E-Learning and Covid-19 - the Nigerian Experience: Challenges of Teaching Technical Courses in Tertiary Institutions

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Abstract

This paper examines the challenges of teaching technical courses through e-learning in Nigerian tertiary institutions during the COVID-19 pandemic lockdown. The COVID-19 pandemic has widespread after-effect 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. This has not just affected teaching and learning but has posed a big problem in teaching technical courses. Problems associated with teaching technical courses in Nigeria during the pandemic lockdown especially the difficulties in handling practical and technical processes online are discussed. Students and educators at different programmes at the Federal Polytechnic Nekede Owerri, Nigeria will be interviewed to ascertain the most pressing problems. The paper will also proffer possible solutions through its recommendations at the different levels of the concerned stakeholders in the Nigerian education sector.

Keywords[1]

E-learning; COVID-19; Technical Courses; Tertiary Institutions; Students; Educators

1. 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 could be defined 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 [1].

The origin of the Coronavirus disease (COVID-19) is traced to Wuhan in China which started in December 2019. This virus has spread across many nations of the world, so, the World Health Organisation (WHO) declared it a pandemic on 11th March 2020. Since then, the pandemic has caused a shutdown in the educational system of more than 171 countries in the world leaving them with the option of blended and online mode of teaching and learning. Most African countries especially Nigeria were more disadvantaged. The educational institutions in Nigeria have not blended the old-style face-to-face lectures in a classroom setting with e-learning [2].

Although the COVID-19 pandemic has led to the global disturbance of technical education, there is an urgent response to the current

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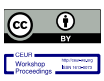

situation that requires a knowledge upgrade for educators on the necessary software and tools needed for teaching technical courses online. For developed countries, e-learning solutions are accelerated and enhanced while it is contrary in some underdeveloped countries [3].

Though e-learning has long been adopted and helped in the establishment of distance and online programmes in the developed countries, only a few private tertiary institutions in Nigeria carry out their academic activities through e-learning, many still find it difficult to use e-learning, while to some, it is still a nightmare because of poor and non-availability of technological infrastructure [4], as well as other challenges which will be discussed in this paper.

The sudden lockdown of different sectors of the country by the government did not allow time for planning remote learning and teaching appropriately. It means that many students and educators are not reaping the modern associated benefits of education, especially in underdeveloped countries [5].

Nigeria is not an exemption to the widespread consequences caused by the COVID-19 pandemic on the education system. The nationwide lockdown by the Government to curb the spread of the virus affected schools resulting in no physical contacts (group gatherings) which instituted a change in teaching and learning. UNESCO in its recent publication estimated that 39,440,016 learners in the country were affected by the lockdown [6].

2. Current State of E-learning in Nigeria Education System

One week after the pronouncement of Coronavirus disease as a pandemic by the World Health Organisation (WHO), the Nigeria Federal Ministry of Education (FME) approved the closure of all schools (Kindergarten, Primary, Secondary and Tertiary) on 19 March 2020 to ensure control of the first wave [7]. With this development, most education administrators tried to adopt different online teaching and learning approaches which unmasked the technological lapses and other problems of e-learning and the education sector in general in most parts of Nigeria.

In the developed and developing countries, online education has played a vital role in the past as it has helped some institutions to overcome the problems associated with educational continuity in the time of crisis [8]. This is seen in countries like Libya whose higher education system was re-built and re-developed because of political crisis, armed conflict, and the destruction that followed the crisis [9]. However, this is not the case in Nigeria where schoolgirls are adopted in the Northern part of the country and the fear of these abductions have put education to a stop with no other means for teaching and learning. Recently, schools are shut in Zamfara and Niger states while dozens of schools have been shut down in Borno, Yobe and Adamawa states because of Boko Haram Insurgency [10].

2.1. Factors Influencing Effective Teaching of Technical Courses during the COVID-19 Lockdown

Due to social distancing measures, an oral interview was conducted by the researchers on a few students and educators at the Federal Polytechnic Nekede, Owerri (a tertiary institution in Nigeria that teaches technical courses) which revealed some challenges which have impaired the teaching and learning of technical courses before and during the COVID-19 lockdown. The numbers of respondents interviewed were five (5) students each from fourteen (14) different programmes and levels. Also, 5 educators with different positions were interviewed from the fourteen departments housing the programmes. The common challenges revealed after the interview are:

i. Non-availability and poor maintenance of IT infrastructures

Investigations show that one of the difficult challenges facing the National Open University of Nigeria (NOUN) and other tertiary institutions is the lack of financial support by the government to build the infrastructure

needed for distance learning education and also the resources to produce teaching and learning resources needed for its registered students, especially the first-year students [11].

ii. Unstable electricity

In Nigerian tertiary institutions, the electricity supply experienced across the country is one of the challenges that has affected online teaching programs. Many Nigerians who live in urban centres where electricity is expected to be stable for 24 hours cannot boast of having it for at least a few hours a day. This has hindered many students from partaking in online teaching whether they are living in the urban or rural areas [2].

iii. High cost of data tariff

The Nigerian digital divide shows the inequality among individuals who have access to regular internet connection and those who do not have access. Regular use of digital devices connected to the internet is seen in the homes of the rich but not the poor because of the high cost of data tariff and alternative means of power supply in such homes [12].

iv. Inadequate IT skills required on the part of educators and learners

The limited exploitation of the e-learning facilities is caused by inadequate training on the part of learners and educators as a result of poor knowledge of ICT facilities and lack of requisite skills [4].

v. Difficulty in handling all practical processes online

This is one of the crucial challenges of teaching technical courses through e-learning. The absence of face-to-face interaction with both educators and learners can be challenging. This is most difficult for students taking courses that are better suited for face-to-face learning, like those with science laboratory apparatuses and other technical courses. Most courses require some percentage of hands-on experience. Students now watch physics laboratory experiments in a digital recording and take quizzes and examinations afterward which does not allow the students to understand the course better. Also, household distractions during e-learning, poor or no internet coverage in some urban and rural areas and lack of discipline on the part of the learner and educator are some of the major challenges facing teaching and learning technical courses online [13].

Tables 1 and 2 below shows the responses to the interview with some students and educators on the choice of their most prevalent e-learning problem.

Table 1

The most prevalent problems of teaching and learning technical courses through E-learning platforms - **Responses from students**

Programme		Related Problems/Number of Responses				
Department	Level	High Cost of Data Tariff	Technical Issues: Devices & Connectivity	Unstable electricity	Poor Internet Network	Inadequate IT skills
EE	HND2	2	-	2	1	-
CS	ND1	2	-	1	-	2
BT	ND2	1	-	2	1	1
CE	ND1	3	-	1	-	1
ARC	HND1	2	-	2	-	1
AT	HND1	1	-	1	2	1
SUG	HND2	2	-	1	2	-
ME	ND1	1	-	1	1	2
EVB	HND1	1	-	3	-	1
FT	HND2	1	-	1	2	1
HMT	ND1	2	-	1	1	1
SLT	ND2	1	-	2	1	1
FIT	ND1	3	-	-	1	1
AD	ND2	1	1	2	1	-

Table 2

The most prevalent problems of teaching and learning technical courses through E-learning platforms - **Responses from educators**

Programme		Related Problems/Number of Responses				
Department	Position	High Cost of Data Tariff	Technical Issues: Devices & Connectivity	Unstable electricity	Poor Internet Network	Inadequate IT skills
EE	Senior Lecturer	2	-	2	1	-
CS	Chief Tech.	1	-	2	2	-
BT	Principal Lecturer	1	1	2	1	-
CE	Assistant Lecturer	2	-	2	-	1
ARC	Chief Tech.	2	1	1	-	1
AT	Senior Lecturer	1	-	3	-	1
SUG	Chief Tech.	2	-	3	-	-
ME	Principal Lecturer	2	-	2	-	1
EVB	Principal Tech.	1	-	3	-	1
FT	Assistant Lecturer	2	-	1	-	2
HMT	Senior Lecturer	1	1	3	-	
SLT	Chief Tech.	1	1	2	-	1
FIT	Chief Lecturer	2	-	2	-	1
AD	Principal Lecturer	3	-	1	-	1

3. Conclusion

This paper has looked into the problems and challenges of teaching technical courses in Nigeria during the global shutdown in the education sector caused by the COVID-19 pandemic. The paper revealed the outcome of the interview carried out by the researchers on students and educators involved in technical courses and programmes at the Federal Polytechnic Nekede, Owerri in Nigeria. Categorically, possible recommendations were made by the researchers to help curb the challenges associated with teaching technical courses via e-learning. Data from the Polytechnic clearly shows that lack of stable electricity, poor internet network coverage, high cost of data tariff, Technical issues with digital devices and lack of IT skills are the major challenges to teaching technical courses in Nigerian tertiary institutions.

4. Strategic Recommendations to Mitigate Challenges

To fully achieve success in teaching technical courses through e-learning in Nigeria, we recommend that the key stakeholders should be fully participatory.

i. Individuals and Families

Individually, students and parents should control the environment at home for e-learning to be more effective. They should support setting the pace, building the appropriate physical space required for e-learning, and continue to encourage their children in the absence of traditional face-to-face teaching and learning. The students should be disciplined while engaged in a class via e-learning.

ii. Institution's Contribution

The institution's management team, departments and units should provide professional development in the area of ICT for educators and learners; and the departments and units should assist in producing e-teaching resource guides. Educators should be trained to improve their skills in computing specifically in areas that will enhance e-learning activities and

in other new educational technologies. Also, while employing staff in any tertiary institution in Nigeria, the computer literacy level of the candidate should be ascertained, and computer application should be made a requirement for all departmental courses. Labour unions in different institutions such as the Academic Staff Union of Universities (ASUU), Academic Staff Union of Polytechnics (ASUP), Senior Staff Association of Polytechnic (SSANIP), Senior Staff Association of Universities (SANU), Non-Academic Staff Union (NASU), Colleges of Education Academic Staff Union (COEASU) and of course the National Association of Nigerian Students (NANS) should help awaken the consciousness of her members on the need for blended learning and a shift in the traditional face-to-face classroom by including ICT training in their yearly activities.

iii. Professional Bodies and Associations

Almost every profession in Nigeria has its professional association with series of yearly activities. Professional bodies in technical disciplines like the Council for the Regulation of Engineering in Nigeria (COREN), the Computer Professional of Nigeria (CPN), the Nigerian Computer Society and others should address the problems of e-learning and gradually work towards eliminating the challenges.

iv. Government

The government should properly fund education by providing appropriate e-learning facilities. They should provide all the incentives to make online studies easy for teaching and learning technical courses. Regulatory bodies such as the National Board for Technical Education (NBTE), National Universities Commission (NUC) and National Commission for Colleges of Education (NCCE) should ensure that IT facilities such as Internet broadbands and network devices are of a good standard for e-learning. Excessive prices on educational facilities should be reduced to make them affordable to students and educators. Since electricity is of great importance in powering computers and other devices, the government should provide appropriate renewable energy like solar, biogas etc.

List of Abbreviations

- AD (Art & Design)
- ARC (Architecture)
- AT (Agricultural Technology)
- BT (Building Technology)
- CE (Civil Engineering)
- COVID19(Coronavirus 2019)
- CS (Computer Science)
- EE (Electrical Electronics Engineering)
- EVB (Environmental Biology)
- FIT (Fisheries Technology)
- FT (Food Technology)
- HMT (Hospitality Management
- HND1 (Higher National Diploma Year1)
- HND2 (Higher National Diploma Year2)
- IT (Information Technology)
- ME (Mechanical Engineering)
- Technology)
- ND1 (National Diploma Year1)
- ND2 (National Diploma Year2)
- SLT (Science Laboratory Technology)
- SUG (Surveying & Geoinformatics)
- TECH (Technologist)

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