

University of Tartu

Faculty of Social Sciences

Institute of Education

Curriculum: Educational Technology

Abimbola Christine Italoye

THE EFFECT OF COVID-19 ON SECONDARY SCHOOLS IN ABUJA,
WITH ITS IMPLICATION ON THE USE OF TECHNOLOGY

MA Thesis

Supervisor: Associate Professor Emanuele BARDONE

Tartu, 2023

ABSTRACT

The pandemic known as COVID-19 touched every sphere of society, including schooling. The old face-to-face teaching style had to give way quickly to online instruction. This study examines the impact of the pandemic and technological use on secondary schools in Abuja.

The study's findings demonstrate the necessity of introducing technology into the classroom. The advantages of using technology to teach cannot be emphasized enough. Because it is the pen and paper of our time and the lens through which we see much of our world, technology needs to be present in every classroom and in the hands of every student and teacher, according to David Warlick.

However, the emphasized obstacles to using technology in education are significant. Internet connectivity issues, inadequate power supply, and skilled teachers.

Keywords:

Education, Technology, COVID-19

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1.INTRODUCTION

My experience during the pandemic inspired me to research this subject. The pandemic shut down every system in the world including schooling.

Nigeria reported its first COVID case in February 2020. The numbers continued to rise, with Lagos State suffering the most closely followed by Abuja, the capital city.

According to reports, governments' preventive measures to halt the spread of COVID-19 led to the closure of schools and colleges with more than 1 billion students and 575 million faculty members in around 188 nations worldwide. (UNESCO 2020a). Every sector of the world was affected by the pandemic with education not being an exception. The global education system has been significantly impacted by the COVID-19 epidemic. Due to isolation, adopting technology has been viewed in many parts of the world as the best (if not the only) way to keep operating educational systems at this time. Many colleges and institutions were compelled to lock their doors and switch to virtual learning as a result of the virus's spread. Several issues, including access to technology and internet connectivity, the efficacy of remote learning, and the pandemic's effects on students' social and emotional well-being, have been raised by the abrupt change to remote learning for students, teachers, and educational systems.

Global educational systems have been impacted by the closure of educational establishments as a preventive measure against COVID-19 proliferation. Even while many educational institutions throughout the world have already started to move their courses online, many developing countries have had a tough time making the transition from traditional classroom settings to online learning.

On March 19, 2020, the federal government of Nigeria ordered that all schools be closed countrywide, with the exception of pupils in their last year of basic and secondary school who were getting ready for their exams. As of June 2020, all schools have been closed, keeping the children at home and affecting their educational development. The secondary schools in Abuja and the entire educational system were impacted by this. Afterward, the government started teaching kids the curriculum via radio and television. For students and teachers in Abuja, having access to technology and internet connectivity was a major concern because many students in

underprivileged and rural regions did not have access to the tools and connections needed for distance learning. This caused these students' educational possibilities to become even more unequal.

Schools in Nigeria followed the traditional method of teaching before the COVID era. Schools used a face-face approach to teach in Primary and secondary schools. Although a number of private schools took exception to that, they used a couple of gadgets while teaching. Primary and secondary schools that were government owned did not allow their students to bring in gadgets, phones, or computers to the school. (Uchenna, Maximus, Charity, and Chiedu 2021). With school closures, as a result of the pandemic, teachers and learners were helpless about how to continue learning in the face of the pandemic.

The findings from this study will provide insight into the effects of COVID-19 on secondary schools in Abuja and inform policymakers on the necessary steps to take to improve the use of technology for learning purposes. It will contribute to the ongoing discourse on the role of technology in education and highlight the importance of adequate investment in technology infrastructure for effective learning, particularly during times of crisis. It will also examine how technology has been applied after the pandemic

1.1 BACKGROUND STUDY

Education in Nigeria is more of a public enterprise that has witnessed the government's complete and dynamic intervention and active participation (Federal Republic of Nigeria, 1981). Education in Nigeria is looked after by the Ministry of Education. It was based on a 6-3-3-4 system which was introduced to replace the 6-5-4 system. Education in Nigeria is compulsory between the ages of 6 and 15, generally from grade one to nine. The language of instruction is English or a local language for the first years. (Doris Dokua, 2022). The mandatory school consists of primary and junior secondary Education. This is free under the Universal Basic Education (UBE) program introduced by President Olusegun Obasanjo in September 1999. (Amanghionyeodiwe, L.A & Osinubi, T.S. 2006) The formal educational system begins at this level. It offers a six-year program for kids between the ages of 6 and 12. When it comes to determining whether a student will succeed or fail in school, this level is regarded as the one that is officially acknowledged as the whole system.

The goal involves being ready for a wide education with a focus on acquiring lasting and practical literacy, numeracy, and effective communication skills. (Birabil, S.T, Ogeh. O.W.O 2020)

Children undergo secondary education, which comes after primary school but before post-secondary education. According to the 6-3-3-4 system of education, secondary education lasts six years but is divided into two stages: a junior secondary school stage and a senior secondary school stage.

Each secondary school stage will last for three years. The official junior secondary education age in Nigeria is age 12 to 14. (Doris, D 2022) In 2019, 7.4 million students were enrolled in both private and public lower-secondary school institutions. (Doris Dokua,2022). Nationwide, there were 13 thousand public schools for over five million students.

The junior secondary school combines academics with pre-vocational training. It is universally available, free, and required. Students are taught fundamental subjects that will help them advance their knowledge and abilities. After this, students will proceed to senior secondary school. The senior secondary school has undergone numerous alterations. Here, a student chooses whether to enroll in science class, art class, commercials, or any other course that the school provides based on his performance and career preference. In Nigeria, Senior secondary education has a three-year study period and a formal entrance age of 15. At age 18, tertiary or postsecondary education begins. Several types of upper secondary school may be the next step after lower secondary school. Senior secondary, vocational, technical, or business schools are available to students.

This indicates that classrooms are divided at this level and that students take elective subjects. Regardless of the field they picked at this level, students must still take some fundamental studies. They are prepared to take a GCE O' Level mock exam in SS2 in order to get ready for the Senior Secondary Certificate Examination (SSCE) in SS3, however, it is not required. At SS3, students take SSCE or one of its similar exams, such as NECO. (Flash Isaac,2022)

After senior secondary school, students go further into tertiary education. Universities, polytechnics, and institutes of education all fall within the category of tertiary education in Nigeria. There are about 170 public and private universities in Nigeria that provide undergraduate and graduate degree programs in a range of subject areas. (Doris. D.S 2023). The vocational and technical education programs offered by polytechnics and colleges of education are created to give students real-world experience and practical training.

The socioeconomic system of Nigeria's educational sector is associated with household income, just like other socioeconomic sectors. Private and public schools are not the same. Higher socioeconomic class individuals attend private schools, while those who attend public schools are from the lower class. (Thomas. A.O, Pius. U.A, 2021).

Those with poor socioeconomic status attend Public schools. Children who attend public schools are unable to participate in long-distance learning or online courses due to inadequate infrastructure, a lack of electricity, etc. (Thomas. A.O, Pius. U.A, 2021).

1.2 COVID IN NIGERIA

Coronavirus disease 2019 (COVID-19) is a contagious illness brought on by coronavirus 2 that causes severe acute respiratory syndrome. (SARS-CoV-2). (Wikipedia). In Wuhan, China, in December 2019, authorities discovered the first recorded case. (Page J, Hinshaw D, McKay B 26 February 2021) The illness soon spread throughout the world, causing the COVID-19 pandemic. It frequently manifests as headache, cough, exhaustion, breathing issues, loss of smell, and loss of taste. Saniasiaya J, Islam MA (April 2021). In Wuhan, China, the first human transmission occurred (Hui, D.S 2020, Chin, T. D. 2020) Since then, person-to-person contact has been the primary method of viral transmission. Close contact with an already infected person is the most typical method of virus transmission. People who have COVID-19 cough or exhale little droplets containing the virus. These droplets can go into the mouth or nose of a person who doesn't have the virus, which can spread the sickness (Parry, J.C, 2020). Although it is possible for someone without symptoms to spread the virus, the disease is most contagious when a person's symptoms are at their worst (Lanry, MD 2020). Infection-carrying droplets can also land on neighboring items or surfaces, and when nearby users contact those surfaces or pick up the things, the infection is spread.

The Federal Ministry of Health in Nigeria announced the first COVID-19 case on February 27, 2020. An Italian national employed in Nigeria who traveled from Milan, Italy to Lagos, Nigeria on February 25, 2020, was the subject of this case (Maclean, R, Dahir, AL. 2020)]. Since that time, both in Nigeria and throughout the world, there have been an increasing number of confirmed cases of illness. 13 nations—the United States, United Kingdom, South Korea, Switzerland, Germany, France, Italy, China, Spain, Netherlands, Norway, Japan, and Iran—had travel restrictions imposed by Nigeria due to high viral prevalence. (Tolulope, A & Oyelade ,E.2020)

1.3 IMPACT OF COVID ON THE NIGERIAN EDUCATION SYSTEM

The Federal Ministry of Education, through the Permanent Secretary in the Ministry, ordered the immediate closure of tertiary institutions, secondary schools, and primary schools across the nation on March 19th, 2020 due to the outbreak of the disease in the nation. (Tolulope, E & Oyelade, E. 2020). This was done as part of measures to contain the spread of COVID-19 in Nigeria. Additionally, interstate travel was restricted, markets were locked, religious gatherings of more than 10 people were prohibited, and social events including parties, ceremonies, club meetings, etc. were suspended (Parke, C 2020 & Burke, D 2020). Following a government decree, all public and private schools must close their doors. There are significant disparities in the education system that the pandemic exposed. While some urban private schools interacted with their students via online teaching, many students who were less privileged or in rural areas were left out. (UNESCO, 2020a).

The pandemic greatly impacted all the sectors of life not exempting Education. Schools were shut down in Nigeria in order to contain the spread of covid. However, this protracted school closure period significantly impacted school children's growth and skill development (Owusu-Fordjour, C & Koomson, C.H 2020). It is important to remember that education in schools is adequate, but when schools close, students miss out on possibilities for academic development and growth. For underprivileged students who typically have fewer or no educational opportunities outside of school, a school shutdown has severe negative effects (UNESCO,2020c).

The school closure had an impact on both the learners and the teachers. Exams for students were either canceled or postponed due to disrupting learning processes during the COVID period. For instance, the 2020 West African Senior School Certificate Examination was postponed indefinitely by the West African Examinations Council (WAEC) in Nigeria. (The Cable, 2020).

During the time when schools were closed, a lot of teachers—especially those working in private schools—did not get paid. (Tolulope, A & Oyebade, E.2020) . As a result of this, some of them were unable to meet the needs of their family (Bao, X et al 2020). Many teachers suffered from psychological issues like worry, dread, anxiety, sadness, and insomnia as a result of the COVID-19 pandemic, which made it difficult for them to focus and concentrate (Di, P.G 2018)

When schools closed, many of them transitioned from face-to-face instruction to online learning to ensure that the students were not missing completely. However, this was not the same with Government owned schools where little or nothing was done during this period. A number of

students from the Public schools were left to be on their own, although some states in Nigeria organized classes via television and radio. Many students were left struggling with issues like poor learning results, lack of access to technology and the Internet, and lack of participation. Many secondary schools were not adequately prepared for the transition.

Due to the epidemic, education was disrupted, putting children in danger of child labor, early marriage, unplanned pregnancies, and exploitation, among other things.

When school closures end, the number of kids dropping out tends to rise, and the majority of underprivileged pupils may choose not to return (Baytiyeh, H 2018)

1.5 CHALLENGES OF EDUCATION IN NIGERIA

The issues with education in Nigeria are endless, as is the scope of solutions.

When issues are left unaddressed, sometimes they resurface as new issues. In reality, a few of these issues are still a chorus in our educational anthem. (Birabil, S.T, Ogeh .o.W.O 2020)

Underfunding is one of the main issues in Nigerian education. Nigeria is one of the nations that has not yet implemented the United Nations' recommendation to devote 26% of its budget to education. (UNESCO). This has a significant impact on the nation's educational system.

Teachers in Nigeria aren't driven to work as hard as they can. They are not only underpaid, but they also fall short of their counterparts in other respects. Perhaps, as the saying, they are patiently awaiting their reward in heaven. (Mahmud. J.2020) In addition to their low pay, teachers occasionally do not get their expected promotions.

The educational system and its curriculum are always changing, and it is rare for anyone to detect any improvements. This argument was eloquently highlighted by Abdulgafar and Edinyang (2013:p.66), who stated that "the purpose of the change is to improve the standard of living for the good of (the) common man."

Many Nigerian schools lack basic resources and equipment. This includes a shortage of instructional tools for teaching and learning as well as pupils learning in deteriorated buildings such as dormitories, recreation centers, and workshops. (Edeh, S.C 2022). A number of Government schools (the Public) lack major basic school equipment, their laboratories are not well equipped and the classrooms are often overcrowded without proper seats for students

The majority of educational reform initiatives fall short, in part because of leaders' conflicting political ideologies. Additionally, there is a lack of continuity from one government to the next. Policies often change from government to government before they are fully implemented. A

number of private schools that do not achieve the requirements for accreditation are nonetheless permitted to operate.

Another problem facing the educational sector in Nigeria is its management. Until policy recommendations are passed as Acts of the national assembly through the provision of legal backing, the management of education in Nigeria at all levels may continue to suffer from ineffectiveness. On occasion, the management of public schools is in conflict with the functions of the federal, state, and local governments in education.

Teachers at Nigerian schools frequently have months' worth of unpaid wages owed to them. This prompted teachers' unions to go on strike repeatedly throughout the years, which in turn decimated the educational sector. Godwin, P.E (2022.)

“We need technology in every classroom and in every student and teacher’s hand because it is the pen and paper of our time, and it is the lens through which we experience much of our world” David Warlick. One cannot emphasize enough how important technology is to Education Since at least Nigeria's independence, the educational system in that country has been undervalued and neglected. Despite claiming to care about the country's development, successive governments have downplayed its significance. In actuality, education is the manure that promotes development, but it does not exist in a vacuum. Godwin P.E (2022).

Solid education systems will be demonstrated by a study of the educational systems of developed and developing countries worldwide. To their own advantage, the majority of these nations have sorted out what works and what doesn't. On the other hand, Nigeria continues to operate on the same framework that was put in place not long after independence. Godwin P.E (2022). Outside of the classroom, the usage of mobile phones has significantly shrunk the world. The internet has improved connectedness across regions, time periods, and cities. It will also function within the classroom if it is successful outside of it.

1.6 BENEFITS OF TECHNOLOGY IN EDUCATION

One of the most significant and frequently discussed topics in modern educational policy is the use of technology in teaching and learning. The majority of education experts concur that Technology has enormous promise for enhancing teaching and learning when used appropriately. (Adeosun, 1998). It quickly rose to become one of the fundamental pillars of contemporary society, where Online collaboration between teachers to share resources and ideas is possible.

Teachers can instantly communicate with people around the globe, correct any errors in their work, and provide their students with the information they need to succeed. (Amuda, K 2021)

Although in-person interactions between students and teachers are fairly common, some students will perform better when allowed to work at their own pace. Here, online education becomes a respectable choice (Amuda, K. 2021)

The educational outcomes of students are improved by technology. after incorporating the appropriate tools into the teaching and learning techniques. On the part of the teachers, technology can help to track the students' progress and makes teaching easier. It enables students and teachers to access information at any anytime and anywhere. Technology has also helped to make learning more fun.

Incorporating technology into secondary schools has the potential to enhance Nigeria's educational system and result in pupils with greater aptitude. There is a common conviction that technology can and does empower teachers and students, according to Onwuagboke (2015), shifting the primarily teacher-dominated learning and teaching process to one that is student-centered increased learning benefits for students would naturally follow from this transition, providing and enabling chances for the development of their creativity, problem-solving skills, informational literacy, communication skills the chance to grow in their capacity for creativity, problem-solving, informational reasoning, communication, and other higher-order thinking talents. (p.3) The roles and relationships of students and teachers are thus altered by technology, with teachers acting as guides and facilitators and students taking ownership of their learning results.

1.7 USE OF TECHNOLOGY IN NIGERIAN SCHOOLS

Hennessy, Harrison, and Wamakote (2010) found in their study that most secondary school teachers in Nigeria view technology as helpful and as facilitating teaching and learning. These educators know how technology can help them advance the field of education. Students will have more chances to work together and the quality of instruction will be considerably improved. The ability to collaborate with others who may not be geographically close to them is crucial in the new digital environment. It is possible to exchange ideas and acquire insights from people at anytime, anywhere, regarding schoolwork. (Emmanuel, A .2016)

The proper integration of technology into secondary schools in Nigeria is hindered by a number of problems. Since I have been exposed to the school system in Estonia, I am more conscious of these challenges. I have a benchmark against which to measure the Nigerian system, and I have

come to conclude that there is still much work to be done. The statement made by Kwache (2007) that "the digital divide between advanced and developing countries, particularly in Africa, are well established" is one that I wholeheartedly concur with.

The use of technology is greatly affected by the lack of infrastructural development, especially electricity. Without a reasonably reliable power source, there can be no successful integration of technology in secondary schools in Nigeria. Technology equipment depends on electricity, and a fluctuating or excessive supply could harm it. Due to the lack of electricity, many rural secondary schools have been unable to take advantage of technology. (Aduwa-Ogiegbaen & Iyamu, 2005). Infrastructure, it goes without saying, is a major barrier to the adoption of technology in secondary schools in Nigeria. No surprise the Nigerian National Policy for Information Technology placed a high priority on the goal of providing leadership, direction, and vision to drive the development of IT infrastructure. (2000)

According to Anene, Iman, and Odumah (2014), the cost of ICT equipment in developing countries might be a barrier to reaching a wide target audience and ensuring that everyone can afford this service. Despite ardent attempts by government organizations, non-governmental organizations, business organizations, and individuals to donate computers to as many schools as possible, a sizable portion of the schools continue to be unable to buy computers for use by their students. (Matthew, Joro, & Manasseh, 2015)

Connectivity has also been a major issue in Nigeria. The most difficult technical challenge in Nigeria is establishing dependable, cost-effective internet connectivity. (Aduwa-Ogiegbaen & Iyamu, 2005). In schools, internet connection is insufficient or unavailable, and bandwidth is constrained. According to studies and observations, there are few effective internet facilities for surfing at schools. (Ajayi, & Ekundayo, 2009) It is impossible to load and navigate the web with ease. Due to connectivity and bandwidth restrictions, downloading by students of interesting instructional materials is always delayed, frustrating, and has an impact on the learning process. (Anene, Iman, & Odumah, 2014)

Another significant obstacle to the use of technology and the integration of technology in secondary education is finding qualified teachers. Since the majority of instructors lack technical knowledge, they view technology's use in education as strange. Technology is not prioritized in any of the channels used for basic teacher training, according to NA-Allah and Jabaka (2014).

Additionally, secondary schools lack the staff members needed to set up, operate, and maintain technological systems. According to Aduwa-Ogiegbaen and Iyamu (2005), there is a severe lack of skilled workers in the fields of application software, operating systems, network administrators, and local technicians to maintain and fix computer equipment.

This study will examine how COVID-19 affects the educational system, paying particular attention to secondary schools. I also want to examine how technology has been applied after the outbreak.

1.8 AIMS OF STUDY AND RESEARCH QUESTION

This study aims to investigate the pandemic's effects on Abuja's secondary schools and how they may affect technology use. With an emphasis on technology accessibility and internet connectivity, remote learning's efficacy, and the pandemic's effects on students and teachers, it will look into the benefits and challenges of remote learning. The pandemic's effects on the future of education and the use of technology in the classroom will also be taken into account in the study

The purpose of this study is to answer the following questions

1. To what extent was the technology used in Secondary schools in Abuja before the pandemic?
2. What are the challenges posed by the COVID-19 pandemic in secondary schools in Abuja?
3. How has the Covid -19 affected the move from the traditional method of learning to remote learning in Abuja Secondary schools?

2.1 METHODOLOGY

This study is centered on the goal of determining how the secondary schools in Abuja, Nigeria, have been impacted by the new coronavirus (COVID-19) pandemic and what effects this has on the use of technology in these schools. It will also explore how the epidemic affected the educational system, the difficulties teachers face, and how technology has been used to promote learning. This study will also examine the usage of technology in secondary schools in Abuja during the pre-covid, covid, and post-covid eras.

For this study, I used a focus group to gather the method for gathering qualitative data and a questionnaire (see Appendix A) as the tool for the interview. For this research, a focus group interview was conducted to better understand how technology was used in the pre-covid, covid, and post-COVID eras.

According to Wikipedia, a focus group is a group interview involving a small number of demographically similar people or participants who have other common traits/experiences.

Focus groups are a form of group interview that capitalizes on communication between research participants in order to generate data. (Kitzinger, J. 1995). Focus groups, which typically have six to nine participants, are described by Martyn Denscombe (2010) as being made up of small groups of people who are brought together by a researcher to examine attitudes and perceptions, sentiments, and thoughts around a specific issue. By inviting a group of people to exchange their views about certain subjects with a moderator to facilitate the discussion, the focus group could produce information in a rather quick and cost-effective way. (Krittinee, N.2019).

2.2 POPULATION AND SAMPLING

The research work was carried out in Abuja, Nigeria. There are six area councils in Abuja, namely Abaji, Abuja Municipal Area Council (AMAC), Bwari, Gwagwalada, Kuje, and Kwali, According to FCT Secondary Education Board (2021/2022), Bwari has 13 public schools, Gwagwalada 13, Kuje 13, Abaji 10, Kwali 9 and AMAC 30. The schools have a total of 88,721 students. (FCT Sec. Edu. Board 2021/2022). According to the Federal Capital Territory

Secondary Education Board (2019), there are over 300 privately owned secondary schools in Abuja.

A purposeful sample of secondary school teachers from six local municipalities participated in the study. Two groups were formed from each local municipality, one group from a private school and another from a government (Public) owned school. Four to six teachers will participate in each group. There will be a minimum of three focus groups created, one for each participant group. Eight to ten people will participate in each focus group.

These were chosen for their capacity and eagerness to deliver in-depth information on the use of technology pre-covid, during covid, and post COVID era. The researcher also ensured that she was able to get the participant's consent and also respected their privacy and confidentiality.

Identification codes were assigned to the participants, for Abaji (ABJ 1 & 2), AMAC (AMC 1&2), Bwari (BWA1&), Gwagwalada (GWA 1&2), Kuje (KIJ 1 & 2) and Kwali (KWA 1&2).

The teachers who participated in this work had 5 to 10 years of teaching experience.

PARTICIPANTS	AGE	GENDER	SCHOOL TYPE	YEARS OF EXPERIENCE
ABJ 1	30-35	MALE	PUBLIC SECONDARY	6
ABJ 2	25-30	FEMALE	PRIVATE SECONDARY	6
AMAC1	40-45	FEMALE	PUBLIC SECONDARY	8
AMAC2	35-40	FEMALE	PRIVATE SECONDARY	9
BWA1	45-50	FEMALE	PUBLIC SECONDARY	10
BWA 2	40-45	FEMALE	PRIVATE SECONDARY	9
GWA1	30-35	MALE	PUBLIC SECONDARY	7
GWA 2	35-40	FEMALE	PRIVATE SECONDARY	8

KUJ 1	35-40	FEMALE	PUBLIC SECONDARY	8
KUJ 2	25-30	MALE	PRIVATE SECONDARY	5
KWA1	25-30	MALE	PUBLIC SECONDARY	6
KWA2	30-35	FEMALE	PRIVATE SECONDARY	6

TABLE 1. Participants Demographics

2.3 FOCUS GROUP

For the purpose of this study, a focus group interview was used to collect data. This method was chosen because it allowed me to collect data from a number of people. A focus group, according to Denscombe (2007), consists of a small group of individuals—typically six to nine—who are gathered by a trained moderator (the researcher) to discuss attitudes, perceptions, feelings, and ideas related to a subject. A collection of individual study responses often does not yield as much relevant information as this interactive conversation approach. (Alexis, A. 2019)

The questionnaire was divided into three parts, the Pre-COVID era, COVID era, and Post COVID era. Pre- COVID era had 5 questions, COVID era had 6 questions while post COVID era had 8 questions.

3.1 RESULTS

The impact of COVID-19 on secondary schools in Abuja was examined in this study. It looked into how technology was used before, during, and after COVID. The data are divided into themes, which makes it easier to understand how much technology was used during the various eras. Direct citations and examples are used to support the data, which provides an in-depth assessment of the experiences, opinions, and concerns expressed by the participants.

3.2 THEMES AND SUBTHEMES

The themes for this study were derived from interviews and research questions, resulting in the use of pre-determined or a priori themes in qualitative analysis. (Sang and Sitko, 2015; Creswell, 2007; I.E. Seidman, 1998). For the purposes of data analysis, three predetermined themes were chosen, and these topics assisted in the extraction of a number of sub-themes from the interview data (see Figure 1).

Figure 1

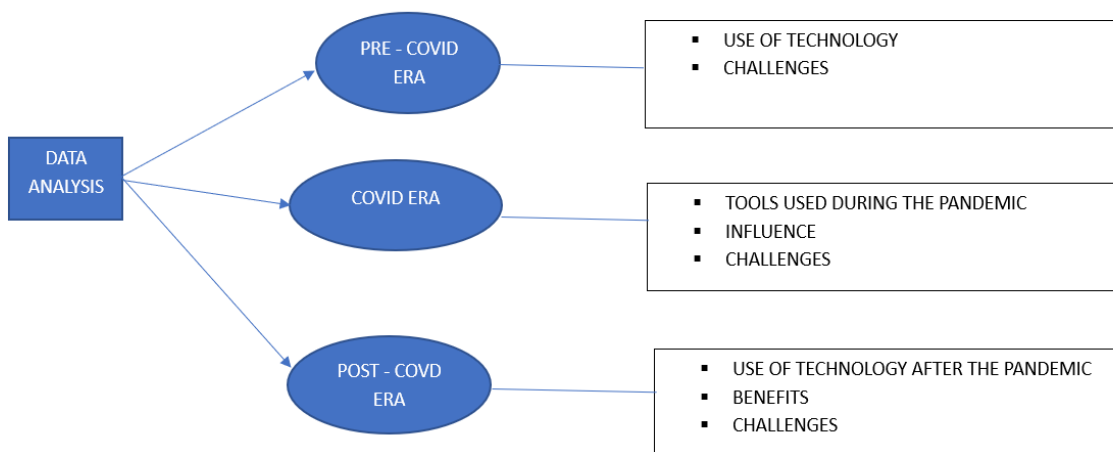


Figure 1 shows the relationship between themes and subthemes generated from the interview data

TABLE 2

RESEARCH QUESTIONS	MAIN THEMES
To what extent was the technology used in secondary schools in Abuja before the Pandemic	Pre covid era
What are the challenges posed by the COVID-19 pandemic in secondary schools in Abuja	Covid era
What have we learned about technology integration in Abuja Secondary schools since the COVID -19 era	Post Covid era

Table 2. Relationship between research questions and themes.

As seen in Figure 1, three themes were chosen for this study: the COVID era, the Pre COVID-era, and the Post COVID era. These themes were selected to address the study's research questions. Other topics that are linked to the previously indicated subject emerged throughout the analysis of the interview data. These themes are known as sub-themes.

3.3 THEME 1

3.3.1 PRECOVID ERA

This is the time period preceding the c- 19 epidemic. The questions in this section were designed to determine how much technology was used to aid their teaching prior to the epidemic. The first inquiry was to determine how much technology was utilized to aid teaching prior to the pandemic. The Public Secondary schools adopted the face- face traditional method of teaching, while their peers in private-owned institutions employed technology more sparingly. The teachers' personal experiences were used prior to the COVID period. The first question encourages teachers to discuss how much technology they utilize. Their personal experiences were used to generate

answers. A teacher's experience in a public secondary school differed from that of their colleagues in private schools.

Little or no technology was adopted in Government Secondary schools.

'We used little or no technology before COVID. Platforms like whats App and Zoom were used occasionally', ...the government provided computers for us but we do not have enough
'Another respondent said, the chalk and blackboard are what we are used to, we only have ICT classes in my school where we teach students about the different types of computer, we do not have any practical sessions... (KUJ1)

While their private school peers used computers to prepare lesson plans and notes. Basic applications such as Word, Excel, Power point, and Corel Draw© were taught to students. Some private schools also used tablets to provide students with notes and homework.

A teacher mentioned they used Google Meet, and Google Classroom to teach their students. Another shared a similar experience saying, Technology is relatively used in our school, we watch instructive videos and frequently use them to prepare students' results'. 'Technology was used to facilitate learning, we used projectors to show instructional materials' (AMAC 2)

Teachers faced a number of challenges that hampered the seamless use of technology in the classrooms. The main issue in all of the schools where teachers were questioned was the lack of power and internet connection which made it difficult for students to use computers on a regular basis.

As a result of the multiple problems they face, the majority of instructors claimed they did not use technology. In a few public schools where these computers are used, the student-to-computer ratio is so high that the vast majority of kids can do little or nothing with the system.

'In my school, we have a lot of computers, however, these computers are just there because we do not have access to electricity in my school' (BWA 1)

Since there was no internet connectivity, several schools just taught the fundamentals of using a computer to their students.

'There is no technology used in my school, we use chalk and board for learning' GWA1

The capacity to use technology to support their teaching was also one of the difficulties experienced by the teachers who were employing it. Numerous educators claimed they were unfamiliar with many of the applications that may be used in the classroom.

One said that using technology for him is a 'no' because it is expensive. 'There are just a few computers in our school, we just use them to teach the students the basics of a computer, another said, some teachers also voiced concerns about the costs associated with adopting technology, citing the difficulty in getting data for online classes. 'It's expensive for me to get data for online classes for my students' (KWA 2)

Before COVID, although in a limited capacity, there existed access to contemporary technology and resources. Some public schools taught their students the fundamentals of using Microsoft Word, Excel, and Corel Draw. Data processing and Information Communication Technology (ICT) were courses taught at several schools.

'ICT is taught to our students as a subject, and they learn about computer classification, ICT applications, and computer upkeep' (AMAC 2)

However, some also complained about technical know-how

'A teacher said he is not very conversant with the use of computers so it's a bit challenging to teach my students. While speaking to justify this another respondent said she wished she knew more about technology and that teachers really need to be educated on teaching with technology. We do not have anyone to help us to manage the few computers in our school, we only have an ICT teacher who comes twice a week to teach students basic computer skills.' (KWA 1)

Before the COVID period, programs like Google Classroom, Zoom, and Google Meet were widely used. A few instructors also displayed their courses on screens and had their students see educational videos. Some respondents said they used Google Classroom, and ClassDojo with their students

3.4 THEME 2

3.4.1 COVID ERA

When the epidemic hit Nigeria in 2020, the government issued orders that all secondary schools be closed to help limit the disease's spread. The schools had to shift from traditional face-to-face instruction to online instruction. Most public schools had to rely on what the government provided: teaching via radio and television. Some teachers also used Whatsapp©© to communicate with their students. Because most public schools relied on face-to-face instruction prior to the pandemic, there was little teaching throughout the period. Only a few teachers shared notes and tasks with their students via their phones.

Sharing their experiences, some said their students did not do anything during the COVID era. While students who were supposed to learn from the radio and television broadcast could not do so because of the power supply, they were not able to participate as much as they wanted. However, a few students relied on the day-to-day broadcast provided by the government on the radio and television. A teacher went further to say she was required to send notes to her students via her phone.

The majority of teachers in private schools used Google Docs, Google Meet, Google Classroom, and Whatsapp© with their students and to provide homework. Teaching was accomplished by sharing notes via Google Docs and Whatsapp©. Zoom meetings were also held. This was ineffective because there were frequent complaints about power outages and poor connectivity.

Transitioning was quite challenging since most schools were not used to the remote learning method. They were not prepared for the change.

Some students lacked access to phones and laptops. Some teachers claimed that they did not have the means to teach as much as they would have loved to. Another respondent gave a similar experience saying, she did not teach because she did not have the means of doing so. How do I teach a child who has no access to a phone or tablet? a respondent said. It was challenging teaching my students during the pandemic, a lot of them did not even own a phone, and some complained of not having an internet subscription' (KWA 1).

'As much as I wanted to teach my students during COVID, I did not have the means of doing so'
(KUJ 1)

In response to the question about the advantages and disadvantages of using technology to teach during the pandemic,

"A respondent said Teaching with the aid of technology during the pandemic was very beneficial for her, she also said she learned a lot of things. In a further explanation, another said that the use of technology has been beneficial based on the fact that they do not need to see their learners before passing information to them. He also said it made learning easier."

Other respondents said they enjoyed it and it was beneficial for them

'COVID-19 made us switch from in-person meetings to online sessions, technology made it possible for teachers to keep track of their pupils' progress, ensuring that learning never stopped.'
(AMAC 2)

3.5 THEME 3

3.5.1 POST COVID

The digital age has demonstrated that there is a critical need for schools to adjust their use of technology to teach. A few public schools have attempted to incorporate more technology into their classroom activities. However, because of the challenges that have existed for a long time, virtually more needs to be done. Most schools lack computers and have limited internet connectivity. The third question set of considered how to respond to the question of technology integration in Abuja secondary schools since the COVID-19 era.

The respondents gave a negative reaction when asked whether any new tools had been provided to help them educate their students.

A respondent said that There hasn't really been any change in their teaching methods since the pandemic. Another respondent from a Public school went further to say that they have not adopted

any new method of teaching, and our teaching method still remains the chalk and board style. We are not using any form of technology

'No changes in my style of teaching, I am still teaching using the traditional method' (BWA 1)

There is a distinction in private schools, where some have begun to incorporate the use of technology to help to learn. Some schools utilize tablets with their pupils to teach, assign homework, and track their progress. Teachers make use of computers to prepare students' results, which their parents can view online. Some respondents from the Private school said they now use Zoom©, ULesson©, and Google Classroom© to teach their students. A teacher mentioned further that she uses educational videos and class dojo to teach her students.

Government Secondary schools in Abuja continue to use the conventional face-to-face method of teaching, however, a few private schools have combined the old method with online education. The teachers who started using technology to aid their teaching in the private schools had testimonies to share concerning the use of technology in their classrooms.

The use of technology has changed the narrative positively *'My class is livelier since I have adopted the use of technology, although we do not have so much in my school' (BWA 2)*

When asked about their view on using technology to improve teaching in secondary schools in Abuja.

Most of the teachers mentioned that using technology will help to make teaching more interactive and it will help their students to do more research work I believe the teaching process will be much easier, one went further to explain

'Technology will help to aid our teaching method if adopted in our school' GWA1

Has the pandemic resulted in an increase or decrease in the use of technology in the classroom? The answer to this question is that not much has changed. A handful of privately-run schools have begun utilizing such tools. However, there have been no adjustments made in the public schools.

'My school is still the same, although there have been promises from the government to improve things. We really need to start using technology to teach our students (BWA 1)

4.1 DISCUSSION

4.1.1 INTERPRETATION AND FINDINGS

The themes previously mentioned and established from the interview data are used to interpret the study's conclusions. To add to the clarity, this interpretation will be carried out in light of the study's research questions.

4.2 RESEARCH QUESTION 1

The first question asked to what extent technology was used in secondary schools in Abuja before the pandemic.

Prior to the COVID era, only a few schools embraced technology to supplement their teaching methods. The secondary school system continues to be dominated by the chalk-and-talk mode of instruction. From the interview, it was found out that only a few schools used different educational applications to aid their teaching. The government and business sectors are working together to embrace and implement various forms of educational technology in schools. In Nigeria, the Ministry of Education has been crucial in ensuring pupils' access to technology. There is a significant gap and anomalies in Nigerian educational institutions as a result of the failure to introduce blended teaching and learning systems prior to the COVID-19 pandemic (Adefuye, Adeola, & Busari, 2021). The Government owned schools were not making use of any form of technology to aid their teaching. The respondents from the Public schools complained that they did not use any form of technology to teach their students.

The most widely used technical tools are the most readily available, most easily implemented, and best adapted to our educational environment. (Edu first. ng). Mobile devices like phones and tablets were used in some privately-owned schools. The phone served as a tool for education and just also an instrument for information, Students accessed the internet, worked with their teachers and peers, shared files and papers, conducted research, and watched instructional videos using their devices. Educational applications like ULesson©, Google Classroom©, SPLATT© (Simple Personalized Affective Learning Tools), Allschool JAMB CBT App, and Preptech© were used in

a number of schools Many schools also featured computer labs where students could learn the fundamentals of computers. The technology used in the classroom includes; audio-visual aids, overhead projectors, smart boards, smart tables, laptops, phones, digital textbooks, cameras, virtual reality devices, videotapes etcetera. (Qasim, O.K 2023). This was not the norm in all schools. Due to various difficulties, just a few public schools had computers, which weren't usually used.

4.3 RESEARCH QUESTION 2

What are the challenges posed by the COVID-19 pandemic in secondary schools in Abuja?

The Nigerian government implemented school closures in March 2020 in response to the first cases of COVID-19. Up to September 2020, schools were shut down. (Ogenyi, M 2022). At least 22.4 million public elementary school pupils, 6.8 million lower secondary school students, and 1.7 million college students did not participate in traditional in-class instruction during this six-month period. (Ogenyi, M. 2022).

Due to a lockdown, all schools were no longer able to rely only on their face-to-face teaching strategy. All schools had to move to remote methods of teaching. As the lockdown extended, online teaching was adopted wherever possible in Nigeria. (Titus, O et al. 2022). Face-to-face instruction was replaced with remote learning because there could be no physical touch. The Minister for Education directed that all academic institutions in the country to resume online teaching during a teleconference with stakeholders in the education sector, sometime in

March 2020 - September (Julius, Onoseme 2022). One of the teachers who was interviewed stated that she had to instruct her students via Google Classroom and Google Meet due to the Pandemic. Another educator claimed that she schedules Zoom meetings for her students. These were teachers from privately owned schools. The Federal and State Ministries of Education in Nigeria pioneered the use of radio, television, and e-learning platforms for teaching and learning (Oyeniran & Oyeniran, 2020). Teachers from public schools who were interviewed claimed that the government-provided television and radio programming helped a few children learn. A couple of them did, however, use Whatsapp© to share notes with their students.

The main issues teachers lamented were lack of electricity, inadequate internet access, and technical know-how. Research and observations have shown that there are limited functional internet facilities for browsing in schools (Ajayi & Ekundayo 2009). Due to these connectivity and

bandwidth limitations, downloading engaging educational content by learners is always slow, creates frustration, and affects the ease of learning. (Anene, Imam, Odumah 2014).

Lack of knowledge of online teaching techniques was another issue that prevented teachers from utilizing technology. It was observed in Oyo state and other parts of Nigeria that most teachers lacked online teaching skills as well as the use of technologies that are associated with online teaching thereby making it difficult for digital teaching and learning to take place during the pandemic .(Julius,Onoseme 2022). Most of the teachers in Nigeria at all levels do not have the needed experience and competence in the use of computers either for educational or industrial purposes; neither do they have the needed skills and knowledge in the use of common computer software (Yusuf 2005; Onasanya et ‘el, 2010).

Due to the difficulties described above, many students were unable to do anything academically.

4.4 RESEARCH QUESTION 3

How has the COVID-19 affected the move from the traditional method of learning to remote learning in Abuja

Several indicators demonstrated that during the shutdown, private institutions at the primary, secondary, and higher levels all exposed their trainers and learners to various platforms for learning (Azubuike et al, 2021). Following the Pandemic, several privately held secondary schools started using technology to enhance their instruction. *‘ We often use phones and tablets to give instruction to our students’(AMAC 2).*

Unfortunately, public secondary schools are different because few tools have been implemented since covid. Most of the Public schools use, little or no technology. Most Nigerian secondary schools have not embraced the use of technology in their classrooms. Thus, the chalkboard and textbooks continue to dominate classroom activities. Unfortunately. (Emmanuel, 2016) Thus the chalkboard and textbooks continue to dominate classroom activities. An Urban secondary school, with a population of 510 students and 42 staff, only has a total of 45 computers for use by the entire school (E. Nwoha, 2016).

Teachers were quick to point out the benefits of using technology to teach, ‘Technology was very helpful during the pandemic because it helped the teaching and learning process easy for both teacher and learner. It should be adopted.

Hennessey, Harrison, and Wamakote, (2010) observed that most Nigerian secondary school teachers perceive technology as being useful and as making teaching and learning easier. The adoption of technology in Secondary schools in Abuja will aid learning. Students can use technology to help them move at a pace that suits them better. They can review challenging material and conduct interesting research without interfering with the rest of the class. (Emmanuel, A .2022). Since the students would have already received the course materials, the teacher could begin teaching in his or her office, saving time and allowing students to attend class conveniently in their comfort zones. E-learning also allows students to collaborate with one another even when they are not physically present, giving them the opportunity to learn from one another even when they are not in the same room

According to the study, radio, television, Google Classroom, Whatsapp©, zoom, telegraph, Facebook, Google, 2go, Twitter, Instagram, Mobile Classroom App, School Gate, and e-learning portals were among the mediums used for learning during the lockdown. (L.J. Dagogo 2021). Teachers interviewed from private schools stated that they utilize Google Meet, Google Classroom, Google Docs, and Whatsapp©

A teacher interviewed from AMAC said the benefits of using technology are that students could learn from different resources and also work independently ‘. The effective use of these digital learning tools in classrooms can increase student engagement, help teachers improve their lesson plans, and facilitate personalized learning. (Qasim, O.K 2023)

‘Technology was very helpful during the pandemic because it helps the teaching and learning process easy for both teacher and learner. It should be adopted ‘ (AMAC 2)

The Pandemic had an effect on the typical classroom setting. Since there was no physical contact under COVID, educational institutions had to rely on learning online. A few schools are using some technology to support learning after the COVID. Today, some teachers utilize it to organize their classes, create ongoing assessments for their pupils, and assign homework. In some schools where technology has been ingrained, changes have occurred. Only a minimal number of schools have done this, though. The conventional one-on-one mode of instruction is still used in the majority of schools.

The implementation of e-learning during the Lockdown really exposed the students to the use of digital devices for learning and having access to digital learning resources, as they could easily access any educational material online and make use of it. It also taught students how to learn independently as they had the freedom to learn on their own by simply watching classes on YouTube© or reading through notes provided to them by their teachers, which will really help them. (Soladoye, Ojo 2021). Students have benefited greatly from the usage of technology in several schools during the pandemic. They have seen how their devices can be used for more than just entertainment and social networking, as well as for obtaining materials and working together with their peers and teachers to complete tasks.’ this has also been beneficial. The Anywhere-Anytime feature of online education has a great advantage in times of crisis-like situations such as man-made disasters, natural disasters, or pandemics such as COVID-19. (Alaba, T.A &Emmanuel, A.O 2020)

Problems or bad experiences can occasionally help people reach their full potential or find new, better, and more practical ways to accomplish their goals. This is what happened during the COVID-19 pandemic lockdown. (Soladoye, Ojo 2021). Everywhere in the globe now uses e-learning. In schools where technology has been adopted, one can say as Munoz (2002) stated, there is flexibility to learn at any time and anywhere, it has reduced the need for teachers to take notes by providing access to a variety of researchers, there is collaboration and engagement.

4.5 DIRECTIONS FOR FURTHER RESEARCH

This research was carried out by interviewing teachers from twelve schools in Abuja's six municipal council areas. More schools should be included in future work so as to be able to get more teachers' experience

Future interactions with students and also their parents would help to widen our scope. Talking with the students will also help them verify how much technology they use for their studies outside the classroom.

Furthermore, because this study summarised the few experiences of Abuja teachers, the author suggests that future studies use a qualitative research approach with an in-depth interview to obtain extensive information from students, teachers, and school leaders on their experiences during the lockdown, as well as the challenges Nigeria's education system is still facing after the COVID-19 school lockdown. The information gained from this study can be used in future studies to

appropriately advise administrative leaders and education policymakers on the crucial need to integrate remote online education and virtual learning.

4.6 LIMITATIONS

This research work aims to investigate the effects of COVID-19 on Secondary Schools in Abuja with its implication on the use of technology. The study was limited to six public secondary schools and six Private schools in all the municipal councils in FCT, Nigeria. This may not be enough to draw a conclusion from the study.

5.1 RECOMMENDATION AND CONCLUSION

The main objective of this study is to investigate how COVID-19 affected secondary schools in Abuja with its implication on the use of technology. The researcher examined how technology was used Pre- covid, covid, and Post covidera .“We need technology in every classroom and in every student and teacher’s hand because it is the pen and paper of our time, and it is the lens through which we experience much of our world” David Warlick.

There is a significant role for the Nigerian government and the many organizations in charge of education and technology. The approval of the Nigerian National Information Technology Policy is a positive development. The goal of the policy is to ensure that Nigeria as a whole understands the strategic value of technology for economic growth (Kwache, 2007). Making policies is one thing; putting them into practice is quite another. This policy should be translated using certain actions. 2016 (Emmanuel, A.)

There were numerous perceived difficulties in using ICTs in the teaching-learning process. Poor electric power supply, a lack of knowledgeable ICT support staff, a lack of trained teachers in the use of computers, insufficient funds, the high cost of ICT equipment, materials, and accessories, the government's lip service to the implementation of ICT policies, inadequate telephone services, the inability to replace broken down equipment and facilities, and a lack of ICT equipment are among them. (Faremi, S.S 2020). To ensure that these issues are remedied, the government needs to do more.

To avoid future school closures due to the pandemic, the government should develop necessary infrastructural facilities that will support online education in all senior secondary schools in the Federal Capital Territory, Abuja, and Abaji in particular. (Ade, S 2020)

Curriculum planners and educational policymakers in the government should stimulate the usage and provision of educational technology related to secondary school teaching subjects. (Amuda. K 2020)

The solution to this issue should involve all parties involved in Nigerian education. We all have a stake in promoting the use of technology in education, thus organizations from both the public and

private sectors, as well as educational institutions, businesses, nonprofits, and even religious institutions should work together. (Emmanuel, A. 2016)

ACKNOWLEDGMENT

I want to sincerely thank my thesis supervisor, Emanuele Bardone (Program Director), of the Faculty of Social Sciences, Institute of Education, at the University of Tartu, for all of his help and assistance with this thesis. I greatly appreciate it.

Thank you so much to each and every one of our Institute of Education course instructors for their influence and helpful criticism.

I also like to thank my Nigerian friends Emmanuel Anyaele, Sanni Adisa, Modupe Oyekanmi, Roseline Amos, and Deborah Italoye for helping me with this study.

To my excellent classmates, thank you for your help in every manner.

Thank you to my mother and my siblings.

Finally, I would like to give particular thanks to my husband Wole, and my children, Tobi, Tolu, and Tomiwa, for their unwavering support and tolerance while I worked on this thesis. I adore each of you.

I am grateful to God Almighty for making this become a reality.

Author's Declaration

I hereby declare that I have written this thesis independently and that all contributions of other authors and supporters have been referenced. The thesis has been written in accordance with the requirements for graduation theses of the Institute of Education of the University of Tartu and is in compliance with good academic practices.

Signature Date

REFERENCES

Abdulgafa, T. O. and Edinyang, S. D. (2013). Social institutions. In S.D Edinyang, D. I. Mezieobi and I.E. Ubi (Eds).Selected issues in social studies education .Calabar:

Adeosun, O.V (1998) The technology of education. Greenline Publishers Ado- Ekiti

Amuda. K (2021) Impact of educational technology on the remembering ability of Senior Secondary school students Biology in Akoko North East Local government area of Ondo State

Ajayi, I.A & Ekundayo, H.T (2009).

Agyeman AA, Chin KL, Landersdorfer CB, Liew D, Ofori-Asenso R (August 2020). "Smell and Taste Dysfunction in Patients With COVID-19: A Systematic Review and Meta-analysis". *Mayo Clin. Proc.* **95** (8): 1621–1631. doi:10.1016/j.mayocp.2020.05.030. PMC [32753137](https://pubmed.ncbi.nlm.nih.gov/32753137/). PMID [32753137](https://pubmed.ncbi.nlm.nih.gov/32753137/)

Amaghionyeodiwe, L.A & Osinubi, T.S (2006) International Journal of Applied Econometrics & Quantitative Studies Volume 3.-1

Anene, J. N & Iman, H & Odumuh T (2014). The Problem and Prospect of E-Learning in Nigerian Universities. International Journal of Technology and Inclusive Education. Volume 3, issue 2, pages

Assessing the Impact COVID-19 Pandemic on the Educational Development of Secondary School Students Thomas Achoda Omanga* & Pius U. Angiohab 2021

Assessing the Impact COVID-19 Pandemic on the Educational Development of Secondary School Students Thomas Achoda Omanga* & Pius U. Angiohab 2021

Bao X et al., Modeling Reading Ability Gain in Kindergarten Children during COVID-19

School Closures. International Journal of Environmental Research and Public Health. 2020;17(17):6371.

Barriers to ICT Utilization in Basic Education in Nigeria. Academia.edu

Burke D. What churches, mosques, and temples are doing to fight the spread of coronavirus. CNN. Archived from the original on. 2020;14.

UNESCO, COVID-19 educational disruption and response; 2020a.

Baytiyeh H. Online learning during post-earthquake school closures. *Disaster Prevention Management: An International Journal*; 2018.

Chigozie-Okwum, C., Ezeanyej, P. C., & Odii, J. N. (2018). Adoption of Learning Management Systems in Nigerian Tertiary Institutions: Issues and Challenges. *International Journal of Computer Applications*, 181(30), 5-10.

Chin TD et al., Morbidity and mortality characteristics of Asian strain influenza. *Public health reports*. 2020;75(2):149.

Doris Dokua 2022, Education in Nigeria

Di Pietro G The academic impact of natural disasters: evidence from L'Aquila earthquake. *Education Economics*. 2018;26(1):62-77.

Flash Isaac, 2022

System of Education in Nigeria, 2022

Godwin, P.E (2022) The problem with the Education system in Nigeria

Hennessy, S. & Harrison, D. & Wamakote, L (2010) Teacher factor influencing Classroom use of ICT in sub-Saharan Africa. *Itupale online journal of African studies*.

Hui DS, et al. The continuing epidemic threat of novel coronaviruses to global health—the latest novel coronavirus outbreak in Wuhan, China. *International Journal of Infectious Diseases*. 2020;91:264-266.

Kitzinger, J. (1995). Qualitative research: introducing focus groups. *BMJ*, 311(7000), 299. doi: 10.1136/bmj.311.7000.299

Kwache, P. (2007). The Imperatives of Information and Communication Technology for Teachers in Nigerian Higher Education. *Journal of online and teaching*. Volume 3, Number 4

Matthew. D. & Joro, I.D & Manasseh, H. (2015).

Maclean R, Dahir AL. Nigeria Responds to First Coronavirus Case in Sub-Saharan Africa. *The New York Times*. Retrieved.,2020;10

Need for ICT integration for effective instructional delivery in Nigerian colleges of education. *Journal of Education and Education Practice*. Vol .6 no,3

Na- Allah, D. & JAbaka, S.M (2014).

Owusu-Fordjour C, Koomson C, Hanson D. The impact of COVID-19 on learning-the perspective of the Ghanaian student. *European Journal of Education Studies*.

2020;7(3).

Page J, Hinshaw D, McKay B (26 February 2021). ["In Hunt for COVID-19 Origin, Patient Zero Points to Second Wuhan Market – The man with the first confirmed infection of the new coronavirus told the WHO team that his parents had shopped there"](#). *The Wall Street Journal*. Retrieved 27 February 2021.

Parry J. China coronavirus: cases surge as official admits human to human transmission. *British Medical Journal Publishing Group*. 2020;368:m236 Landry MD et al.

Parke C. Churches cancel Sunday service, move online amid coronavirus outbreak.

Fox News. Archived from the original on. 2020;15.

Sang, K.J.C. & Sitko, R. (2015) "Chapter 8 Qualitative Data Analysis Approaches" In

O' Gorman, K.D. & MacIntosh, R. (ed). Oxford: Goodfellow Publishers

<http://dx.doi.org/10.23912/978-1-910158-51-7-2775>

Saniasiaya J, Islam MA (April 2021). "Prevalence of Olfactory Dysfunction in Coronavirus Disease 2019 (COVID-19): A Meta-analysis of 27,492 Patients". *The Laryngoscope*. **131** (4): 865–878. doi:10.1002/lary.29286. ISSN 0023-852X. PMC 7753439. PMID 33219539.

Saniasiaya J, Islam MA (November 2020). "Prevalence and Characteristics of Taste Disorders in Cases of COVID-19: A Meta-analysis of 29,349 Patients". *Otolaryngology–Head and Neck Surgery*. **165** (1): 33–42. doi:10.1177/0194599820981018. PMID 33320033. S2CID 229174644.

Small Business(Chron newspapers) Advertising & Marketing |Focus Groups By Alexis Writing
Updated January 25, 2019

The Application of Information and Communication in Nigerian secondary schools. International journal. Vol. (4) 5 pp 281-286

Tolulope, A & Oyelade , E.A (2020) Impact of COVID-19 on the Nigerian Educational System: Strengths and Challenges of Online/Virtual Education

The Nigeria Education Working Group (EiEWG). (2020). Nigeria Education Sector COVID19 Response Strategy in North East.
https://reliefweb.int/sites/reliefweb.int/files/resources/nigeria_education_sector_COVID

The novel coronavirus (COVID-19): making a connection between infectious disease outbreaks and rehabilitation. University of Toronto Press; 2020.

The role of information communication technology in Nigeria. Educational System. International Journal of Research in Humanities and Social studies\Volume 2issue 2 pages 64-68 Onwuagboke, B, B.C & Singh, T K.R & Fook. F.S (2015

UNESCO, 290 Million students out of school due to COVID-19: UNESCO releases first global numbers and mobilizes response. UNESCO; 2020c.

APPENDIX 1

PRECOVID ERA

1. To what extent did you use technology to aid your teaching before COVID-19
2. Was there access to modern technology and resources, such as computers and online databases? If yes, which applications did you use?
3. What challenges did students and teachers face while using technology for learning?
4. What challenges have you faced as a teacher using technology?
5. Was there access to modern technology and resources, such as computers and online databases?

COVID ERA

1. How did you teach your students during the COVID-19 pandemic
2. How much did your school rely on technology to keep academic activities going during the pandemic
3. Which tools did you use to teach during the pandemic and how were they used?
4. How has COVID-19 influenced your teaching
5. Could you explain the role of technology in facilitating ongoing learning during the pandemic
6. What have been the benefits and drawbacks of using technology in the classroom during the pandemic?

POST COVID ERA

1. Which tools have you adopted since after the pandemic
2. How has the use of technology in secondary school changed since the outbreak of the pandemic
3. How do you see technology being used to improve teaching in Abuja secondary schools after the pandemic
4. How has the pandemic impacted the traditional classroom environment? Have schools had to switch to remote or hybrid learning models?
5. Has the pandemic resulted in an increase or decrease in the use of technology in the classroom? Explain what way(s) it has affected teaching and learning.
6. What changes have the tools and applications used since the COVID era brought to the students
7. How has the pandemic affected student engagement and participation in the classroom?
8. Do you still use the same tools/ applications used during the pandemic?

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