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Perceptions of Teachers and Students on Online Teaching and Learning During COVID-19 Pandemic: Problems and Prospects

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Abstract
Coronavirus disease 2019 (COVID-19) outbreak has impacted catastrophically every sector of the economy throughout the world. And the education sector is not left out from the devastating effects of lockdown, especially in Africa. The pandemic led to the prolonged closure of schools, consequently, teaching and learning transformed into online using internet remote communication platforms. In the light of the events, this study is pertinent to examine perceptions of teachers on the online teaching and the obstacles they faced adopting the learning through technology during period of the pandemic. The research takes a quantitative and sample survey approach. A Google Form Questionnaire was used to obtain a sample of 200 students of the Ahmadu Bello University Zaria in the months of March and April 2022. Data were analyzed in SPSS using Descriptive Statistics, Factor Analysis, Reliability and Chi-Square test. The result of the study indicates that on average, lecturers have a positive perception about virtual teaching amid COVID-19 for mitigating the learning gaps and shaping pupils' future during the crisis. Nevertheless, the students faced several obstacles in the online teaching in both the technical and access difficulties which affected performance in examinations. The study concludes that the perceptions and experiences of teachers, students, and ICT staff differed, indicating the need for further research and collaboration to improve online education practices. It therefore recommends that teachers should provide clearer guidelines and support for adopting various forms of online teaching-learning modes to ensure consistency and effectiveness.

Keywords: Online teaching, Teachers and students' perceptions, COVID-19

Introduction

COVID-19 is a highly infectious disease or illness caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), originated in Wuhan city of China, has already taken on pandemic proportions, affecting across all the continents (Remuzzi & Remuzzi, 2020). Mostly spread among individuals during close contact, COVID-19 resulted in millions of deaths. Due to its severity and fierceness, COVID-19 is referred to as a pandemic was regarded as the greatest global health crisis since the dawn of human civilization. The onset of the novel coronavirus devastated everything from world economies to social rituals (Schulten, 2020). For

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that reason, the International Labour Organization (ILO) estimated that 195 million individuals were put at risk of losing jobs (UNDP, 2020). One of the most preferred ways to subdue the effects of this crisis is to introduce COVID-19 containment measures in their respective territories (De Brouwer, Raimondi, & Moreau, 2020). Nowadays, lockdown is a common buzzword that has been mulled over by people during the Corona virus pandemic. Lockdown is a state of emergency protocol implemented by the competent authorities (in this case, the central and state governments) to restrict people from leaving their place of residence, resulting in mass quarantines and stay-at-home across the world since March 2020. The coronavirus triggered a global restriction of movement within and among nations. For instance, in India, a nationwide lockdown was declared in phases an consecutively - March 25, 2020, for 21 days, repeated in April for another 19 days, in May for 14 days, in June 16 days etc. To a greater extent, getting control over the COVID-19 pandemic is possible with people's unbridled determination to take stringent precautionary measures such as maintaining social distancing, following medically instructed quarantine processes, and embracing hygiene and sanitation (Khachfe et al., 2020).

COVID-19 pandemic caused a serious set-back to learning globally. Approximately 264 million children and adolescents were unable to attend schools during the pandemic period (UNESCO, 2017). As the pandemic continued to spread, there had been an increasing move towards teaching online because the shutting down of schools including colleges, and universities for an indefinite time (Martinez, 2020). Therefore, this is the time to gravely rethink, revamp, and redesign our education system considering the unprecedented current situation. Both informal and non-formal education were tremendously affected. However, it is a well-established assumption that no pedagogical approach can replace the peak position of formal education due to teacher-taught direct interaction. But, in the aftermath of the COVID-19 crisis, online education became a pedagogical shift from traditional methods to the modern approach of teaching and learning, from classroom to Zoom, Teams etc. Other remote learning platforms include Start.me, Neo, Classtime, Classwize, Ted-Ed, Coursera, Google Classroom, Bakpax, Pronto, Skillshare, ClassDojo, Edmodo, Blackboard Learn, Parlay, Docebo, Feedback Fruits, Udemy, WeVideo, WizIQ, Flipgrid, Codeacademy, Gynzy, Adobe Captivate, Seesaw, Edx, GoGuardian, Elucidat, Kami, Pluralsight, G Suite, Otus, Articulate 360, Floop, Future Learn, Hapara, Shift, Lectora Inspire, Kialo Edu, Buncee, LanSchool, and many more.. Learning shifted from personal to virtual, and from seminars to webinars. Previously, e-learning, distance education, and correspondence courses were popularly considered part of non-formal education, but as of now, it seems that they would gradually replace the formal education system if the circumstances persist over time. The impact was felt across all populations, with no exceptions for the young population, including students. A longitudinal and cross-sectional online survey with children ranging in age from 3 to 18 years old identified that children's mental and emotional wellness are significantly influenced by the COVID-19 pandemic, as the children experienced depressive symptoms, difficulty concentrating, anxiety, and the ability to get mad (Tambunan et al., 2020).

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Online learning is one of the factors that impact the children's behavior and health condition. The school closures, self-isolation, and restrictions on movement required them to stay home and learn online during this pandemic, which worsened mental health among children (UNICEF, 2020). After the outbreak of the COVID-19 pandemic, most education sectors chose to conduct online teaching and learning as a way to mitigate impact of the pandemic on learning. Dhawan (2020) mentioned that there was no choice but to switch completely to online teaching and learning for many academic institutions that were previously hesitant to change their traditional approach. Educational institutions in Malaysia also implemented online learning (Azahar, 2020) following the emergent COVID-19 situation. In face-to-face learning, teachers are the source of information for students and the dependents for the quality of learning; however, in online learning, the quality of learning is strongly dependent on the teachers' level of digital skills and their teaching style (Gherhes et al., 2021). The readiness and challenges of online learning have been discussed in previous studies (Qureshi et al., 2012; Bali and Liu, 2018; Aboagye et al., 2020). In the sub-region of the West Africa for instance, Government closed primary schools, universities, and colleges, which had a massive negative impact on education because social distance was an important element in preventing the spread of the disease. Education agencies, governmental and non-governmental, local and international, tried to devise alternative approaches to settling the dilemma. However, there was no other alternative other than to introduce distance learning, where students accessed education from home through the internet to ensure minimal interruption to the teaching-learning process in all schools. Multiple entities took part in this transition to ensure that the students received quality online educational materials and performed their evaluations without a glitch. While many schools were able to adapt to this situation, others faced the challenge of internet access because over 54% of families in the region did not have access to the internet (UNICEF, 2020). Part of the limitations of the online learning was that not all children could access the internet, and this led to disparities in the teaching-learning process. Many families and communities have no access to computers, internet connections, or smartphones. This proved to be a difficult time for the education sector to achieve its objectives during the trying period. The COVID-19 pandemic presented a demand for online education at all levels including Universities. In many institutions teaching and learning using remote alternative was unsuccessful as resources needed were not readily available. Teachers were not well-versed in the art of distance learning and completing syllabus on time became could not be achieved.

Additionally, non-compliance from students hindered successes of the virtual learning alternative. With the difficulties posed by the pandemic on learning across the sub-African region and beyond, it is evident that despite all the efforts, teaching and learning faced a serious setback globally. There was an abrupt disruption of pedagogical processes across all the learning institutions, many students could not graduate at the stipulated time of their graduation The study intends to investigate effect of COVID-19 on learning and discuss contribution of remote or home-based learning as a mitigation measure to the negative impact of the pandemic on learning. The study focused on the situation in Ahmadu Bello University Zaria.

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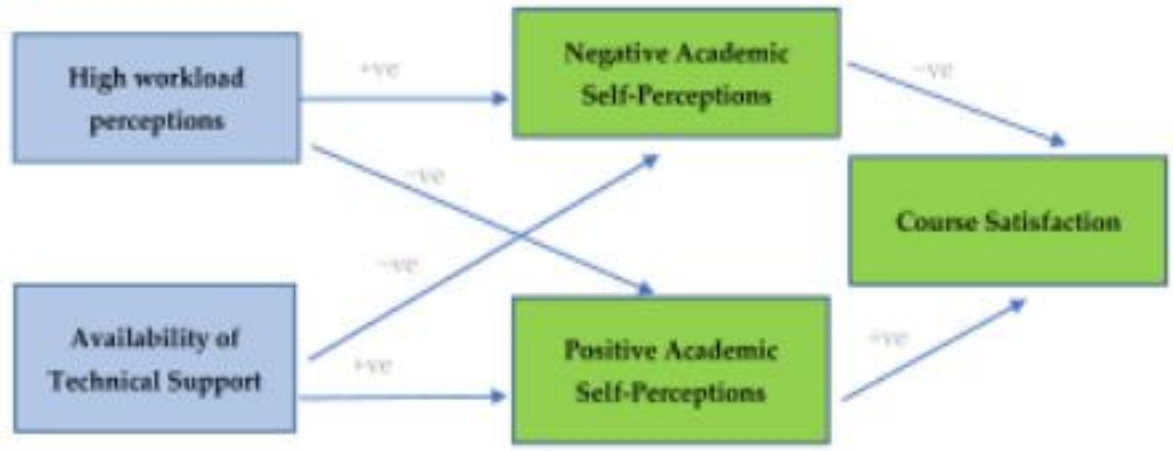

Fig. 1: HEI Implementation Process

There are some difficulties felt in the implementation of the change process in the education system that has arisen after the COVID-19 crisis; these difficulties are related to the novel perspectives of online education and their technological complexities. Earlier in this pandemic, online education was considered the education provided by open universities in India. But in the COVID-19-induced time, online teaching and learning became a massive challenge to deal with, and stakeholders are not potentially fit to adjust to the sudden educational change as they are not technologically competent to embrace the current situation. Therefore, for the successful implementation of educational change, Fig. 1 describes how to decide on the implementation process of online teaching and learning. The journey begins with the collective vision of UGC and MHRD (supra-system), universities and Colleges (system), and different academic departments (sub-system) in favor of implementing online teaching and learning in the education system. In the face of COVID-19, the shared vision of education system realized that during the pandemic period, teachers and students are motivated to adapt online teaching-learning platforms in fulfilling the current educational needs. Everyone, either teachers or students, was friendly and skilled in using social media apps such as WhatsApp, Facebook, Twitter, and Instagram, which turned into smooth facilitation of using online educational platforms such as Zoom, Cisco WebEx, Google Meet, etc. as a sign of positive transfer of learning. Also, there are some useful educational apps such as Office 365, Google Classroom, and much more user-friendly videoconferencing apps that can be downloaded free of charge and are easy to use (FutureLearn, 2020), so to some extent, it seems that there is no reason to get into a panic to get new technology suddenly as some of the apps are already embedded in our HEIs. Many stakeholders possessed smartphones, and only a considerable number had laptops. These are the needed resources to implement online teaching and learning. Mizoram University has an ICT center and LMS that help in seamless monitoring of online teaching and learning modes. The central and State governments unanimously agreed upon implementing online education

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across the country, keeping in mind the need of the hour. Various national, state, and university-level teachers' and students' associations half-heartedly and hesitatingly supported the vision of online teaching-learning modes with mixed bags of opinion as a result of curiosity to trial new technology and the new mode of the teaching-learning process in the education system; it is due to the lack of preparedness, orientation, and incentives of stakeholders in using the online mode of teaching.

The action plan was prepared keeping in view our readiness for online teaching mode, our drive for change in this pandemic, and the availability of resources for implementing online teaching mode. To go with the action plan, teachers prepared and trained themselves independently to become accustomed to the technology required for using online teaching modes. At the university level, system administrators and Information and Communication Technology (ICT) experts provided necessary assistance to stakeholders and managed the change process. However, while many pieces of research have been conducted on online teaching and learning and its effectiveness, no such studies were conducted during the COVID-19 lockdown period. Hence, the researcher is insightfully interested in doing this study with the following objectives:

Just like their teachers, students also had challenges adjusting to online learning from traditional class-based learning. In the study of barriers to online learning in the time of COVID-19, Ronnie et al. (2020) discovered that students found it difficult to adjust to online learning styles due to having to perform responsibilities at home and poor communication between them and lectures. Students were generally not prepared for online learning. While it was found that social issues and lecturer issues affect students' intentions to study online, access to online learning platforms was a demonstrable major challenge for many students (Aboagye et al., 2020; Chung, 2020; Rapanta et al., 2020). Technical issues may occur in the middle of online learning, yet most students do not have access to technical support and advanced technologies that facilitate online learning (O'Keefe, 2020). Access to digital learning devices such as laptops and tablets and access to data for internet connections were found to be barriers to online learning for some students (Adnan & Anwar, 2020; Dhawan, 2020; Moawad, 2020). Lack of access to online learning systems is common among students from poor families living in underdeveloped communities. The study that was conducted in West Bengal, India, shows that 30.6% of students studied through reading textbooks by themselves and did not participate in e-learning, mainly due to a lack of access to online learning platforms (Kapasia et al., 2020). As also understood by Dawadi et al. (2020), access to online learning for some students in these difficult times is a major problem for the higher education sector as it increases the already existing inequalities among its citizens in terms of their socio-economic status and education or literacy. While some students are dissatisfied with the existing online teaching platforms (Chen et al., 2020), others have more serious challenges to overcome, such as those concerning access to online learning platforms (Ronnie et al., 2020).

Online teaching and learning require a fast and reliable internet connection. Therefore, the shift from traditional face-to-face learning to online learning meant that students and

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academics had to stay connected to the internet. However, under some circumstances, this may be impossible; hence, teaching and learning would be affected. Challenges with connectivity were highlighted as the leading factor undermining e-learning and e-teaching during lockdown as a result of Covid-19 pandemic outbreak (Aboagye et al., 2020; Bao, 2020; Berezhna et al., 2020; Dawadi, 2020; Jena, 2020). In their study of barriers to online learning, Ronnie et al. (2020) found the availability of a fast and reliable internet connection to be a greater concern than either device ownership or technical aptitude. The critical challenge of a reliable internet connection for online learning was also reported in the literature (Mamun et al., 2020; Naciri, 2020) as the main cause of non-participation in online learning by the majority of students. This drawback for online learning, according to Demuyakor (2020), was attributed to a lack of internet data among Ghanaian international students in China. The unavailability of suitable hardware and software to access online learning was also identified as a barrier by some students (Crawford et al., 2020).

In an attempt to ensure that all students have equal access to online learning, Student Representative Councils (SRCs) in various universities demanded the provision of digital learning devices (smartphones, tablets, and laptops) and internet data to all students (Kwabena & Boateng, 2020). However, some students could not access online tools despite having digital learning devices and internet data because of a poor network at home (Aboagye et al., 2020; Rose, 2020; Wargadinata et al., 2020). The poor network problem is particularly common in developing countries where ICT and telecommunications systems are not properly developed (Aboagye et al., 2020). Correspondingly, Chang and Fang (2020) discovered that 60%–70% of teachers agree that "network speed and stability are poor", leading to challenges with accessing online learning tools. This literature evidence suggests that reliable network infrastructure, availability of internet data, and availability of digital learning devices such as smart phones, tablets, and laptops to students are important to ensure smooth online teaching and learning.

The lack of physical learning space and environment also presented itself as a challenge for some students learning online during lockdown. In most poor households, students do not have a private room where they can peacefully study without disturbance (Ronnie et al., 2020). Learning from home therefore becomes difficult for this disadvantaged group of students. The research conducted by Demuyakor (2020) shows that some students have to rush to the toilets to answer calls from their professors or to turn off video feeds because of the noisy background. Similarly, Kapasia et al. (2020) found that, of 232 students, 103 (44.4%) had no separate reading room for the study. Without a conducive learning environment, students are unable to concentrate on their schoolwork, and study productivity is reduced as a result (Chang & Fang, 2020). As argued by Daniel (2020), it is therefore necessary that institutions and educational systems consider the concerns of students whose parents are unsupportive and whose home environments are not conducive to study. The shift to online education during COVID-19 overlooked this reality of an unconducive learning environment, which negatively affects learning outcomes.

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The mental health issues associated with COVID-19 and the sudden shift from class-based to online learning are also demonstrable in the literature. Such issues include stress, anxiety, and depression, which occur due to a sudden change in one's lifestyle and uncertainty about the future (Rajkumar, 2020; Ronnie et al., 2020; Rossi et al., 2020; Tandon, 2020; Xiong et al., 2020). Learning loss and drop-out rates, among other harder-to-quantify factors due to COVID-19, cause social and emotional disruption for the general public and worse for students (Dorn, 2020). In addition, students whose family income or livelihood strategy was impacted by COVID-19 and its regulations were found likely to suffer from stress, anxiety, and depression, which in turn affect motivation to engage in online learning (Cao et al., 2020; Husky et al., 2020; Son et al., 2020; Wu et al., 2020; Zolotov et al., 2020). While COVID-19 created fear and other mental health issues among Israeli university students, Zolotov et al. (2020) further discovered that students who were psychologically affected turned to substance use in order to cope. This coping mechanism during these difficult times has a negative impact on learning. Among Chinese students, 24.9% have experienced anxiety because of this COVID-19 outbreak (Pragholapati, 2020). Anxiety was often associated with having a relative or acquaintance who is infected with COVID-19 (Pragholapati, 2020).

There is limited research evidence on the impact of COVID-19 on students' academic performance. This is probably due to the lack of data that measures academic outcomes during the COVID-19 period. However, it is expected that as academic results become available, more research will be conducted in this area. Gonzalez et al. (2020) studied the academic performance of students before and after COVID-19 confinement. Their study results show that students achieved significant improvements in their scores even in tests that were performed in an online format in previous years (Gonzalez et al., 2020). Moreover, this improvement is only significant when comparing data after the COVID-19 confinement (i.e., there are no significant differences in on-line tests that were performed before the confinement) (Gonzalez et al., 2020). Therefore, these findings reveal that the new assessment process cannot be the reason for the improvement in students' performance because the learners also achieved better scores when the format of the assessment did not change (Gonzalez et al., 2020). Although Gonzalez et al.'s study did not find the effect of COVID-19 confinement on students' academic performance, it is expected the COVID-19 outbreak will not only cause poor performance among students but also increase the dropout rate (Dorn et al., 2020).

While COVID-19 has created a lot of problems for the higher education sector, it has been recognized that this pandemic has, on the positive side, created opportunities. Such opportunities involve new approaches and tools for learning online and capacity development. For instance, lockdown implemented as a result of COVID-19 pushed universities that previously used traditional teaching methods into the digital world (Ratten, 2020). This means universities must develop innovative ways to deliver teaching without compromising quality (Ratten, 2020). Also, new challenges associated with online teaching and learning will create a space for innovative thinking and innovative solutions within the sector (Bryson & Andres, 2020). It is also argued that due to online teaching and learning, both students and teaching staff

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will further develop their online communication and interpersonal skills through regular exposure to online platforms (Beech & Anseel, 2020). The COVID-19 outbreak also presented opportunities for new research in a new area with the increased use of digital data collection methods and a wider exposure to the virtual dissemination of research results. This provided researchers and academics with new experiences in the digital world necessary for their capacity development (Gardner, 2020; Shahzad et al., 2020; Zhu & Liu, 2020). Therefore, not all is bad about COVID-19; however, challenges and problems far exceed opportunities.

Classical Liberal Theory of Equal Opportunities is one of the theories that guided the current study. According to Von Mises (2012), liberalism is an aspect in which equality and individual liberty are considered the most important objectives by emphasizing equality and individual rights. Liberal theories advocate the provision of basic rights for everyone while seeking to avoid favoritism or unfairness. Therefore, the classical liberal theory of equal opportunities holds that an individual matters most and that in any society, an individual must be allowed to live the best life in their own unique way. As such, it is clear that society must take deliberate steps to ensure all individuals receive equal opportunities in any societal realm. In the current study, this theory will be used to elucidate the need for providing learners with equal opportunities despite their coming from different socioeconomic backgrounds. The pandemic has widened economic inequality in the region, which could limit access to education.

The equivalence theory holds that for distance learning to be considered a success, it must provide learning experiences for every student, either locally or distantly. The model states that distance learning is not the same as physical learning, but the two approaches are equivalent (Lapsley et al., 2008). This means that the term equivalency should not be confused with mean equal, but it is a situation in which learning experiences that students receive are considered to give them similar experiences for similar outcomes. However, the main emphasis of the theory is not to expect that every student will be taught or learn in a similar manner (Garratt-Reed et al., 2016).

There are three major aspects of the theory:

1. Distant and local students are essentially in different environments.
2. Digital technology is used synchronously and asynchronously.
3. Learning experiences have anything happening with or to learners to boost learning. This theory will be useful in this study because it explains how physical and virtual education is different and how the difference matters.

According to Goldie, J. G. S. (2016), connectivism is, to a certain degree, a new theory of Learning suggests that learners need to combine general manners, theories, and thoughts in a useful manner. The theory emphasizes that technology is a key part of the learning process, and that persistent connectedness provides people with opportunities to make choices about their

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learning. The theory states that some of the digital technology features, such as web browsers and search engines, are significant tools that help in online learning implementation. As such, education, being an important aspect of people's lives, is a subject of technology. As Strong & Hutchins (2009) state, learning only happens within ever-changing networks, only after information sources and specialized nodes are connected, and can occur in non-human appliances. In online education, learning happens when various stakeholders interact; an example is the interaction between students and teachers. For this reason, this theory was selected.

Researchers have agreed on the fact that the Technology Acceptance Model (TAM) has been the most influential of all the theories explaining the acceptance of digital transformation. The theory illustrates and describes how people in different societal realms come to accept and widely use a given technology. The actual use of a system is the result of how people use the technology. People are forced by behavioral intention (BI) to embrace technology. But BI is affected by attitude, which is the general impression of the technology. One of the factors that influence acceptance is Perceived usefulness, which has to do with how the users view the technology in question. To accept a given technology, a user must perceive it as useful in their lives, and in this case, the general education Another factor that users consider is ease-of-use, which is defined as "the degree to which a person believes that using a particular system would be free from effort (Al-Maroof & Al-Emran, 2018). The hindrances are removed only if the user thinks that the technology in question is easy to use. This theory will be useful for the current study in explaining why there could have been resistance during the initial stages of the implementation of online learning in Nigeria.

Objectives of the study

1. To reveal the various forms of online teaching and learning modes adopted during the COVID-19 pandemic.
2. To examine the perceptions of teachers and students about online teaching and learning during the COVID-19 pandemic.

Research Questions

1. What are the various forms of online teaching and learning modes adopted during the COVID-19 pandemic?
2. How are the perceptions of teachers and students about online teaching and learning during the COVID-19 pandemic?

Methodology

This section of the report presents the research methods that the researcher employed in the study. An effective and efficient research method is necessary for the success of a study,

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considering that research has to go beyond the gathering of information. Goddard & Melville (2004) state that in any study, the researcher is obligated to either create new questions to be answered (through policy implementation or research development) or answer the existing questions to fill a knowledge gap. Therefore, it is crucial to select a sound methodology for any research. The method involves gathering and distilling data via a succinct methodological procedure, then arranging the data to derive meaning. It is imperative that a researcher select research methods that will help them answer the research questions in order to collect the relevant data because the data will be important in addressing the research problem in question (Baker (2000)). As such, this section will outline the procedures taken to complete the research and fill the knowledge gap. The first section will be the research design, which explains the overall strategy used for the research. Following it is the target population, which is the entire group from which a sample was taken. A sampling procedure will then be presented to show how the researcher arrived at the study sample. Presented after the sampling technique is the data collection section, which shows how information was obtained from the selected sample. The collected data needed to be analyzed, and the section that follows is a data analysis section to show how the data was analyzed. Finally, the chapter closes with a presentation of ethical concerns with the research study.

Before the investigator starts the process of collecting information from the participants of the study, the first thing that one is supposed to do is determine the overall approach that one is going to take for the success of the study. This involves identifying the relevant instruments and procedures for the study while outlining the whole study framework systematically and in a fashionable manner. Research design can, therefore, be said to be the techniques and framework of the research methods that the investigator selects to complete the project (Creswell & Creswell, 2017). According to Blanche et al. (2008), a design refers to "plans that guide the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure" and that it "serves as a bridge between research questions and the execution or implementation of the research" (p. 34). For the current study, the researcher chose to conduct qualitative research based on the interviews done to assess the respondent’s feelings concerning the issues online education has faced since the start of the pandemic. In a qualitative research design, the researcher establishes answers to the whys and how of the phenomena under investigation, something that a quantitative design cannot accomplish (Flick, 2018). As such, rather than being objective, qualitative research is an objective design where the findings are presented in a written format as opposed to the numerical presentation in quantitative research.

In any research, the target population refers to the whole set of units for which the research information is to be used for making the final conclusions. It defines the units on which the investigator intends to generalize based on the findings of the group of individual units from which the researcher selects a sample. This is the second step in any research project after the researcher establishes the research objectives. The definition of a target population should be as specific and precise as possible because it acts as a check for the eligibility of the entire research.

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Asiamah et al. (2017) state that the temporal and geographic features of a target population should be outlined, in addition to the types of units that the researcher intends to include. Sometimes, the target population in a study is limited to exclude those members whose access is impossible or difficult to avoid inconveniencing the researcher. According to Draugalis (2009), the researcher needs to understand the target population to determine the go-to sampling procedure and also to inform the sample size. The target population may be finite or infinite, meaning that, respectively, it is easy to determine the total number of units in a group or it is impossible to determine the total number of units in the targeted group (Taherdoost, 2018). Since the researcher could not work with the entire population of individuals, it was necessary to select part of the group to work with, and this is referred to as the sampling process. In Touvila's (2020) article at Investopedia, the sampling process has to do with predetermining the number of units selected from the entire population. Therefore, a sample is defined as a subset of the entire targeted group representing the needed population characteristics (Acharya, 2013). It could either be selected using probability sampling or non-probability sampling.

Data collection refers to the process that a researcher uses to systematically and fashionably gather and measure data on the specific variables in question to enable him or her to fill the knowledge gap and evaluate the outcomes. A researcher has an array of data collection approaches at their disposal during the planning stage. The selection of a data collection method is determined by the type of data that the researcher wants to use, i.e., whether the data is experimental or observational, qualitative or quantitative (Bar-llan, 2001). The current study, as earlier stated, is phenomenological, meaning that the researcher is studying things as they are. The study involved collecting information from the sample about the challenges they identified during their use of online learning. While doing data analysis, the researcher filtered out all the unnecessary data to analyze the data that matters to the current research. The data collected for this research is primary data. All the information that the researcher gathered. Thus, the initial stage involved examining the transcripts as they were collected. However, everything was double-checked to ensure that there were no inconsistencies between the translated message and the recorded message. The qualitative data that the researcher obtained from the interviews and focus groups were analyzed through thematic analysis using the Nvivo application. The major purpose for which this process was applied was to make sure that all the important aspects of the collected data were captured so that all the research questions could be answered completely. It helps the researcher in the generation of findings and insights for the study (Terry et al., 2017). There are five steps that need to be undertaken to complete the process of thematic analysis: getting familiar with the information, coding, identifying themes, naming, and defining themes, and getting the report on paper (Almaiah et al., 2020). The creation of themes is a crucial process where important and recurring points are derived from the transcribed texts in relation to the research objectives. During the process, the investigator categorized the data into three elements using the software. The initial process started with descriptive coding, and then phrases, words, and sentences gotten from the transcribed information were obtained as guided by Morse and Richards (Watts et al., 2017). These elements were labeled using the appropriate words, which relate to the challenges of online learning. Codes are referred to as "nodes, for reference to code

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text," representing a collection of references about a particular theme, category, or area of interest (Almaiah, 2018). After that, the researcher classified several sub-themes for each of the themes, depending on the topic of study. The material used for the analysis is the transcription made from the discussions during interviews and focus group discussions. There were also some notes that the researcher took during interviews. The transcriptions were checked three times to make sure that they matched the recordings and to avoid analyzing the wrong data, which could lead to flawed findings.

Demographic Data of Respondents

Table 1: Response Rate

Distributed	Received	Percentage
160	150	94 %
Total	**150**	**94. %**

Field Survey, 2023

Table 1 shows that the researcher distributed one hundred and sixty (160) copies of questionnaires to both lecturers and students of Ahmadu Bello University. Zaria and one hundred and fifty (150) copies of the questionnaire were returned duly completed, representing 96% turn-over. The main reason for the high response was the commitment of the research assistants to ensuring that all distributed questionnaires were collected.

The researcher asked questions related to the respondent's background information, such as gender, age group, and academic status. These items are discussed under the following headings:

Table 2: Gender Distribution of the Respondents

Gender	Frequency	Percentage
Male	65	45%
Female	85	55 %
Total	**150**	**100%**

Field survey, 2023

Table 2 shows the gender distribution of the respondents of lecturer and students of A.B.U. Zaria, where it is clearly shown that females had a higher number of 85 (55%) respondents and males had 65(45%) respondents. This implication shows that females had the highest number of lectures and students at in Ahmadu Bello University, Zaria.

Table 3: Age Group of the Respondents

Age	Frequency	Percentage
25–34 yrs.	79	53%
35–49 yrs.	41	27%
50–59 yrs.	20	13%

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60-69 years	10	7%
Total	**150**	**100%**

Field survey, 2023

Table 3 shows the age group of the respondents: those between the age groups of 25-34 have 79(53%) which is the highest response in terms of this study, while 35-49 have41 (27%), 50-59 years have20 (13%), and 60-69 years have 10 (7%). This indicates 25-34 years as the majority of lecturers and students in this study.

Table 4.4: lectures/students' qualification of The Respondents

Qualifications	**Frequency**	**Percentage**
Professor	6	4%
Associate professor	4	3%
PhD	14	9%
Masters	30	20%
Degree	84	56%
Diploma	12	8%
total	**150**	**100%**

Field survey, 2023

Table 4.4 shows the academic qualifications of the respondents at Ahmadu Bello University, Zaria, where degree representing a frequency and percentage of 84 (56%) has the highest response, followed by Masters 30 (27%), Ph.D. 14 (9%), Diploma 12 (8%), professor 6 (4%), associate professor 4(3%). In regard to this study, it shows that the degree has the highest qualification among respondents in the study.

Result

Research Question 1

What are the various forms of online teaching and learning modes adopted during the COVID-19 pandemic?

Various Forms of Online Teaching-Learning Modes: The respondents were undecided about the various forms of online teaching-learning modes adopted during the pandemic. This indicates a lack of consensus or clarity among the participants regarding the different approaches used.

Research Question 2

How are the perceptions of teachers and students about online teaching and learning during the COVID-19 pandemic?

Perceptions of Teachers and Students: There was disagreement among the respondents regarding the perceptions of teachers, ICT staff, and students on online teaching and learning. This

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suggests a divergence of opinions and perspectives among the participants regarding the effectiveness and benefits of online education.

Conclusion

Based on the findings, it can be concluded that the COVID-19 pandemic presented various challenges and uncertainties in the implementation of online teaching and learning. The perceptions and experiences of teachers, students, and ICT staff differed, indicating the need for further research and collaboration to improve online education practices.

Recommendations

1. Provide clearer guidelines and support for adopting various forms of online teaching-learning modes to ensure consistency and effectiveness.
2. Address the challenges faced by teachers, ICT staff, and students in adapting to online teaching-learning through training, resources, and support.

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