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Opportunities and Challenges in Distance and Online Education in Covid-19 Era, Lessons for Developing Countries: A Study of Nigeria Students in Various Universities

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ABSTRACT

The emergence of internet technology has brought profound growth in the learning culture of tertiary institutions across the globe. Unfortunately, most third world nations, Nigerian schools are yet to fully embrace this alternate learning process due to issues like poor network system, the financial cost of acquiring data amongst others. However, the effect of covid-19 pandemic globally and the disruptions of social and economic activities occasioned by it has far-reaching implications on societies in general and the educational sector in particular. Thus, based on this note, this study investigated the opportunities and challenges that accrue to distance and online learners during the covid-19 era. The study anchored on the evolutionary theory because it effectively explains the changes in learning pattern during the pandemic. A descriptive survey research design was used in the study. Questionnaire and observation were used as the data collection instruments. Data collected were presented in tables and processed using simple percentages statistical method. Findings indicate that most universities in Nigeria relied on distance and online education during the covid-19 era however, computer literacy and the financial cost of data was a major challenge to students. Therefore, the study concludes and recommends that, school authorities add computer literacy as one of the criteria for admission to encourage computer literacy and that, parents/guardians provide funds for their wards to enable them buy data.

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Introduction

Online education has to do with the acquisition of knowledge, skill and learning as a whole through the internet and through electronic technologies such as; computers, android phones etc. Gokah, Gupta, & Ndiweni, (2015), referred to it as the courses that are delivered electronically through the help of the internet. Distance learning on the other hand has to do with the use of the internet and electronic technologies to bridge the learning gap between a teacher and a student all of which Olukayode (2015)

referred to as the use of ICT to enhance and support learning. This encompasses series of systems that varies from students' using e-mail to access course materials online, to programmes delivered entirely online. It can also be termed as E-learning and may include online classroom session in the form of videos and transcript.

Mahyoob (2020) states that online and distance learning entails a combination of technologies such as information and multimedia aids that alters the traditional or classroom learning style and learning environment. Shaikh (2013) claims that its processes and applications could include computer-based learning, online education, virtual learning opportunities, and digital collaboration. He goes on to say that a combination of hardware, software, media delivery systems, and communication systems, including networking, has transformed the learning process.

A few examples of the hardware include computers, whether they are desktop, laptop, notepad, palmtop, or hand-held, electronic blackboards, electronic writing pads, mice, trackballs, joysticks, light pens on touch screens, optical mark/character recognition, bar code readers, digitising tablets or digitizers, and cursors (pucks) or pens (stylus), as well as printers, scanners, copiers, and fax machines (Shaikh, 2013).

Voice recognition, handwriting recognition, information management programmes, learning materials on removable discs and hard drives, data base management and data processing software, information banks (dictionaries, encyclopaedias, almanacks, references), digital books, educational games, programmes, and languages, skill training, self-learning materials, edutainment (education and entertaining) software, presentations, word processors, spreadsheets, and other software are examples of the types of software (Shaikh, 2013).

Telegraph, conversation (telephony, video telephony, telemetry, teletext, telex, videotext, facsimile, video surveillance), retrieval (videotext, broad band), messaging (voicemail, video mail, electronic mail), etc. are a few examples of communication services (Shaikh, 2013).

All of them make it possible to impart knowledge effectively whenever and wherever, even in the midst of the COVID-19 pandemic. Online and distant learning, according to Sunil (2015), have shown to be the second teacher during times of unrest, epidemic, and natural disasters. They can also take the role of traditional classroom instruction for people who have been domestically displaced and for people with hectic schedules. Olukayode (2015) believed that online and remote learning equips students with the knowledge and abilities necessary to flourish in the current global information economy.

The most popular kind of online and distance learning used in Nigerian schools, according to Ajadi *et al.*, (2008) and Olaniyi (2006), is the use of lecture notes on CD-ROMs that may be played whenever and however the students choose. They also pointed out that certain institutions had started using Internet resources, but that this may not have been adequately maintained due to problems that may have plagued them.

Thus, most students in Nigeria seem to have visited cyber cafés more frequently so as to access Internet facilities as the rate of distance and online education increases continually and is gradually, becoming a fast substitute for the traditional classroom education.

Statement of the Problem

Distance and on line education may have allowed for effective acquisition of knowledge even in the midst of the COVID-19 pandemic that disrupted both social and economic activities. This medium of learning however may not have been as effective as it seem as some students who could not afford the financial requirement of buying an android phone, computer and data were deprived of learning.

Even when this challenge may have been defeated, the government and the network providers may not have provided the infrastructural environment necessary for digital learning. While the poor network issues may have frustrated this learning process, some of the students may not have been computer literates before the outbreak of the pandemic.

Thus, the swift move from the normal class learning tradition to digital or on line learning may have caused some learning discomfort and inconvenience for those who could not adapt to this sudden change in the educational pattern.

Research Question

- What were the challenges of distance and on-line education during the COVID-19 pandemic?
- How was distance and on-line education encouraged by the government and network providers during the COVID-19 era?
- How well did students adapt to distance and on-line education during the COVID-19 pandemic?
- How best can distance and on-line education be encouraged in Nigeria?

Objective of the Study

The study aimed investigating the opportunities and challenges encountered in distance and on-line education during the COVID-19 pandemic so as to make recommendations that will cause the development of the educational sector even in the face of a pandemic like COVID-19.

Theoretical Framework

This study anchored on the transformative learning theory because it acknowledges the transformation that takes place in learning. Jack Mezirow established this idea, which is also known as transformative learning theory. It assumes that students can change their thinking based on new knowledge, dismissing their prior understanding of events in favour of the new ones, leading to the development of new understanding of such situations. They are able to understand things differently as they change thanks to this fresh viewpoint. Base on this theory, the COVID-19 pandemic did not allow for the traditional classroom learning culture. Hence, students had to discard this form of learning culture and adjusted their thinking to the need for distance and on-line education in their learning process.

This learning transformation reduced the reliance on attendance of the teacher/lecturer and other classroom exercises to the reliance on data and other digital learning equipment that aids digital learning. This transformation which may have started small obviously, is becoming a fully blow digital learning process which have also necessitated the need for other learning process like computer education so as to adapt to this current learning trend.

An Overview of Distance and Online Education

Distance and online education is a mode of instruction that enables teachers to share educational resources with their pupils via the internet, intranets, or other network device media (Ompusunggu, 2019). According to Ana and Ahmad (2021), online and distance learning is a digital revolution of the conventional educational system and its content. According to Ajadi, Salawu, and Adeoye (2008), the internet has altered how individuals interact with one another, do business, and receive knowledge. The use of ICTs to improve and support the teaching and learning process is referred to as distance and online education, they added.

Communications systems are typically divided into synchronous and asynchronous categories. Technology used in asynchronous activities includes blogs, wikis, discussion forums, and e-mail. Synchronous actions take place in a virtual conference, school, or chat room. According to Nassoura (2012), students have favourable attitudes regarding online and remote learning. Nassoura (2012) added that this might be the case since it has a favourable effect on both their motivation and self-esteem. Technology proficiency among students is a highly important predictor of attitudes toward ICT, remote learning, and online learning (Liaw & Huang, 2011). Technology availability and dependability have an impact. attitude of students toward using ICTs to help learning (Paris, 2004).

Thus, distance and on-line education entails any form of learning that is done through the internet however, its usage is based on its reliability and the ability of students to access technologies like computers that would enable them access the learning materials on the internet.

Forms of Distance and Online Education

The forms of distance and on-line education according to Shaikh (2013) are;

Computer-Based Learning (CBL): Computer-based learning (CBL) is the practise of incorporating computers as a significant element of the learning environment. The term "structured environment" refers more broadly to a setting where computers are used for educational purposes, and while this might include the usage of computers in a classroom.

Computer-Based Training: Self-paced learning activities available through a computer or portable device are known as computer-based trainings (CBTs). Like reading an online book or manual, CBTs frequently offer content in a linear manner. As a result, they are frequently employed to instruct students in static activities like utilising software or solving mathematical equations.

Web-based training (WBT) and computer-based training (CBT) are frequently used interchangeably; the main distinction is the mode of delivery. WBTs are supplied on the Internet using a web browser, as opposed to CBTs, which are frequently delivered by CD-ROM. In a CBT, learning is typically assessed via multiple-choice questions or other computer-scoring-friendly methods like drag-and-drop, radio buttons, simulations, or other interactive techniques. Online software makes it simple to score assessments and record them, giving end users quick feedback and a completion status.

Users frequently have the option to print certificates for completion records. Beyond the typical learning methodologies from textbooks, manuals, or classroom-based education, CBTs offer learning stimuli. For instance, CBTs provide simple ways to meet continuing education needs.

Students now have more options for learning than just going to classes or reading textbooks, and they can develop their knowledge and abilities in ways that are far more suited to their specific learning preferences. For instance, CBTs provide benefits to visual learning through animation or video that are not normally provided by any other method. Due to the ease with which rich media, such as films or animations, can be quickly integrated to enhance learning, CBTs can be an excellent substitute for printed learning materials.

CBTs also have the advantage of being simply and affordably distributed to a large audience when their initial creation is finished. CBTs, however, also present some learning difficulties. Effective CBTs typically take a tremendous amount of resources to develop. The software used to create CBTs (such as Flash or Adobe Director) is frequently more advanced than a teacher or subject matter expert can handle. Additionally, the absence of human interaction may restrict the kind of assessment that can be conducted and the kind of content that can be delivered. As part of a larger online learning programme that might include involve online discussion or other interactive components, many learning organisations are starting to incorporate smaller CBT/WBT activities.

Computer-Supported Collaborative Learning (CSCL*):* One of the most innovative ideas to enhance teaching and learning with the use of contemporary information and communication technologies is computer-supported collaborative learning (CSCL). However, the idea of collaborative or group learning, whereby instructional methods are created to promote or demand that students work together on learning tasks, has existed for much longer. The majority of current innovations in CSCL have been referred to as E-Learning 2.0. Even though the traditional "direct transfer" model, which is frequently referred to as "E-Learning 1.0," most closely resembles Computer-Based Learning systems, in which the instructor is assumed to be the distributor of knowledge and skills, collaborative learning is generally agreed to be distinct from this model (CBL). The teaching community frequently uses CSCL mediums like blogs, wikis, and Google Docs.

The usage of technology in the typical classroom has significantly increased as a result of the ability to disseminate information in a setting that is getting easier for the layperson. Its use is primarily justified by the statement that it serves as "a breeding ground for new and interesting educational activities."

Collaboration, discussion, and information sharing are made possible between students and teachers in the classroom when Web 2.0 social tools are used. He claims that social networking knowledge, blogs, and wikis are all very helpful in the classroom. After receiving basic training on how to use the technologies, students also reported having more knowledge of and comfort utilising Web 2.0 tools. The collaboration tools also give students the technological know-how they need to succeed in the modern workforce.

Technology-Enhanced Learning (TEL): Technology enhanced learning (TEL) aims to deliver socio-technical innovations for e-learning practises for people and organisations, regardless of time, place, or pace. It also improves efficiency and cost effectiveness. The use of technology to help any learning activity falls under the umbrella of TEL.

Web-based training: In corporate training, technology is primarily utilised to transmit content to the end user, with little contact from (or help from) trainers, peers, or management. This type of E-learning has given rise to a sizable sector that includes content creation, content asset management, instructional design, and learning administration.

Supported Online Learning: The majority of a course's content may be taught in lectures or through text-based distance education in higher education, but the interaction with the instructor, conversations with other students, searching for resources, carrying out collaborative activities, and access to course outlines and supporting materials are all done online. For these reasons, a course is classified as E-learning.

Informal E-learning: There are expanding opportunities for technology to promote informal learning in the workplace outside of traditional "course-based" methods to e-learning. It is connected to knowledge management in a lot of knowledge-intensive enterprises.

Challenges of Distance and Online Education in Developing Countries

Shaikh (2013) stated that the challenges of distance and on line education in developing countries are as follows.

- A lack of infrastructure that affects connectivity, Internet accessibility, etc.
- In many underdeveloped nations, including Nigeria's institutions, there is little or no connectivity, which makes it difficult to access distance learning and online education.
- Equipment that can promote learning is needed for distance and online education, but several Nigerian colleges do not have access to computers, digital technology, or the Internet.
- Software makes it possible for teachers to create educational materials. Some of Nigeria's colleges do not have access to this expensive software, which is needed to support online and distant learning programmes.
- The use of these software, hardware, and connectivity is not taught to people.

Michael (2019) further added that the challenges include; Adaptability Struggle, Computer Literacy, Technical Issues, Diversions of Attention to Other Sites and the Cost of Running Online Education.

Empirical Literature

Olukayode (2015) conducted a study at the National Open University of Nigeria titled "Challenges and Prospects of E-learning." The National Open University of Nigeria was the subject of this study, which utilised a descriptive survey with a questionnaire to explore the difficulties and opportunities of e-learning (NOUN). At the Akure Study Centre of NOUN, 250 students were randomly chosen, with 50 chosen from each of the five faculties, to form the study's sample. Experts in computer science education, educational technologies, and exams and measurement approved the questionnaire. Findings showed that

opportunities included promoting distance learning, extending the boundaries of knowledge, eliminating e-illiteracy, and improving education while challenges included a lack of computers, a lack of Internet facilities, students' lack of access to e-learning facilities and tools, a high cost of software, and erratic power supply (a major challenge). A stable power supply should be guaranteed, and education stakeholders should make sure to buy the necessary information and communication technology (ICT) equipment and make it available for students to utilise, with maintenance and upgrading as needed, according to recommendations. The study also found that e-learning affects students' ICT proficiency.

This study may have investigated the prospects and challenges of E-learning in Nigeria. But this study was conducted before the outbreak of the COVID-19 pandemic and thus, does not reflect the challenges and prospects that may have been encountered during the COVID-19 pandemic. This is a departure from this study which investigated the prospects and challenges of open, distance and E-learning during the COVID-19pandemic.

Cathy, Sarah, Josephine, Janine & Zoë (2016) also carried out a study titled, "Opportunity through online learning: Experiences of first-in-family students in online open-entry higher education" This study examines the experiences of 87 first-generation college students who were able to enrol in a university education because to Open Universities Australia's open-entry, online undergraduate programmes. As part of a larger investigation on first-in-family students, extensive interviews and surveys were undertaken with these students using a qualitative methodology. The importance of opportunity in igniting interest in study as well as the necessity of support and motivation from loved ones, close friends, coworkers, and institutions are among the findings.

Again this study does not reflect the outbreak of the COVID-19 pandemic which this study looked at. Though, it looked at the opportunity of on-line leaning, it failed to look at the challenges and then the opportunities from the Nigerian culture.

The Challenges of e-Learning During the COVID-19 Pandemic Experienced by EFL Learners were further examined by Mahyoob (2020). The goal of the study is to identify the difficulties and barriers faced by English language learners (ELL) at Science and Arts College, Alula, Taibah University, Saudi Arabia, as a result of the COVID-19 epidemic when they convert to online learning in the second semester of 2020. This study's contribution is to examine how new experiences in online learning are going for the students and to determine whether or not virtual learning is actually feasible. This is accomplished by reviewing the survey-based questionnaire replies from 184 students. The validity of the study was examined using a descriptive statistical methodology. The main issues that affect and have an impact on online EFL learning during COVID-19 are determined to be connected to technological, academic, and communication difficulties. The study's findings indicate that the majority of EFL students are dissatisfied with online learning since they have not made the anticipated gains in language proficiency.

This study only investigated a category of student; English language learners and was also, not conducted in Nigeria. However, this research study investigated all students in tertiary universities in Nigeria thereby bridging the gap in knowledge of this study.

Research Methodology

Research Design:

The study assessed the opportunities and challenges of distance and online education during the COVID-19 pandemic in Nigeria. The study focused on tertiary institutions in Nigeria who adopted distance and on-line learning during the COVID-19 pandemic. The descriptive research design was adopted because the study relied on the behaviour, opinion and happenings within the environment.

Sampling Technique:

The researchers adopted a probability sampling technique in selecting the institutions used for the study. The institutions in Nigeria were divided into four clusters; south-south, south-west, south-east and the north. One institution was selected to represent the other institutions in the cluster because; these institutions are homogeneous in terms of adopting on line and distance education during the COVID-19 pandemic and are likely to encounter the same opportunities and challenges having existed within the same environment.

These institutions included, Nnamdi Azikiwe University Awka, Federal University Birnin Kebbi, Delta State University and Lagos State University. The courses in the selected institutions were further stratified into two; arts and sciences so as to effectively assess the opportunities and challenges of those studying calculative courses and theoretical courses.

Sample Size:

While those in history and international relations represented those in arts, those in sciences where represented by those in electrical engineering. The researchers selected students who were in 400 level and 500 level because they started with the traditional classroom education before the outbreak of the pandemic and thus, are in better position to assess the opportunities and challenges of on line and distance education. Respondents were selected using simple random sampling technique so as to give each individual an opportunity of being represented.

The sample population was made up of the entire population of the class according to the course representative of each institution in the department of electrical engineering and half of the population in history and international relations. This comprise of 80 students studying electrical engineering and 150 students studying history and international relations in Nnamdi Azikiwe University Awka, 77 students studying electrical engineering and 115 students studying history and international relations in federal University Birnin Kebbi, 101 students studying electrical engineering and 161 students studying history and international relations in Delta state university and 121 students studying electrical engineering and 198 students studying history and international relations in Lagos State University.

Thus, the sample for this study is 711 students which comprise of 332 students in history and international studies and 379 students studying electrical engineering. In addition with the questionnaire, the researchers also used secondary sources to derive data for this study. Data was presented in tables and analysed using simple percentages. The data used for this study was derived using secondary sources, observation and questionnaire. Data was however, presented in tables and analysed using simple percentages.

Research Findings

Table 1: *What were the challenges of distance and on-line education during the COVID-19 pandemic?*

S/N	Questions	Responses (%)
1.	Computer literacy.	Yes 523 (73.6%)
		No 188 (26.4%)
2.	Financial cost of acquiring data.	Yes 444 (62.4%)
		No 267 (37.6%)
3.	Lack of infrastructures to engage in distance/on-line education.	Yes 312 (43.9%)
		No 399 (56.1%)

Table 2: *How was distance and on-line education encouraged by the government and network providers during the COVID-19 era?*

S/N	Questions	Responses (%)	
4.	Was there any measure put in place by the government to encourage distance/on-line education? If yes what_____	Yes No	0 (0%) 711 (100%)

Table 3: *How well did students adapt to distance and on-line education during the COVID-19 pandemic?*

S/N	Questions	Responses (%)	
5.	Did you adapt easily to the distance/online classes?	Yes No	383 (53.9%) 328 (46.1%)

Table 4: *How best can distance and on-line education be encouraged in Nigeria?*

S/N	Questions	Responses (%)	
6.	Internet service providers should provide better internet connectivity.	Yes No	315 (44.3%) 396 (55.7%)
7.	Government should provide computers for students upon admission.	Yes No	220 (30.9%) 491 (69.1%)
8.	School authorities should ensure that computer literacy is one of the criteria for admission in schools.	Yes No	417 (58.6%) 294 (41.4%)

Discussion

Findings from the studies revealed that all the institution adopted distance and on-line education in other to teach their students during the COVID-19 lockdown and this was an effective way of impacting knowledge to students during the COVID-19 lockdown. Though this was a change from the normal classroom tradition, most of the students were able to adapt to this change perhaps because some of them were already conversant with digital technology.

It was found out that more than half of the respondents knew how to operate computer and that; computer literacy is a major challenge and a necessary skill for the adoption of distance and on-line education. It was found out that finance was also a challenge perhaps because distance and on-line education requires a lot of data to function. Even with this, the government and network providers did not do anything to help these internet users or even subsidizes the price of data or provide the infrastructure needed for the distance and on-line education.

Thus, distance and on-line education can be encouraged if internet service providers provide better internet connectivity, if government provides computers for students upon admission and if school authorities ensure that computer literacy is one of the criteria for admission in schools.

Findings from the Observation

It was observed that most institutions adopted distance and online education during the covid-19 era but most learning were done through whatapp audios and videos. Most lecturers found these patterns more convenient compared to other forms of distance and online learning and this enabled students to learn from wherever they resided and also, when they feel learning was most convenient.

Conclusion

Distance and on-line education is the most recent form of learning however, the outbreak of COVID-19 pandemic has made it necessary to adapt to this form of academic change. Distance and on-line education does not just allow more students to access skills and knowledge from various parts of the world, it tends to give the student the liberty to choose the most convenient time when learning is convenient to learn.

Therefore, there is need for government, students, parent/guidance and the network provider to tackle the challenges that come with this change and queue into this academic development. This will not only improve the educational system in the country but also, make learning more interesting for students.

Recommendations

Based on the research findings, the following recommendations were made.

1. School authorities should include computer literacy as one of the criteria of gaining admission into tertiary institutions.
2. Government should provide computers for students to enable them access distance and on-line education from anywhere around the world.
3. Network providers should ensure the provision of stable network coverage. Also, government and network providers should work together to provide internet infrastructure and also, ensure that data and other internet services are provided at subsidized rate for easy access to academic sites.
4. Students should endeavour to acquire computer skills before their admission into tertiary institutions.

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Conflict of Interest

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