to limit on online teaching and learning in Nigeria’s Universities.
- (iii) Explore the potentials of e-learning and teaching in fostering inclusive education at the university level

#### 4.1 METHOD

##### Study Area

Established in 2009, Akwa Ibom State University is a conventional, multi-campus institution. The main campus is located at Ikot Akpaden, Mkpatt Enin Local Government

Area. It adjoins the confluence of Ikot Akpaden - Eastern Obolo road and Eket - Ikot Abasi highway. The next campus is located at Obio Akpa, Oruk Anam Local Government Area, along Abak - Ikot Okoro Road (AKSU, 2023). The university has several directorates including the directorate of ICT. Administrative departments include Vice-Chancellor's Office, Registry, Bursary, University Library, Works Department, Health Services and Students' Affairs Division.

The university has the following eight (8) faculties; Agriculture Sciences, Arts, Biological Science, Engineering, Social Sciences, Educational Sciences, Management Sciences and Physical Sciences (AKSU, 2023). It is a public higher-education institution located in the urban setting of the small city of Ikot Akpaden, Akwa Ibom State. Officially recognized by the National Universities Commission of Nigeria, Akwa Ibom State University (AKSU) is a medium-sized (uniRank enrollment range: 8,000-8,999 students) coeducational Nigerian higher education institution (AKSU, 2023). The University offers courses and programs leading to officially recognized higher education degrees such as bachelor degrees in several areas of study. AKSU also provides several academic and non-academic facilities and services to students including a library, housing, sports facilities, financial aids and/or scholarships, study abroad and exchange programs, as well as administrative services (AKSU, 2023).

In terms of organizational structure of the University, it shares same pattern with other universities in Nigeria. The administrative structure includes: The Governing Council of the University, University Senate and University Congregation (AKSU, 2023). Particularly, one of the important reasons to study at AKSU is the motto of the University, which reads; "Knowledge and Technology for Development". Thus, the study of the dynamics of "technology for development" in contexts associated with e-learning and e-teaching is important for relevant stakeholders including policy makers.

#### **4.1a Procedure**

The purpose of the study was to determine and address the perceptions of students about e-learning and teaching; online teaching and learning, the internet usage, number of students that have access to the internet, which is the basis of e-learning and e-teaching. Survey research design was adopted for the study, which builds on Student's Perception of E-Learning and Teaching in University (SPEN) project, set out to obtain responses from at least 713 (seven hundred and thirteen) students, which constitutes almost 10% of students sampled from a total of eight thousand (8,000) students drawn from the eight faculties of the university. In each faculty, half of the students were recruited from one hundred and two hundred levels and half from three hundred and final year students. Within the participating students, questionnaires were administered by research assistants under examination-like conditions. Participants were assured of anonymity and confidentiality and given the

option not to participate in the project. A total of 713 (seven hundred and thirteen) students participated in the project while a total sub- sample of 335 were the actual participants who returned their questionnaires.

#### **Participants**

The population for the study was all students from the eight faculties of the University namely; Agricultural Science, Arts, Biological Sciences, Engineering, Social Sciences, Educational Sciences, Physical Sciences, Management Sciences. There are a total population of about 8,000 students (AKSU, 2023). The present analyses were conducted on the sub-sample from the Student's Perception of E-Learning and E-Teaching in University (SPEN) Project. Simple random sampling was used to select participants from across the faculties. Questionnaire and interviews were used as instrument for data collection. Data collected were analyzed using the SSPS statistical package. 335 participants self-identified as students of AKSU and also self-identified as male or female. In terms of sex and faculty, 47% were male and 53% were female; 57% were in the sciences and 43% were in the non- sciences.

#### **4.1b Measures**

E-Learning and E-Teaching in Akwa Ibom State University was assessed by the 7-item Student's Perception of E-Learning and E-Teaching in University (SPEN) Index developed specifically for this study. Each item was assessed on a five-point Likert scale: Strongly disagree (1), disagree (2), not certain (3), agree (4), and strongly agree (5). Personal factors (sex and age) were recorded as dichotomous variables: male (1) and female (2).

Lack of computers was assessed by the computer-based education in Nigeria's University Questionnaire (CBENUQ) developed for the study. An example item is: 'Computers are used in teaching and learning in AKSU'. Responses to each item were recorded on a five-point scale: strongly disagree (1), disagree (2), not certain (3), agree (4), and strongly agree (5).

Limited smart devices was assessed by the statement 'there is availability of smart devices such as phones and laptops for e-learning and e-teaching among students'. Responses were recorded on a five-point scale: strongly disagree (1), disagree (2), not certain (3), agree (4), and strongly agree (5).

Low computer literacy was assessed by the statement; 'Majority of the students of AKSU are computer literate (like use of various soft wares, Microsoft, PowerPoint, excel)'. Responses were recorded on a seven-point scale: often (1), always (2), no idea (3), once in a while (4), annually (5), uncertain (6), several (7).

Poor access to the internet was assessed by the statement; Students have free access to internet services in the School for teaching and learning. Responses were assessed on a five-point scale: strongly disagree (1), disagree (2), not certain (3), agree (4), and strongly agree (5).

Poor power supply was assessed by the statement; there is



regular power supply for online teaching and learning’. Responses were recorded on a five-point scale: never (1), strongly disagree (2) not certain (2), agree (4) and strongly agree (5).

Poor funding was assessed by the statement; there is adequate funding for e-learning and e-teaching in AKSU. Responses were recorded as a dichotomous variable: No (1), Yes (2).

Unavailability of internet facilities was assessed by the statement ‘There is availability of internet facilities in AKSU’. Responses were assessed on a five-point scale: strongly disagree (1), disagree (2), not certain (3), agree (4), and strongly agree (5).

**V. RESULTS AND ANALYSES**

The first step in data analysis explored the scale properties of the Student’s Perception of E-Learning and E-Teaching in University (SPEN) Index. In terms of the item endorsement on the sum of the ‘agree’ and ‘agree strongly’ responses, the percentage endorsement of the individual items demonstrate considerable consistency with higher percentage of students affirming that there are limitations to e-learning and teaching in Akwa Ibom State university.

In terms of lack or unavailability of computers 55% agreed strongly that lack of computers adversely affect e-learning and e-teaching, 29% agreed, 8% were uncertain, 3% disagreed, and 5% disagreed strongly. This is in line with the finding of Afrobarometer (2021) that citizens’ readiness to engage in remote learning is primarily shaped by their level of formal education and access to electricity, rather than by their overall level of wealth or geographic location. Across the 34 countries sampled by Afrobarometer in 2016/2018, one in 10 households (11%) owned neither a mobile phone nor a computer. An additional 43% had access only to a mobile phone that can’t connect to the Internet (Krönke, 2020).

**Table 1** Response on unavailability of computers

Item Statement	Responses	Percentage
There is unavailability of computers	agreed strongly	55%
	agreed	29%
	uncertain	8%
	disagreed,	3%
	disagreed strongly	5%
<b>Total</b>	Agreed	84%
	Uncertain	8
	Disagreed	8

Source: Field (2023)

In terms of limited smart devices, 10% had no idea, 30% strongly agree, 8% strongly disagree, 26% disagree, and 26% agree. Thus, majority of the students were of the view that

they have limited smart devices such as smartphones and laptop computers. Such digital inequality as Jantjies (2020) found out undermines e-learning. A major consequence has been lack of inclusive education. This is consistent with the findings of Both UNESCO (1994) and Mowat, (2010 p.231), which highlights that ‘... inclusion is an elusive and much-contested concept’. It is highly complex, and in order for schools to become truly inclusive in their practice, any known conflicting imperatives may need to be addressed. To overcome such educational disparity and inequality, Differences in implementing inclusive education involve ideas about how education should be organized. Göransson and Nilholm (2014) in their study highlight that policy makers, researchers and practitioners perceive inclusive education differently concerning what schools can and should do to help inclusive education succeed. Such scenario therefore calls for inclusive collaboration to overcome the challenges limited smart devices pose on e-learning.

**Table 2:** Response on Limited Smart Devices

Item Statement	Responses	Percentage
There is limited smart devices	No Idea	10%
	Strongly Agree	30%
	Strongly Disagree	8%
	Agree	26%
	Disagree	26%
<b>Total</b>	Agree	56%
	Disagree	34%
	No Idea	10%

Source: Field (2023)

In terms of low computer literacy 12% responded that they do not know how to use computers, 42% responded that they do not have proficiency in use of computers, 8% said they have no idea, 10% responded once in a while, 18% said they at least use the computers once in a year and 10% responded that they were uncertain of the use of computers. The findings are in line with a number of previous studies (Rozina, 2002; Hedge and Hayward, 2004; Eteng, and Ntui, 2009). In their study, Hedge and Hayward, (2004) found out that there is need to redefine roles in University e-learning including a boost in the availability and trainings on the use of computers in order to make e-learning a Life-long learning in a networked world. Camilleri-Cassar (2014) found out that lack of knowledge on computer use contributes to the marginalization of the learner in computer-based education. In a related study, Iloañusi (2007) found out that the ownership of personal computers is the starting point for E-Learning and E-Teaching stressing that without personal computers the implementation of e-learning in higher institutions in Nigeria may not be easy if not impossible.

**Table 3:** Response on Low Computer Literacy

Item Statement	Responses	Percentage
There is low computer literacy	Disagree	12%
	Strongly Agree	42%
	no idea	10%
	Agree	18%
	Strongly Disagree	10%
<b>Total</b>	No idea	10%
	Disagree	22%
	Agree	60%

Source: Field (2023)

In terms of poor access to the internet 10% not certain, 22% agreed, 5% strongly disagree, 8% disagree, and 56% strongly agreed. Thus, majority responded that they have poor access to the internet. This is consistent with a related previous study by Eteng and Ntui (2009) on access to E-learning in the Nigeria university system (NUS) a case study of University of Calabar found out that there is limited access to e-learning facilities by university students. Our findings also corroborate Afrobarometer (2021), which found that on average across 34 countries, one in five adults (20%) have access to both a smartphone and a computer, while 43% only have access to a basic cell phone. In 15 out of 34 countries, at least half of adults have access to a smartphone or a computer or both. Daniel (1996) in an empirical study found out that a key consequence of poor access to the internet is the poor quality and low standard of Nigerian Universities. Stressing that because of the inflexible nature of the traditional teaching method adopted in the higher institutions, the students tend to be exposed to non-technology-based education, in their study, on access to the internet, Chingwete, etal; (2019) found out that a prerequisite for progress in terms of accessibility to the internet is reliable power supply, which they argued is still in short supply across Africa. Electricity power outage is in line with the context of our study where poor electricity supply remains an inhibiting factor to access to the internet including zoom meetings and similar online classes, which undermines the quality of education.

**Table 4:** Response on poor access to the internet

Item Statement	Responses	Percentage
There is poor access to the internet	Not certain	10%
	Agreed	22%
	Strongly Disagree,	5%

	Disagree	8%
	Strongly Agreed.	56%
<b>Total</b>	Not certain	10%
	Agreed	78%
	Disagree	13%

Source: Field (2023)

In terms of poor power or electricity supply 12% responded that power is irregular, 42% responded that they do not have power supply, 8% said they have no idea, 10% responded once in a while, 18% said once in a week, 10% responded that power comes. Kamba (2009:66) identified several challenges of e-learning in Nigeria including electricity and observed that learning in an electronic environment is great challenge in Nigeria because of so many factors. Part of these negative factors included difficulties with computers and Internet access, electricity.

**Table 5:** Response on poor electricity supply

Item Statement	Responses	Percentage
There is poor electricity supply	Agreed	12%
	Strongly Agreed	42%
	No idea	8%
	Disagree	10%
	Strongly Disagreed	18%
<b>Total</b>	No idea	8%
	Agreed	54%
	Disagreed	28

Source: Field (2023)

With regards to poor funding, 74% Yes, and 27% No. Afrobarometer (2021) similarly found uneven access to resources such as electricity and unequal access to and use of smartphones and computers. The results suggest that government efforts to redress widespread inequalities need to be increased drastically to avoid the widening of an education gap among their citizens. A similar finding from an empirical review by Manir Abdullahi Kamba point to same direction. Kamba (2009) found out that out of the 18 universities selected from different specialization areas, that awareness of e-learning among the Universities is very high but investment and commitment to develop an e-learning application is very poor and below expectation according to the study. Ekundayo and Ekundayo (2009) have made a case for the need for more e-learning space in Nigeria by overcoming capacity constraints such as funding among others.



**Table 6:** Response on poor funding

Item Statement	Responses	Percentage
There is poor funding	Yes	74%
	No	26%
<b>Total</b>	Yes	74%
	No	26%

Source: Field (2023)

In terms of unavailability of internet facilities, 56% strongly agreed, 10% not certain, 22% agreed, 5% strongly disagree and 8% disagree. Thus, majority responded that there is access to unavailability internet facilities. Recent studies have identified the problem of unavailability of internet facilities in most Nigerian universities as a constraint to e-learning (See Eteng, and Ntui, 2009; Kamaba, 2009; Afrobarometer, 2021).

**Table 7:** Response on unavailability of internet facilities

Item Statement	Responses	Percentage
There is unavailability of internet facilities	Strongly agreed	56%
	Not certain,	10%
	Agreed	22%
	Strongly disagree	5%
	Disagree	8%
<b>Total</b>	Not certain	10%
	Agreed	78%
	Disagree	13%

Source: Field (2023)

**Table 8** below shows the overall sample size from the eight faculties of the university and the returned questionnaire.

**Table 8:** Sampled Faculties of the University

Selected Faculty	Sample Size	Copies of Questionnaire Returned
Agricultural Sciences	79	30
Arts,	80	31
Engineering	92	47
Social Sciences	99	42

Educational Sciences	100	58
Biological Science	98	47
Physical Sciences	88	43
Management Sciences	77	37
<b>Total</b>	<b>713</b>	<b>335</b>

Source: Field Survey (2023)

## VI. CONCLUSION

This study examined the level of implementation and the use of e-learning facilities in Nigerian Universities for inclusive and quality education, drawing on the case study of Akwa Ibom State University. As shown, e-learning and e-teaching in Nigeria is essential for quality higher educational development. Our analyses, which draw on data from Afrobarometer and field survey data from Student's Perception of E-Learning and E-Teaching in University (SPEN) project developed for the study examined the problems, challenges and benefits of implementing e-learning.

As such, the varied and important roles of e-learning is essential for technological development. Our key finding shows that there is lack of computers or unavailability of computers for students, there is limited internet facilities across the faculties investigated. Overall, there is low computer literacy among the students as most of them are not familiar with recent and updated versions of e-learning soft wares, poor access to the internet continues to undermine e-learning and e-teaching in various ways, the issue of poor funding remains a problem as the students' responses confirmed, it was also established that there is limited smart devices such as smart phones and laptop computers. These problems have serious implications for technology-based education generally and e-learning and teaching in particular. The absence of these technology-based facilities also have implications for inclusive and quality education (SDG: 4).

While there has been a growing recognition of e-learning and e-teaching in educational development, in particular, the way in which e-learning has become an emerging mode of dissemination of knowledge in the current information age, this study identified a further educational implication of e-learning and teaching, namely how it can foster 'inclusive education' and how it can shape the broader context of digital education.

However, there was evidence of several limitations to e-learning such as lack of skills to teach online, insufficient electronic content, limited access to personal computers, lack of access to the internet, and frequent electricity blackout.

Specifically, the study advances two interrelated arguments. First, while a new kind of teaching and learning

has emerged within the global educational system as a result of digitization that has (a) increased the number of the number and type of actors involved in technology based teaching and learning and (b) higher educational institutions in the poor countries are missing out. Drawing on Akwa Ibom state university and a survey and qualitative data, (as explicated) the study demonstrates a wide educational gap as our finding show disparity in e-learning and e-teaching. This educational disparity has obscured the links between inclusive education and outcomes in ways that make the technological context for improving eLearning and e-teaching challenging.

The theoretical and policy upshot of the study is four-fold. First, while acknowledging the evidence and many importance of e-learning, our study nonetheless suggests that there are disparities, particularly with regards to access to the internet. Secondly, a basic prerequisite for most forms of remote learning are technological devices such as smart phones and similar mobile phones and personal computers or laptops, which are in limited supply. Thirdly, poverty has been a major inhibiting factor as majority of the students do not have PCs and smartphones. Fourthly, internet access remains another constraint to e-learning among the various faculties of the university investigated, which inhibits the ability of students to study and share knowledge. Thus, access to internet devices remains limited. These factors are essential for effective e-learning and e-teaching.

## VII. RECOMMENDATIONS

The findings from this study show that e-learning and e-teaching in Nigerian University is faced with several challenges ranging from funding, poor technological know-how, limited internet access, lack of smart devices such as smartphones and personal computers and internet facilities etc. The key stakeholders, which include the government, policy makers, civil society organizations, teachers, learners etc. have a lot of roles to play. This is particularly important at the post COVID-19 pandemic era, which has unfolded the need for more effective e-learning and teaching practices at the university level. Some of the following could be considered recommendations;

(1) The government should as a matter of educational expediency provide personal computers for students which is the starting point for e-learning and teaching.

(2) Provision of internet facilities should be seen as a necessity in Nigerian universities. Our findings show that most students in AKSU are denied access to the internet, which undermines their academic performance and response to online learning and related computer-based learning. Government should create enabling environments for internet-based learning National University Commission (NUC) as well as the National Board for Technical Education (NBTE) should play active roles to ensure that there is provision of internet services across Nigerian institutions of higher learning and in particular, revise the existing

curriculum to prioritize e-learning.

(3) There is need for new awareness to promote digital literacy at the tertiary educational level with regards to the relevance of e-learning and teaching for the improvement of the quality of education in Nigeria. In this context, the government should introduce courses at the university level, which could help promote e-learning and teaching. Thus low computer literacy has been a key inhibiting factor to e-learning and teaching.

(4) Poor access to the internet should be remedied by the government and policy makers. Beyond digital literacy and the introduction of e-learning courses and teaching in the universities, there is need to create access for students to smart devices, such as smart computers and phones. Government could make such provisions to help bridge digital divide and promote e-learning.

(5) Funding is key to e-learning and teaching. The federal Government should provide adequate funding to enable students and relevant stakeholders benefit from e-learning.

(6) The issue of poor power supply has been another inhibiting factor to e-learning in Nigerian Universities. There is need for adequate provision of electricity across Nigeria's institutions of higher learning. This should be a priority for the promotion of e-learning.

(7) There is need for the promotion of information commination technology (ICT) services and facilities as essential for e-learning. In this regard, the government should provide adequate info-tech facilities to Nigeria institutions of higher learning to promote e-learning and teaching.

(8). Government should engage in the training of both the teachers and IT personnel to gain adequate knowledge and skills required to promote e-learning and teaching in the institutions of higher learning. This includes capacity building workshops, short courses, seminars, conferences etc. as well as the introduction of new packages and latest e-learning tools for the benefit of the learners and for the improvement of the quality education (SDG: 4).

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