



## STUDENT PERCEPTIONS OF ICT-BASED LECTURE DELIVERY DURING COVID-19 PANDEMIC

U. A. Baba<sup>1</sup>, M. I. Ishaq<sup>2\*</sup>, A. Mohammed<sup>3</sup>, I. Halliru<sup>4</sup>

<sup>1</sup>Department of Computer Sciences, Pen Resources University, Gombe, Nigeria

<sup>2</sup>Department of Mechanical Engineering, University of Maiduguri, P.M. B 1069, Maiduguri, Nigeria

<sup>3</sup>Department of Information Technology, Modibbo Adama University, Yola, Nigeria

<sup>4</sup>Department of Civil and Water Resources Engineering, University of Maiduguri, P.M. B 1069, Maiduguri, Nigeria

\*Corresponding author's email address: [m.ishaq@unimaid.edu.ng](mailto:m.ishaq@unimaid.edu.ng)

### ARTICLE INFORMATION ABSTRACT

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The COVID-19 pandemic forced schools to adopt online learning methods. This study investigates the impact of Information and Communication Technology (ICT) usage on student performance in Adamawa State, Nigeria, focusing on Yola North Local Government. A quantitative approach employed a survey questionnaire distributed to 170 participants (students, teachers, and principals). Descriptive statistics analysed demographic profiles, ICT access, online learning satisfaction, and perceived barriers. While many students and teachers agreed they had sufficient IT skills, access to equipment and internet connectivity was limited. Zoom was the preferred online learning tool, but challenges like inconsistent communication, difficulty participating, and limited practical sessions were reported. Barriers included lack of consistent power supply, poor learning environment, and limited access to materials. ICT played a crucial role in continuing education during the pandemic, but significant challenges remain. Improved access to resources, better connectivity, and enhanced online learning practices are essential for optimizing student performance in future disruptions.

### 1.0 Introduction

The novel Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2); the official name for the disease that is caused by SARS-CoV-2 is COVID-19 (WHO, 2023). Covid-19 was first discovered in Wuhan, Hubei province, China in 2019 and is now widespread (Andersen et al., 2020; Simon et al., 2020). Globally, as of October 14, 2023, there have been 777,191,203 confirmed cases of COVID-19 including 6,961,014 deaths, reported to the World Health Organization (WHO) (WHO, 2023).

Due to the surge in the number of COVID-19 confirmed cases around the world, Governments took several measures to prevent or limit the spread of the pandemic and most educational institutions were closed down as a way to curb the spread of the disease (Gonzalez et al., 2020). This closure of educational institutions led to an unprecedented impact on the educational system in a lot of developed as well as developing countries like Nigeria (Kapasia et al., 2020).

The ability to respond to the closure of schools depends largely on the level of development, for example, by April 2020, 86% of children in Primary education had been out of school in countries with low human development as compared to 20% in countries with very high human development (De Giusti, 2020).

With the advancement of technology; to meet the challenges faced instead of the COVID-19 pandemic, a lot of learning institutions across the globe adopted the use of new technologies and appropriate Information and Communication Technology (ICT) resources for teaching and learning (Adarkwah, 2021). Hence, one of the effects of the pandemic can be the academic performance of Secondary School Students in developing countries, as for most students, using ICT resources for online learning is a strange phenomenon (Hashemi, 2021).

The spread of COVID-19 has caused fear, and anxiety, and traumatized citizens around the world since its inception in 2019, and it is spreading everywhere across the globe with most countries putting preventive measures in place to curb or limit the spread of the disease (Ekpenyong et al., 2020). These measures include lockdown and travel restrictions, quarantine, social distancing, wearing of facemasks and so on. If someone develops the symptoms, he or she is advised to remain in isolation for the good of others. This case leads to panic, and people want to be more and more aware of the situation in this crisis (Crawford et al., 2020).

The number of confirmed cases of Covid-19 keeps rising across the globe with the first case of COVID-19 reported in Nigeria by the Federal Ministry of Health on 27 February 2020. This was the case of an Italian citizen who works in Nigeria and returned from Milan, Italy to Lagos, Nigeria on the 25th of February, 2020 (Agbele and Oyelade, 2020). In Nigeria, as of 14 October 2023, there have been 266,675 confirmed cases of COVID-19 with 3,155 deaths (NCDC, 2023).

While many sectors have been seriously affected by the pandemic, Academia was amongst the first few sectors that faced a rapid shutdown of all its activities. The COVID-19 pandemic has caused the largest disruption of education in history, having already had a near-universal impact on learners and teachers around the world, from pre-primary to secondary schools, technical and vocational education and training (TVET) institutions, universities, adult learning, and skills development establishments (Rajhans et al., 2020).

By mid-April 2020, 94 per cent of learners worldwide were affected by the pandemic, representing 1.58 billion children and youth, from pre-primary to higher education, in 200 countries (De Giusti, 2020). COVID-19 has triggered a substantial revolution, imposing a lot of challenges in the educational system ranging from primary school, and secondary school, to higher education in Nigeria and globally.

A large number of schools were already closed for several months even before the Nationwide school closure instead of the pandemic, some, because of severe insecurities, strikes or climatic hazards (De Giusti, 2020). The pandemic can be seen as an opportunity to restructure our longstanding educational systems and establish better and updated practices in academia, suitable for the present technologically-advanced generation of learners (Ntibi and Effiong, 2021).

According to the National Policy on Education, the main goal of Secondary education is to prepare the learner for higher education and specifically to provide the learner with the necessary knowledge to be able to successfully live in the modern age of Science and Technology (Ntibi and Effiong, 2021). After the Nationwide closure of schools, both public and private schools have mostly switched to online learning as a result of the pandemic.

In Adamawa State, all public Secondary Schools started learning through television and radio stations (Gotel TV, ATV, Gotel Radio and ABC) while some private schools such as Aliyu Mustapha Academy, Ahmadu Ribadu College, etc, resorted to the use of various ICT tools like WhatsApp, Telegram, ZOOM Meetings, YouTube, etc. to aid learning during the pandemic.

Before the COVID-19 pandemic, the world was already facing formidable challenges in fulfilling the promise of education as a basic human right and after about four months of the global crisis, we have started realizing that COVID-19 is here to stay and we need to find solutions to move on. This crisis can be looked upon as an opportunity to reconstruct our longstanding educational systems and establish better and updated practices in academia, suitable for the present generation of learners (De Giusti, 2020; Rajhans et al., 2020).

One of the effects of the pandemic can be the academic performance of Secondary School Students in developing countries, as for most students, using ICT resources for online learning is a strange phenomenon (Hashemi, 2021). Adamawa state government adopted online learning as a means to curb the spread of the pandemic in the state. There are limited studies that have been published to assess the effect of ICT usage on the academic performance of Secondary School students during the pandemic.

Hence, this study is aimed at investigating the effect of ICT usage on the academic performance of Secondary School students in Adamawa State during the Covid-19 pandemic by evaluating the level of access to ICT resources by the Students and Teachers, the perceived effectiveness of online learning during the pandemic and also determining the perceived barriers to online learning in lieu of the COVID-19 Pandemic.

## **2.0 Literature Review**

### **2.1 Education during the Covid-19 Pandemic**

The Covid-19 pandemic presents a damaging effect globally. Specifically for health as well as all spheres of life like the economy, education, supply chain, and social security containing an overwhelmingly negative effect on the enjoyment of social, economic and cultural rights. This led the Global Campaign for Education to reaffirm its position on the need to respond to COVID-19 to protect human rights in the short, medium and long terms (Espino-Díaz et al., 2020; Lorente et al., 2020)

The COVID-19 pandemic has affected the educational systems worldwide, leading to the near-total closures of schools, universities and colleges all over the world. Most governments around the world have temporarily closed educational institutions, terminated all public events, and placed travel restrictions in an attempt to reduce the spread of the pandemic and bring it under control (Lorente et al., 2020; Meo et al., 2020).

The UNESCO Global Monitoring Education Report for 2020 has stated that the COVID-19 crisis is an opportunity to focus all efforts on developing policies for educational inclusion and has invited interested organizations to an initiative to ensure and provide continuity of education during the global emergency caused by COVID-19. The central idea is that organizations should commit to providing educational services and materials with open and free access. The World Bank, and the Organization for Economic Cooperation and Development (OECD) are some of the numerous organizations that are taking a lot of measures to turn the crisis into an opportunity to improve the education system for both students and teachers in developing countries (Chatterjee and Chakraborty, 2021; Lorente et al., 2020).

According to Lorente et al. (2020), “to truly the measure impact that COVID-19 is having and will have on education in the short-, medium-, and long-term, it is necessary to consider some determining contextual elements. Firstly, the lack of schooling and gender bias. Secondly, this entire crisis falls on top of a previous global learning crisis with 617 million students aged between 12 and 14, who, at the end of their primary education, have serious learning deficiencies in reading and mathematics.

Thirdly, there is weakness built into the “international architecture for education”, as claimed by Burnett, which is the “set of international agencies and institutions, official and unofficial, public and private, that receive international resources to support the educational development of countries” that, together with governments in developing countries and donors, are failing the world with out-of-school figures which have been stagnant for years and with a learning crisis that still needs to be resolved. From his point of view, it is, among other things, a problem of a lack of effective leadership, a lack of definition in global educational priorities, and insufficient funding for the development of educational systems in low-income countries, especially in sub-Saharan Africa. Besides this, the pandemic will aggravate its causes and make solutions more difficult”.

Simon et al. (2021) explored the impact of the COVID-19 lockdown and relevant vulnerabilities on capability well-being, mental health and social support in Austria. The authors used a cross-sectional survey to get responses about peoples’ experiences during the COVID-19 lockdown and concluded that the negative capability well-being, mental health and social support impacts of the COVID-19 lockdown were strongest for people with a history of mental health treatment. Social distancing is one of the measures of hygiene which have proven to be an effective reactions to the threat of increasing numbers of COVID-19 cases and fatalities (WHO, 2023).

## **2.2 ICT Usage and Student Performance**

In the most fragile education systems, the interruption of the school year due to the COVID-19 pandemic will have a disproportionately negative impact on the most vulnerable pupils, it could negatively affect the performance of students and their general interest in academia (De Giusti, 2020; Ntibi & Effiong, 2021) If the students are not engaged productively, their presence at home can muddle the economic situation of parents, who must find solutions to provide care or compensate for the loss of school meals.

School closures could promulgate youth involvement in crimes, loss of interest in learning, poor academic performance, increase in students' debts, extension of graduation time and can ruin academic dreams of students amongst other negative factors (Merkl-Davies, Doris M.; Brennan, 2001; Pozo et al., 2021). In response to school closures, UNESCO (2023) recommended the use of distance learning programs, social distancing and open educational applications and platforms that schools and teachers can use to reach learners remotely to limit the disruption of education.

Dozens of independent schools in Australia were shut down, while some moved to online classes. Students learn from home, while some schools were opened but implemented strong measures to ensure a social distancing strategy. The opening of schools amidst the coronavirus pandemic was backed by the Australian government to enhance teaching and learning (Priyadarshini et al., 2020).

According to De Giusti (2020), “relatively few countries are monitoring the effective reach and use of distance learning modalities. However, estimates indicate variable coverage: distance learning in high-income countries covers about 80–85 per cent, while this drops to less than 50 per cent in low-income countries. This shortfall can largely be attributed to the digital divide, with the disadvantaged having limited access to basic household services such as electricity; a lack of technology infrastructure and low levels of digital literacy among students, parents, and teachers”.

In Nigeria, COVID-19 has spread across the thirty-six (36) states of the country including Abuja, and the Federal Capital Territory (FCT) which caused all educational institutions to be closed down for a very long period. After a unanimous decision was reached at a virtual consultative meeting between stakeholders on the educational system regarding the

resumption of school activities, exit classes of Nigerian Secondary Schools resumed on August 4, 2020, and the students were given two weeks to prepare for the West African School Certificate Examinations (WASCE) which started on August 17, 2020 (Ntibi & Effiong, 2021).

### **2.2.1 Online Teaching and Learning during Covid-19**

Ensuring learning continuity during the time of school closures became a priority for governments across the globe, many of which turned to ICT, requiring teachers to move to online delivery of lessons (Almaiah et al., 2020; De Giusti, 2020). In areas with limited connectivity, governments have used more traditional distance learning modalities, often a mix of educational television and radio programming, and the distribution of print materials (Agbele and Oyelade, 2020; Lorente et al., 2020)

Due to the closure of all the academic institutions across the country, the Ministry of Higher Education (MoHE) of Afghanistan for example, decided to compensate for the teaching process through an online teaching system. Therefore, the MoHE of Afghanistan designed and administered an online platform system called the Higher Education Learning Management System (HELMS) to rapidly respond to the COVID-19 crisis in the educational context. The transformation process of face-to-face teaching began with online teaching where thousands of teachers and students were allowed to employ this platform. Since then, public universities across the country have experienced online teaching as a new phenomenon during the COVID-19 pandemic where there was no prior preparation for such an emergency case (Hashemi, 2021).

For this purpose, Hashemi (2021) investigated the effects of COVID-19 on the academic performance of Afghan students and their level of satisfaction with online teaching. The author also explored the significant difference in academic performance and the level of student satisfaction with online teaching across genders from both public and private universities in Afghanistan. The author used descriptive and inferential statistical methods of analysis and found that COVID-19 hurts the academic performance of Afghan students and also discovered that the students were highly dissatisfied with online teaching during the pandemic.

Hence, after the investigation, Hashemi (2021) presented a lot of suggestions to the MoHE and other stakeholders to enhance both the quality and capacity of online teaching during unexpected emergencies and, to stimulate the student's academic performance so that their level of satisfaction with online teaching will improve. The author recommended that the MoHE and all the involved stakeholders provide online teaching applications, professional training for online teaching applications and devices, Wi-Fi facilities, cheap internet packages, and other virtual resources. The author further recommended that teachers should provide interactive and comprehensive online services along with supportive guidance and constructive feedback that could enhance the student's level of satisfaction with online teaching.

According to De Giusti (2020), school closures have necessitated changes in – and in some cases caused serious disruptions to – how students are evaluated. In most countries, exams have been postponed; in a few, they have been cancelled; and, in others, they have been replaced by continuous assessments or alternative modalities, such as online testing for final exams. In Nigeria, in close coordination with health, environmental, education, and school safety experts, guidelines were drafted to safely reopen schools and learning facilities for quality teaching and learning (Ntibi and Effiong, 2021).

To cover up the loss of education during lockdown, many schools have offered distance learning or online courses to students. For example, in Nigeria and by extension in Adamawa State, all public Secondary Schools started learning through television and radio stations (Gotel TV, ATV, Gotel Radio and ABC) while some private schools such as Aliyu Mustapha Academy,



Ahmadu Ribadu College, etc, resorted to the use of various ICT tools like WhatsApp, Telegram, ZOOM Meetings, YouTube, to aid learning during the pandemic.

### **3.0 Methodology**

The research was carried out on Secondary Schools within Yola North Local Government of Adamawa State and focused on investigating the effect of ICT usage on the academic performance of Secondary School students in Adamawa State during the Covid-19 pandemic. This was achieved by evaluating the level of access to ICT resources by the Students and Teachers, assessing the perceived effectiveness of online learning during the pandemic and also determining the perceived barriers to online learning in lieu of the COVID-19 Pandemic. Due to the limited time and resources, the research was restricted to only a few Secondary Schools within Yola North Local Government of Adamawa State.

#### **3.1 Research Design**

The study adopted a quantitative research design, in which a survey questionnaire was adapted to assess the effect of ICT usage on student's performance. The assessment is in both public and private secondary schools in Yola North during the COVID-19 pandemic. The obtained data was analysed through descriptive statistical analysis. The research employed descriptive statistics using SPSS version 26. This is to identify the frequency and percentage of the respondents' demo-graphic profile, as well as to evaluate the level of access to ICT resources by the Students and Teachers during the pandemic. Furthermore, this is also to measure their level of satisfaction with online teaching and to determine the perceived barriers to online learning in lieu of the COVID-19 Pandemic.

#### **3.2 Population and Sampling Participants**

According to the Local Government Educational Authority, as of the time of this research, Yola North Local Government Area consists of eighty-three Private Schools (83) and thirty-seven (37) Public Schools.

##### **3.2.1 Population of the Study**

The schools as well as participants are randomly selected from One Hundred and Ten Secondary Schools and an estimated number of four hundred and twenty-nine thousand (429,000) students. The participants from each selected school include both teachers and students to be able to achieve the stated aim and objectives of the research.

##### **3.2.2 Sampling Technique**

The selection process of the sampling was employed through the use of a multi-stage sampling technique involving stratified and simple random sampling techniques to ensure that every sample has an equal chance of being selected in the study and the choice of Yola North metropolis is due to its large size as compared to another district within the Local Government Area.

##### **3.2.3 Sample Size**

The instrument used for data collection is a questionnaire shared directly with 170 people from the target population at random, consisting of 15 teachers and 155 students (to assess the effect of ICT usage on student's performance in both public and private secondary schools in Yola North during the covid-19 pandemic).

### **3.4 Data Collection Instrument**

The data collection instrument is a questionnaire which consists of two sections: Section A is designed to obtain the demographic data of the respondents, while Section B is designed to obtain information using the five-point Likert scale for measuring responding opinion level of

agreement/disagreement ranging from Strongly Agree to Strongly Disagree which will aid in answering the research questions.

### 3.5 Data Analysis

The process of data analysis began - after the questionnaires were retrieved from the respondents through the Statistical Package of Social Science (SPSS) software, version 26. The descriptive statistical analysis was used to compute the percentage, and frequency of the respondent’s demographic profile as well as to evaluate the level of access to ICT resources by the Students and Teachers during the pandemic. Also, it was used to measure their level of satisfaction with online teaching and, to determine the perceived barriers to online learning in lieu of the COVID-19 Pandemic.

## 4. Results and Discussion

### 4.1 Results

The demographic information obtained is presented in Table I.

**Table I:** Demographic Information and Availability of ICT Tools

Variables	Frequency	Percentage (%)
Gender		
Male	66	77.6
Female	19	22.4
Category of the Respondent		
Principal	2	2.4
Student	48	56.5
Teacher	32	37.6
Student & Teacher	3	3.5
Affiliation School		
Private School	38	44.7
Public School	47	55.3
Do You have sufficient IT Skills or Computer Knowledge (IT Skills)?		
Yes	68	80
No	17	20
You have sufficient equipment and facilities (computer/laptop/Internet/software) to participate in online lectures		
Yes	53	62.4
No	32	37.6
Total	85	100

In Table I, the demographic information of the study shows that more males participated in the study, that is 77.6% were male and 22.4% were females. The categories of the participants involve the principal, students and teachers. The study shows that more students participated with 56.5% of the total participants. Most of the students are from public schools and most of the participants say they have sufficient ICT skills which is 80% of the participants. 62.4% of the participants say that they have sufficient equipment such as the internet, laptop, internet and software for online lectures.

Table 2 below shows the tools mostly used for online teaching and learning popularly called ICT Tools which include social media platforms such as WhatsApp, Telegram, Facebook, Zoom, Google Classroom etc. The participants in this study mostly use Zoom (35.3%) followed by WhatsApp (18.8%) and 17.6% use Google classrooms for their online learning.

**Table 2:** Tools Used in Online Learning and Teaching

		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Google Classroom	15	17.6	17.6	17.6
	Other	4	4.7	4.7	22.4
	Other   Team app	1	1.2	1.2	23.5
	Other   Teams	1	1.2	1.2	24.7
	Telegram   Other	1	1.2	1.2	25.9
	WhatsApp	16	18.8	18.8	44.7
	WhatsApp   Google Classroom	2	2.4	2.4	47.1
	WhatsApp   Google Classroom   Telegram	1	1.2	1.2	48.2
	WhatsApp   Other	1	1.2	1.2	49.4
	WhatsApp   Zoom	1	1.2	1.2	50.6
	WhatsApp   Zoom   Google Classroom	1	1.2	1.2	51.8
	WhatsApp   Zoom   Google Classroom   Telegram	1	1.2	1.2	52.9
	WhatsApp   Zoom   Google Classroom   Telegram   Other	1	1.2	1.2	54.1
	WhatsApp   Zoom   Telegram	1	1.2	1.2	55.3
	Zoom	30	35.3	35.3	90.6
	Zoom   Google Classroom	5	5.9	5.9	96.5
	Zoom   Google Classroom   Telegram	3	3.5	3.5	100.0
	Total	85	100.0	100.0	

**Table 3:** ICT Skills for Online Teaching and Learning

You have sufficient computer knowledge and IT skills to conduct your online teaching and learning class?

		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	37	43.5	43.5	43.5
	Disagree	11	12.9	12.9	56.5
	Disagree   Strongly disagree	1	1.2	1.2	57.6
	Neutral	11	12.9	12.9	70.6
	Strongly agree	21	24.7	24.7	95.3
	Strongly agree   Agree	1	1.2	1.2	96.5
	Strongly disagree	3	3.5	3.5	100.0
	Total	85	100.0	100.0	



Table 3 shows that the participants agree that they have sufficient computer knowledge and IT skills to conduct online teaching and learning classes. 37% of the participants agree that they have enough knowledge to participate in online teaching and e-learning. 11% were neutral and only 14% said that they do not have enough knowledge to conduct online teaching and e-learning.

**Table 4: Training on Online Lectures**

		Do you prefer to have training on conducting online lectures?			
		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	41	48.2	48.2	48.2
	Disagree	3	3.5	3.5	51.8
	Neutral	16	18.8	18.8	70.6
	Strongly agree	21	24.7	24.7	95.3
	Strongly agree   Agree	1	1.2	1.2	96.5
	Strongly disagree	3	3.5	3.5	100.0
	Total	85	100.0	100.0	

The participants were asked if they preferred to have online lectures. The majority of the participants agree that 41% of the participants agree that they prefer online classes and 3.5% of the participants say they strongly disagree.

**Table 5: Poor Communication with Lecturers during Online Classes**

		Inconsistent/poor contact and communication with the lecturers?			
		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	37	43.5	43.5	43.5
	Disagree	8	9.4	9.4	52.9
	Neutral	23	27.1	27.1	80.0
	Strongly agree	16	18.8	18.8	98.8
	Strongly disagree	1	1.2	1.2	100.0
	Total	85	100.0	100.0	

The participants were asked if there was inconsistent and poor communication with the lecturers. Most of the participants agree that there is poor communication with the lecturer and only 10.6% say that there is good communication with the lecturers.

**Table 6: Difficulty to Participate in Online Lectures**

		It is difficult to participate in the online classes?			
		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	32	37.6	37.6	37.6
	Disagree	21	24.7	24.7	62.4
	Neutral	13	15.3	15.3	77.6
	Neutral   Disagree	1	1.2	1.2	78.8
	Strongly agree	15	17.6	17.6	96.5
	Strongly disagree	3	3.5	3.5	100.0
	Total	85	100.0	100.0	

Table 6 shows that 37.6% of the participants agree 17.6% Strongly agree that it is difficult to participate in online classes, 24.7% disagree, 13% are neutral and only 3% strongly disagree.

**Table 7: Level of Motivation during Online Classes**

		Students are motivated during online lectures?			
		Frequency	Per cent (%)	Valid Percent	Cumulative Percent

Valid	Agree	34	40.0	40.0	40.0
	Disagree	19	22.4	22.4	62.4
	Neutral	18	21.2	21.2	83.5
	Strongly agree	12	14.1	14.1	97.6
	Strongly disagree	2	2.4	2.4	100.0
	Total	85	100.0	100.0	

In Table 7, the participants of the study were asked if they were motivated during online lectures. The responses show that 40% of the participants agree, 22.4% disagree, 22.2% are neutral, 14.1 Strongly Agree and 2.4% strongly disagree. This implies that most participants agree that they were motivated during online lectures.

**Table 8: Questions during Online Lectures?**

Students ask questions or clear doubts during online lectures.

		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	42	49.4	49.4	49.4
	Disagree	13	15.3	15.3	64.7
	Neutral	14	16.5	16.5	81.2
	Strongly agree	11	12.9	12.9	94.1
	Strongly disagree	5	5.9	5.9	100.0
	Total	85	100.0	100.0	

In Table 8, The participants were asked if they were able to ask questions during online lectures. The result of the study shows 49.4% of the participants ask questions when they are in doubt. 16.5% were neutral and 15.3% of the respondents disagreed. Therefore, this implies that the majority of the participants agree that they ask questions when in doubt.

**Table 9: Feedback during Online Class**

Students give feedback during class online.

		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	47	55.3	55.3	55.3
	Agree   Disagree	1	1.2	1.2	56.5
	Disagree	11	12.9	12.9	69.4
	Neutral	15	17.6	17.6	87.1
	Strongly agree	11	12.9	12.9	100.0
	Total	85	100.0	100.0	

The participants were asked if the students give feedback during classes online. 55.3% of the participants agree that students give feedback during online classes 1.2% disagree and 17.6 are neutral.

**Table 10: Students' level of comprehension during online lectures**

The students were able to comprehend what was taught to them

		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	50	58.8	58.8	58.8
	Disagree	8	9.4	9.4	68.2
	Neutral	17	20.0	20.0	88.2
	Strongly agree	10	11.8	11.8	100.0
	Total	85	100.0	100.0	

The respondents were asked if students were able to comprehend what was taught to them. 58.8% of the participants agree, 9.4% disagree and 20% are neutral. This implies that the majority of the participants agree that the students comprehend what was taught to them.

**Table 11:** Difficulty in Conducting Practical

Difficulties in conducting Practical		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	30	35.3	35.3	35.3
	Disagree	2	2.4	2.4	37.6
	Neutral	15	17.6	17.6	55.3
	Strongly agree	38	44.7	44.7	100.0
	Total	85	100.0	100.0	

In Table 11, 35.3% of the participants agree that there is difficulty in conducting practical, 2.4% disagree and 17.6% are neutral. This implies that the majority find it difficult to conduct practical.

**Table 12:** Online Environment takes more time

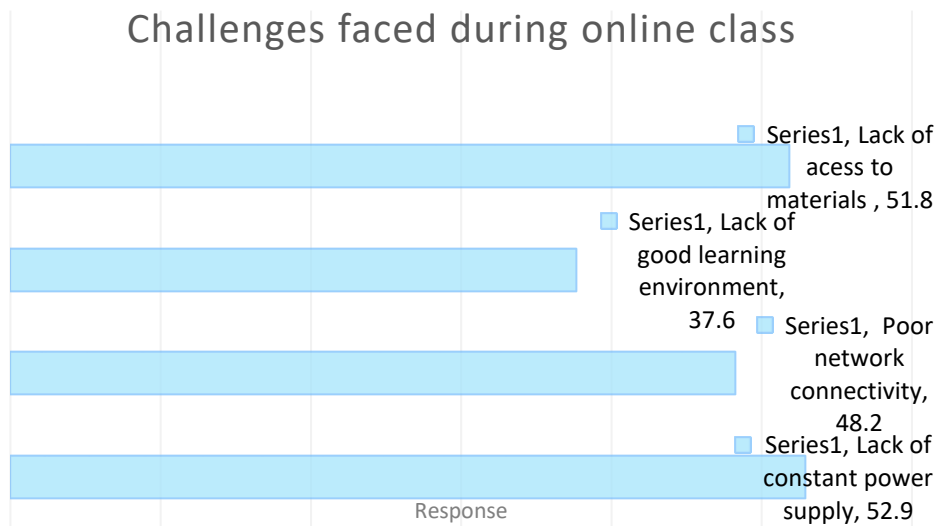
The online environment simply takes more time.		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	32	37.6	37.6	37.6
	Disagree	17	20.0	20.0	57.6
	Neutral	10	11.8	11.8	69.4
	Neutral   Disagree	2	2.4	2.4	71.8
	Strongly agree	20	23.5	23.5	95.3
	Strongly disagree	4	4.7	4.7	100.0
	Total	85	100.0	100.0	

The majority of the participants (37.6%) agree with 23.5% strongly agreeing that the online environment takes more time, 20% disagree 4.7% strongly disagree and 11.8% being neutral. This implies that the majority of the respondents believe that the online environment takes more time.

**Table 13:** Lack of Constant Supply

Lack of constant power Supply		Frequency	Per cent (%)	Valid Percent	Cumulative Percent
Valid	Agree	33	38.8	38.8	38.8
	Disagree	6	7.1	7.1	45.9
	Neutral	4	4.7	4.7	50.6
	Strongly agree	41	48.2	48.2	98.8
	Strongly disagree	1	1.2	1.2	100.0
	Total	85	100.0	100.0	

In Table 13, 38.8% of the respondents and another 48.2% believe that there is a lack of constant poor supply, 7.1% disagree, 4.7% are neutral and 1.2% strongly disagree while the rest agree.



**Figure 1: Barriers to Online Learning**

Figure 1 shows that some of the barriers to online learning are the lack of power supply, lack of a good learning environment, lack of access to materials as well as lack of good internet connection. The respondents were also asked if it was difficult to get immediate feedback on what was taught. 44.7% of the respondents agree that it is difficult to get feedback on what was taught. 20% disagreed and 15.3% were neutral.

## 5. Conclusion and Recommendation

This study explored the impact of Information and Communication Technology (ICT) on student performance during the COVID-19 pandemic in Yola North, Nigeria. This was carried out using quantitative research design in which a survey questionnaire was adapted to assess the effect of ICT usage on student’s performance. While ICT played a crucial role in keeping education afloat, challenges remain. Despite positive perceptions of online learning’s potential, limitations in resource access, technical issues, and pedagogical considerations hinder its effectiveness. Limited access to equipment, internet, and consistent power supply poses significant barriers. While platforms like Zoom are popular, concerns regarding inconsistent communication, difficulty participating, and limited practical sessions highlight areas for improvement. Lack of conducive learning environments and limited access to materials further complicate online learning implementation. To optimize the impact of ICT-based education, we need to prioritize equitable access to resources. This means ensuring affordable devices, reliable internet connectivity, and essential software for all students and teachers. Investing in improved power infrastructure is also crucial for sustained online learning activities. On the pedagogical side, targeted training and support for teachers are essential. Equipping them with the skills to deliver engaging and interactive online lessons is key. Additionally, developing contextually relevant online learning materials that align with local curriculum and address cultural specificities is crucial. Exploring alternative content delivery methods for practical subjects is also necessary to ensure effective online learning across all disciplines. By addressing these challenges and recommendations, we can move towards harnessing the full potential of ICT for education, ensuring all students benefit from effective online learning experiences, even in challenging circumstances.

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