UNIVERSITY OF EDUCATION, WINNEBA

EXPERIENCES OF POSTGRADUATE STUDENTS IN STUDYING ONLINE DURING THE POST COVID-19 ERA: THE CASE OF UNIVERSITY OF EDUCATION, WINNEBA

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Department of Educational Administration and Management
School of Education and Lifelong Learning

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DECLARATION

Student's Declaration

I, Bright Atsrim, declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

Signature: ……..….

Date: …….

Supervisor's Declaration

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis/dissertation/project as laid down by the University of Education, Winneba.

Name of Supervisor: PROF. HINNEH KUSI

Signature: ……..……

Date: …….....……

DEDICATION

To my lovely mother, Mrs Elizabeth Abra Atawakuma Atutonu- Atsrim (Emmanor) and a loving family of Rev. and Mrs Eric Edzeame Vidzah, for their invaluable inputs.

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GLOSSARY

CBT	Computer-Based Training
Col	Community of Inquiry
CMI	Computer-Managed Instruction
COVID-19	Corona virus-19
CSCL	Computer Supported Collaborative Learning
GHS	Ghana Health Service
IPC	Infection Prevention and Control
LMS	Learning Management System
MERS	Middle-East Respiratory Syndrome
NMIMR	Noguchi Memorial Institute for Medical Research
PHEIC	Public Health Emergency
PLATO	Programmable Logic for Automatic Learning Operations
PLE	Personal Learning Environments
SARS	Severe Acute Respiratory Syndrome
TEL	Technology Improvement
UCC	University of Cape Coast
UEW	University of Education, Winneba
UNESCO	United Nations Educational, Scientific and Cultural Organization
VLE	Virtual Learning Environments
WBT	Web-Based Training

ABSTRACT

The study sought to explore the experiences of students in studying online during the Covid-19 era at the University of Education, Winneba (UEW). Interpretivist paradigm was employed for the study. Qualitative approach was selected for the study. A phenomenological design was chosen for this study. The sample for the study was ten postgraduate students from two departments of the university, who were purposively sampled. A semi-structured interview guide was used to generate data which was analysed thematically. Interview guide was used as the data collection instrument. Data was analysed using the thematic analysis procedure. Results of the study revealed that technology-related experiences of students in studying online during the post COVID-19 era at UEW were poor internet accessibility, inadequate knowledge in ICT and lack of transparency in assessment online. Also, Lecturer-related experiences of students in studying online during the post COVID-19 era at UEW were identified as lack of commitment and motivation to use technology and lack of training and experience in technology use. It was concluded that some students and lecturers in the University of Education, Winneba are not committed into e-learning. They need a clear understanding of e-learning and be encouraged to embrace it. Based on the findings, it was recommended that, the Management of UEW should organize monthly workshops for lecturers and tutors to enable them exchange ideas and acquire requisite competencies that will promote e-learning. Again, the Management of UEW should design an operational policy that mandate lecturers to lecture on-line in addition to face to face lecture. Moreso, the internet network system within UEW should be made stronger enough for students to effectively utilize it to search for information. This could be done by expanding the internet network infrastructure.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

The introductory chapter addressed the background to the study, the statement of the problem, the purpose of the study, the research objectives, the research questions, and the significance of the study. It also outlined the delimitation of the study and concluded with the organization of the study.

1.1 Background to the Study

In 2020, the World Health Organization declared the outbreak of the coronavirus disease, COVID-19 to be a Public Health Emergency (P.H.E.I.C) of International Concern (Emanuel et al., 2020). Preventive measures including effective hand hygiene, respiratory hygiene as well as other Infection Prevention and Control (IPC) practices like social distancing, the use of Personal Protective Equipment (PPEs) were instituted at all treatment centres and in the community (Ghana Health Service [GHS], 2020). The COVID-19 virus kept surging and so a number of social and personal restrictions/ measures were put in place to prevent its spread throughout the populace. By mid-June 2020, there had been over 8 million cases of COVID-19 globally, with over 436,000 deaths (Brodeur, Gray, Islam & Bhuiyan, 2020).

According to Asante and Mills (2020), major cities in Africa such as Lagos, Accra, and Johannesburg have recorded the highest numbers of cases of COVID-19 which has altered their everyday social, economic, and political lives. The rapid spread of COVID-19 places huge strain on capacity, responsiveness and resilience of public and private healthcare systems worldwide (Legido-Quigley, Mateos-Garcia, Campos, Gea-Sanchez, Muntaner, McKee, 2020). Across multiple countries, this has been

accompanied by implementation of public health policies significantly altering everyday life, such as the quarantine of citizens for significant periods of time, with both short- and longer-term consequences for psychological distress and wellbeing (Brooks et al., 2020). In Ghana, the first two cases of COVID-19 were confirmed on March 15, 2020 when two foreigners from Turkey and Norway found their way into Ghana (Ghana Health Service [GHS], 2020). The rapid spread of COVID-19 places huge strain on capacity, responsiveness and resilience of public and private healthcare systems worldwide (Legido-Quigley et al., 2020).

In response to the Corona virus pandemic, on the 15th of March, 2020, President Nana Akufo-Addo of Ghana ordered the closure of all education establishments in Ghana, affecting some 9.2 million basic school students (kindergarten, primary and junior high schools) and 500 thousand tertiary education students. As at July 2021, the active cases of COVID-19 in Ghana had risen to 103019 with a death toll of 996, severe conditions 198 and critical conditions at 35 (Ghanaian Times, 2021). According to Barnum, (2020) the COVID-19 pandemic has altered the lives of huge numbers of school administrators, teachers, students and parents around the world, with millions now teaching and learning remotely from home. Although it is still early days, the pandemic is likely to have substantial long-term effects on educational systems worldwide.

The United Nations Educational, Scientific and Cultural Organization (UNESCO), (2020), launched Guidance Note on Education Systems' to provide immediate support to countries as they work to minimize the educational disruption and facilitate the continuity of learning, to plan distance learning solutions and ensure that learning continuous during the COVID-19 outbreak (UNESCO, 2020). The adverse effects of

the COVID-19 pandemic and government lockdown restrictions on the education system is very apparent. The government and education institutions suspended face-to-face learning activities in March 2020. Across the various levels of education, learners and students from poor homes struggled to continue their education due to expensive internet access and poor supervision of their learning. The closure of colleges and universities has ramifications for students, faculty, administrators, and the institutions themselves. To aid in limiting the spread of COVID-19, several libraries have been temporarily closed. In the United States, a lot of major cities announced public library closures, affecting 221 libraries (Hauck & Stanglin, 2020). Students without internet access at home are striving to keep up with distance learning (World Economic Forum, 2020).

According to Reimers, Fernando, Schleicher and Andreas (2020) internationally, university authorities have also switched to e-Learning through online platforms such as Zoom, WhatsApp, Facebook, and Instagram live, YouTube, and many others to facilitate learning at the tertiary level and University of Education, Winneba is no exception. At the University of Education, Winneba, most postgraduate students have halted their thesis works. Although University of Education, Winneba have introduced virtual learning, the progress of learning by continuing students has been hindered by unstable e-Learning platforms, poor internet connectivity etc. Government intervention to support universities with virtual learning alternatives is commendable however it is not accessible to many students in the country. It is therefore imperative that government and institutions invest more and improve upon their virtual learning interventions to promote quality education in our universities.

1.2 Statement of the Problem

The COVID-19 pandemic compelled the University of Education, Winneba (UEW) to undergo a radical transition from traditional face-to-face instruction to a digitized modality via its institutional Learning Management System (LMS). While this ensured academic continuity, it birthed a complex array of challenges that persist in the post-COVID-19 era. Currently, postgraduate students at UEW are grappling with significant academic adjustments. Research indicates that the rapid transition to online learning and changes in coursework delivery have created a "pedagogical shock" that can negatively impact academic performance (Hodges et al., 2020; Owusu, 2020). Students struggle to adapt traditional research-intensive pedagogies to a virtual format, leading to concerns about the quality of scholarly discourse.

Furthermore, the technological experience of these students is marred by inequities in accessibility and equity. Despite the availability of the LMS, persistent technical issues, erratic internet connectivity, and varying levels of digital literacy continue to hinder effective learning (UNESCO, 2020; Bawa, 2020). Beyond the screen, the mental health and well-being of postgraduate students have emerged as a critical concern. The shift has induced high levels of stress, anxiety, and burnout, exacerbated by the social isolation and loneliness inherent in virtual environments (González, 2020; UNESCO, 2020). These students, who often balance professional and family roles, find their coping mechanisms stretched thin without physical academic support communities.

Socio-economically, the post-pandemic era has introduced financial struggles related to data costs and digital infrastructure, which threaten students' career aspirations and long-term employability (World Economic Forum, 2020). While institutions have

moved forward with digital agendas, the social connections essential for postgraduate mentorship have weakened, creating a gap in professional networking.

Despite these multifaceted problems, there is a dearth of empirical evidence documenting how these specific issues ranging from mental health burnout to technological inequity intersect at UEW. If these experiences are not systematically investigated, the university risks entrenched inequalities and diminished quality in postgraduate outcomes. Therefore, this study explores the experiences of postgraduate students at UEW to identify lessons learned and future directions, aiming to establish best practices and improved support systems that "future-proof" postgraduate education in Ghana (OECD, 2020).

1.3 Purpose of the Study

The study sought to explore and understand the experiences of postgraduate students at the University of Education, Winneba, in studying online during the post-COVID-19 era.

1.4 Objectives of the Study

1. To explore postgraduate students' technology-related experiences in studying online during the post-COVID-19 era at the University of Education, Winneba.
2. To understand postgraduate students' experiences of interaction and communication with lecturers and peers in online learning environments at the University of Education, Winneba.
3. To explore postgraduate students' experiences of academic engagement, participation, and performance in online learning during the post-COVID-19 era at the University of Education, Winneba.

4. To identify postgraduate students' experiences of institutional and supervisory support systems that facilitate online learning at the University of Education, Winneba.

1.5 Research Questions

The study was guided by the following research questions:

1. What are the technology-related experiences of the students in studying online during the post Covid-19 era at UEW?
2. What are the experiences of the students in interacting with lecturers when studying online during the post Covid-19 era at the University of Education, Winneba?
3. How does studying online during Covid-19 affect students' academic performance at UEW?
4. What are the support systems that the management of the University should put in place to enhance on-line teaching and learning in the advent of Covid-19 at UEW?

1.6 Significance of the Study

The findings of this study will help stakeholders, especially the management of University of Education, Winneba to appreciate the challenges confronting students with regards to teaching and learning in the wake of the COVID-19 pandemic. This will throw a challenge to them to provide the necessary training and support services that will enhance distance education (support for lecturers and students on the use of digital tools) to aid teaching and learning and also effectively plan the study schedule of the distance learning programmes. Finally, the study is expected to generate interest in other researchers to undertake similar studies in other Universities.

For policy, the study will expand the use of e- learning in Ghana through giving of feedbacks to policy makers which intend improve the quality of e- learning services. This means the study can be used to inform dialogue about the potential need to integrate online learning services into university and other institutions. Moreover, data collected and analysed will add up to existing literature on exploring experiences of postgraduate students studying online during the post Covid-19. The findings and recommendations of this study is to give enough information on studying online during pandemic times.

The researcher used qualitative method. As such the researcher engaged in exploratory field visits to focus on in-depth understanding of the problem through detailed examination of participants' perceptions and experiences. Ultimately, it will function as a resource for future research on online learning in the aftermath of the Covid-19 pandemic by postgraduate and undergraduate students.

1.7 Delimitation of the Study

Creswell and Creswell (2018) define delimitation as "how the study is narrowed in scope" (p. 106). Delimitations therefore specify the boundaries within which a study is conducted. This study was delimited to the University of Education, Winneba (UEW), in the Central Region of Ghana. The choice of UEW was deliberate because it is the premier institution for teacher education in Ghana and one of the first public universities to fully adopt an institutional Learning Management System (LMS) to facilitate online and blended learning during and after the COVID-19 pandemic. This made UEW a suitable context for examining postgraduate students' experiences with online learning in the post-pandemic era.

The study was also delimited to postgraduate students rather than undergraduates or faculty members. This decision was informed by the distinctive nature of postgraduate education, which involves advanced research, intensive supervision, and self-directed learning. These characteristics make postgraduate students' experiences of online learning qualitatively different from those of undergraduate students. Exploring their experiences provides a deeper understanding of how mature learners use pete digital platforms, and academic support systems within a post-pandemic context.

The temporal scope of the study was confined to the post-COVID-19 era (2021–2023). This period was selected because it reflects a transitional phase during which universities in Ghana, including UEW, shifted from emergency remote teaching to more structured and sustainable blended learning systems. Focusing on this era made it possible to capture students' reflections on their adaptation, engagement, and learning practices beyond the immediate crisis period of the pandemic.

Methodologically, the study was delimited to a qualitative research approach, employing semi-structured interviews as the primary data collection method. This design was chosen to allow for an in-depth exploration of students' lived experiences, perceptions, and interpretations of online learning, which could not be effectively captured through quantitative measures.

Finally, the study did not include the perspectives of university administrators, lecturers, or other stakeholders. The focus was solely on postgraduate students' experiences to ensure that their voices were central in understanding the realities, challenges, and opportunities of online learning in the post-COVID-19 era at UEW. The study involves ten (10) postgraduate students from two (2) departments, Department of Educational Administration and Management and Department of Arts

and Design at the University of Education, Winneba. The purposeful selection of the Department of Educational Administration and Management and the Department of Arts and Design serves to provide a comprehensive analysis of the postgraduate digital experience by contrasting two distinct pedagogical landscapes. While Educational Administration represents a theory-intensive and policy-oriented discipline, Arts and Design offers a practical, studio-base perspective that traditionally relies on tactile, face-to-face interaction; this dual focus allows the study to evaluate how the university's technological infrastructure supports vastly different research methodologies. Furthermore, both departments host a robust mix of Regular and Sandwich postgraduate streams, ensuring that the findings regarding lecturer-student interaction and online assessment transparency are representative of the diverse academic and professional backgrounds found within the University of Education, Winneba.

1.8 Organization of the Study

The study was organized into five chapters; Chapter One dealt with the introduction, the background to the study, the statement of the problem, purpose of the study, objectives of the study, the research questions, and significance of the study as well as the delimitation of the study, and ends with organization of the study. Chapter Two focuses on the review of literature relevant to the study. It consists of both empirical and theoretical literature. The third chapter dealt with the research methodology. The chapter covers the research paradigm, approach and design, population of the study, sample and sampling techniques, research instruments, data collection and analyses techniques, trustworthiness of qualitative data and ethical issues. Chapter Four presents an analysis and discussion of the results. Chapter Five covers the summary, conclusions as well as recommendations and areas for further research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter presents theoretical and empirical review of related literature to the topic. Literature was also sourced from a wide range of sources including local and international. These included literature from books authored by individuals and groups, journals, articles, the internet and other scholarly works to achieve the results for the present study. Areas highlighted in the review include the following:

a. Theoretical underpinning of the study
b. Online learning
c. Concept of educational technologies
d. Educational technologies and pandemics
e. The concept of teaching and learning
f. Technology-related experiences of students in studying online during Covid-19
g. Lecturer-related experiences of students in studying online during Covid-19
h. How studying online during Covid-19 affected students' academic performance
i. Support systems for enhancing on-line teaching and learning in the advent of Covid-19

2.1 Theoretical Underpinning of the Study

The study was underpinned by the viral modernity theory by Peters (2020) and the Community of Inquiry (Col) Framework (Garrison, Anderson, & Archer, 2000). Viral Modernity is a model that is based on the nature of viruses, the ancient and significant role they play in evolution and culture, and the elementary application to comprehending the role of information and forms of bio-information in the social

world' (Peters, Jandri & McLaren, 2020). The concept draws a close association between viral biology on the hand, and information science on the other hand (Peter et. al, 2020). This theory discusses the impact of information on infectious diseases and their consequential effects on education and socio-cultural activities of people. Peters et al. (2020), explains that media play part in the fight against pandemics and identifies some journalists, and bloggers as messengers of inaccurate information on social media and described it as a way of helping to fuel panic, hysteria and stigma that are associated with infectious diseases outbreak (Peters et al., 2020). This study used modernity theory to explore the experiences of students in studying online during the post COVID-19 era at the University of Education, Winneba.

This theory is uniquely suited for this study because it acknowledges that the shift to the University of Education, Winneba (UEW) was not merely a temporary fix but a systemic "infection " of traditional pedagogy by digital systems. It explains the rapid, non-linear transition postgraduate students had to make. Viral Modernity helps us understand the "blurred boundaries "postgraduate students face. For instance, at UEW, the physical campus experience is now inseparable from the Learning Management System (LMS) and WhatsApp groups, creating a 24/7 "viral " flow of academic expectations that can lead to both increased connectivity and digital fatigue. While Peters (2020) provides a macro-view of digital acceleration, the theory is somewhat deterministic. It assumes that because the technology is present, the "viral " spread of knowledge is automatic. In the context of UEW, this ignores the digital divide specifically, how intermittent internet connectivity and data costs in Ghana act as "antiviral " barriers that hinder the seamless flow of ideas the theory predicts.

To provide a more student-centered lens, this study also adopts the Community of Inquiry (CoI) Framework. This model suggests that effective online learning occurs through the interaction of three core elements: Social Presence, Cognitive Presence, and Teaching Presence. While Viral Modernity explains the environment, CoI explains the experience. It allows the researcher to measure whether UEW postgraduate students feel socially connected to their peers and whether the instructional design supports deep intellectual engagement. This theory directly addresses the research questions regarding student interactions. It helps identify if the "post-COVID " online experience at UEW is a lonely endeavor or a collaborative academic community. The combination of these two theories ensures that the study covers both the infrastructure of online learning (Viral Modernity) and the pedagogical quality of the experience (CoI).

While Viral Modernity Theory and the Community of Inquiry Framework originate from different academic perspectives, this study integrates them to provide a holistic understanding of the postgraduate experience at the University of Education, Winneba (UEW). The researcher justifies the use of these two theories based on the dual nature of online education in a post-pandemic era. Viral Modernity is essential for explaining the macro-environment- how Covid-19 acted as a catalyst that "infected" traditional Ghanaian pedagogy of technology rather than the quality of the learning taking place. To bridge this gap, the CoI Framework is introduced to evaluate the actual social and cognitive engagement of the students. By combining them, the study moves beyond simply acknowledging that "learning is now online " to investigating "how effectively students are learning " within that digital viral ecosystem.

In the view of this researcher, most literature on viral modernity (e.g., Peters, 2020) carries a Western-centric assumption of seamless connectivity. In the context of UEW, the "Viral " spread of ideas is often interrupted by localized "structural antibodies," such as high data costs, erratic power supply (dumsor), and varying levels of digital literacy among mature postgraduate students. Therefore, this study argues that the "blurred boundaries "mentioned in Viral Modernity are not always a sign of progress; for a postgraduate student, a blurred boundary might mean the intrusion of academic stress into a home environment that lacks the infrastructure to support it. By using the CoI framework alongside Viral Modernity, this researcher intends to highlight that presence (social, teaching, and cognitive) is the "vaccine " against the isolation and technical frustrations inherent in the post-COVID digital shift

2.2 Covid-19 Pandemic

At the end of 2019, a new disease commonly called Covid-19 appeared and shocked the whole world. This disease was first discovered in the city of Wuhan, China. Covid-19 is an infectious disease caused by the corona virus. This virus spread quickly and spread to other regions in China and most countries in the world, including Indonesia (Alodokter, 2022). Covid-19 is caused by a coronavirus, which is a group of viruses that infect the respiratory system. In most cases, this virus causes only mild respiratory infections, such as the flu. However, this virus can also cause severe respiratory infections, such as pneumonia, Middle-East Respiratory Syndrome (MERS), severe acute respiratory syndrome (SARS), and can even cause death (Biofarma, 2021). In addition, Fadli (2022) also mentioned some common symptoms experienced by patients with Covid-19 infection including fever, cough, fatigue, diarrhea, runny nose, nausea and vomiting, headache, sore throat, and loss of the sense of smell and taste.

The emergence of the Covid-19 pandemic caused tremendous panic for the entire community, as well as destroying all sectors of life. The emergence of the COVID-19 pandemic has forced several countries to implement social distancing policies to prevent the spread of COVID-19. This policy in Indonesia is often called physical distancing, this aims to minimize the spread of Covid-19 (Oktarina, Warsono, Priyadi, & Kismartini, 2021). The social distancing policy means that residents must carry out all activities at home, such as work, study, and worship (Baznas, 2020). The implementation of this policy has an impact on all sectors of life, one of which is the education sector. Teaching and learning activities are forced to be carried out remotely or online or commonly referred to as online learning. In implementing this policy, many parties are not ready to implement online learning.

Not only readiness that still needs to be improved from this online learning, many people are apparently unable to take part in online learning activities due to the limited ability of the community, many of whom do not have devices that support online learning (Baznas, 2020). The Covid-19 pandemic condition forces policy makers in the education sector to be able to adapt in carrying out the learning process. This is certainly a challenge in carrying out online learning during the Covid-19 pandemic.

2.2.1 COVID-19 in Ghana

In Ghana, the first case of COVID-19 has been recorded on 12th march, 2020 (Ghana Health Service [GHS], 2020a). The report from GHS indicated that two individuals who had returned from Norway and Turkey respectively tested positive for COVID-19 per the laboratory results from the Noguchi Memorial Institute for Medical Research (NMIMR) (GHS, 2020b). The cases of COVID-19 increased from two to four the following day and from four to six on the 14th of March. On the 15th of March the

country recorded additional four cases of COVID-19 resulting in a total of 10 confirmed cases. Currently (as at 23rd April, 2020, 11:00am) confirmed cases of COVID-19 stands at 1154, 99 of them had recovered and 9 people had lost their lives (GHS, 2020b). To curtail the spread of COVID-19 in Ghana, the president of Ghana had interdicted all public gatherings including conferences, workshops, funerals, festivals, political rallies, church activities and other related events. In addition, both public and private basic schools, senior high schools, colleges and universities were closed down (Kokutse, 2020; Nyabor, 2020).

In Ghana, in an attempt to continue with academic work, some universities including University of Ghana, Wisconsin International University College, University of Education, Ashesi University and Kwame Nkrumah University of Science and Technology have resorted to e-learning platform for engaging students in academic activities (Anaba, 2020; Ashesi University, 2020). Recently, the Directorate of Academic Affairs at the University of Cape Coast (UCC) had released a notice to inform its students about the resumption of official academic work (lectures and tutorials) online from Wednesday, April 22, 2020 to Tuesday, June 2, 2020 and this will be done through UCC Moodle Platform (Bonney, 2020). Lecturers were mandated to develop their model and upload it on e-learning platform to ensure effective instructional discourse.

2.2.2 COVID-19 Pandemic and Higher Education

The current pandemic caused by the novel coronavirus (COVID-19) has had a profound impact on our daily activities and has presented us with unprecedented challenges. As the dreadfulness of COVID-19 became crystal clear, globally, governments closed schools in an attempts to curb the spread of the virus impacting over 90% of the world's

enrolled learners (Riggall, 2020; UNESCO, 2020a). The intermissions to education can have long-term repercussions, exclusively, for the most vulnerable. This may not only cause loss of short-term learning but also further loss in human capital and diminished economic opportunities in the long-term as well as prejudice towards particular groups (Watson, 2020). The COVID-19 outbreak is affecting education in terms of reduction in utilisation of schools, lack of quality appropriate education, reduction in access to education services, reduction in availability of education services, lack of maintenance of schools, lack of teacher training, fear of school return and emotional stress caused by outbreak, reduced financial resources, diversion of resources and teachers, confusion and stress for teachers, lack of at-home educational materials, challenges measuring and validating learning, parents unprepared for distance and home schooling, challenges creating, maintaining, improving distance learning, loss of quality teaching and learning, social isolation, emotional disequilibrium and school drop outs (Bozkurt & Sharma, 2020; Hallgarten, 2020; UNESCO, 2020b).

Due to these effects, governments are taking measures to ensure that education continues via emergency remote learning/teaching approaches with many deploying online learning solutions (David et al., 2020; Jalli, 2020). This may seem experimental to some higher education institutions, typically, those in developing countries like Ghana, and however, there might be others who have managed online teaching/learning before. Regarding this, several organisations are providing assistance to ensure that learners continue their education worldwide. For example, the World Bank is vigorously working with Ministries of Education in numerous countries to support their efforts to employ instructional technologies of all sorts to provide remote learning opportunities for students while schools are closed as a result of the COVID-19 crisis

(World Bank, 2020a). Similarly, UNESCO is helping countries in their labours to alleviate the instantaneous effect of school closures, particularly for more vulnerable and disadvantaged communities, and to facilitate the continuity of education for all through remote learning (UNESCO, 2020a).

However, it seems that higher educational institutions understand the pedagogical, logistical, and also technological challenges to these timely measures. Most of the higher educational institutions in low- and middle-income countries, including students and teachers, lacked access to high-speed broadband or digital devices needed to fully deploy online learning options. Thus, transition from in-person to person instruction to emergency remote learning/online learning has wide-open cavernous digital divides between and within schools and countries (World Bank, 2020a), particularly, among low-medium income countries like Ghana. The condition is far poorer for lower resource environments in middle- and- low-income countries with internet dissemination rates typically less than 50% and a large fraction of students without devices to enable emergency remote learning at home (World Bank, 2020a). This result indicates the capacity of parents and even schools to support emergency remote learning or online learning during school closures as result of COVID-19. Per this, higher education institutions need to cogitate substitute ways for students to continue learning when they are not in school, like in the current COVID-19 crisis.

On this account, UNESCO is centring on solidifying capacities of distance learning systems to overcome the digital divide through resources providing support to teachers, parents and caregivers. In equivalent, the Organization is firming its assistance with the open educational resource (OER) community to support openly licensed teaching and learning materials in the framework of the 2019 UNESCO OER Recommendation;

identify MOOCs and OERs which can provide online courses and self-directed learning content through both mobile and desktop platforms; support, through the OER4Covid initiative, transition to online learning using OER during the COVID-19 pandemic (UNESCO, 2020).

2.3 Online Learning

Online learning (e-learning) describes any form of pedagogy delivered using digital technology. Such methods incorporate visual graphics, text, animations, videos and audio. In addition, online pedagogy can also facilitate group learning, and the assistance of instructors within specific fields (Wan Aziaris, 2015). For the purpose of this study, online learning is defined as a teaching and learning process between teachers and pupils that involves various digital mediums, such as 'Whatsapp', 'Zoom', and 'Google Classroom'. In addition, online learning does not refer to direct learning alone. Any assignments or activities, provided by the teacher online, are considered part of online learning.

According to Ratheeswari (2018), in the digital age, the use of Information and Communications Technology (ICT) allows students to learn and apply the skills that they need in the 21st Century. Furthermore, online learning is the best medium by which to ensure the continuity of students' learning during the COVID-19 pandemic (Ariffin et al., 2020; Fauziana, 2020; Mansor et al., 2021; Raheim, 2020; Samat et al., 2020). According to Pusvyta Sari (2015), online learning is an alternative pedagogy for the era of technological development and communication, and students in particular need to adapt. Mat Dawi et al. (2016) found that, in the midst of globalisation and the advancement of ICT, technology-based and online learning is highly encouraged. The management of pedagogical processes should be conducted creatively and undergo

innovation to facilitate interaction between teachers and students. By interacting online, instructors and educators remain connected with their students notwithstanding being in different locations (Hussin, 2017).

Technology-based teaching and learning techniques should be applied within schools and universities by public or private agencies. These methods should be implemented in accordance with the requirements of digital learning, and participants should experience constant interaction without the need for face-to-face communication (Duff, 2020). Various educational technology should be employed to ensure that students feel excited to learn, and to resolve any discrepancies between the consistency of students' learning experiences online, as opposed to face-to-face. Interactive online learning allows students to uncover new information by exploring digital libraries and websites. As further technologies are introduced to the field of education, distance learning facilitates the global dissemination of information and knowledge (Hasifah, 2020). She contends that online learning is important because it can enable more effective self-learning. Students can choose the time they spend, the content they learn, and the direction of their learning. Students also have the opportunity to revisit challenging topics until they feel confident in their understanding.

Furthermore, online learning allows students to study in a "safe" environment, without experiencing embarrassment about asking questions. According to Harrison (2018), young children can access pictures and videos, navigate 'Youtube', and interact and participate in games and digital applications that are suited to their age. Generations Y and Z evidently possess the greatest experience of ICT facilities, thereby making it easier for these groups to utilise online learning. According to Fauziana (2020), students can revisit their lessons by re-watching recordings made by the educator, and obtain

information from books or using the internet to strengthen their knowledge. Educators and students can also conduct bilateral communication, as messages can be exchanged during a lecture using the meeting software's chat column, 'Whatsapp', 'Telegram', video calls or phone calls. Students can also review their lessons using Education TV on TV channels.

Sadeghi (2019) argued that the online learning has the benefits of study from anywhere at any time, saving significant amount of money, no commuting, flexibility to choose the course of learning, and saving time. Convenience, accessibility and cost are very beneficial to online teaching and learning. For instance, both lecturers and students can conveniently have lectures anywhere without being limited to the confines of the lecture halls (Murphy, 2020). It is envisioned that especially students during holidays are able to maintain contact with their lecturers irrespective of the distance.

Online learning has benefited society by giving professionals an opportunity to continue their education on a flexible, part-time, and distant basis. Furthermore, with the rapid development and implementation of advanced information technology (IT) such as digital libraries and electronic publishing, distance education will experience significant changes in organizational structure and design, as well as in the way educators taught classes, assign grades, and certify degrees (Lang & Zhao, 2014) Electronic commerce (e-commerce) as an IT form is not only a modern technical means for improving the efficiency of the traditional distance learning business model; it has also resulted in the transformation of current processes and organizational frameworks, resulting in transforming the learning environments into innovative and more effective learning environments. According to Lang and Zhao (2014), there are two important areas of e-commerce that shape a basis for distance learning; namely, digital libraries

and electronic publishing. Electronic publishing created new business models, such as subscription or pay-per-use retrieval of online books and other information sources, offering easy and affordable access to up-to-date information on relevant subjects and specialized fields (O'Reilly, 2016). Digital libraries became the epicentre of organized electronic books, and they are now easily accessible through the Internet (Mannoni, 2012). As a result, specialized service providers, referred to as virtual universities by (Hamalainen, Whinston & Vishik, 2011), who operate in the Internet-based e-commerce market, will be able to provide just-in-time and on-demand delivery of personalized educational products in digital form.

Online education has the potential to transform the education system by expanding educational opportunities, transforming student populations and encouraging the development of new pedagogical methods (Karp & McGowan, 2020), making the learning process more reliable, more efficient, and less stressful for both instructors and students. Although there are studies suggesting that online and traditional education are comparable in terms of learning outcomes, it is also admitted that online learning is perceived as lacking in interactivity compared with classroom learning (Murphy, 2020). However, in a study including 156 students, Patricia (2020) concluded that there was no statistically significant difference in learning preferences between students attending online courses and students attending courses in person. The effectiveness of online education has shown a number of advantages due to increased flexibility and learning opportunities: easy access to experts, exposure to educational environments, a wide range of types of courses, and joining student communities.

The use of Information and Communications Technology (ICT) can offer the ideal solutions to solve the challenges of traditional approaches such as e-learning, distance education, and virtual universities (Kheyrandish, 2011). We are going to witness a digital revolution for the higher education system that will be imposed by the consequences of the COVID-19 outbreak through teleconferencing, online lectures, online examination, and communications in virtual environments (Strielkowski, 2020). For example, before the COVID-19 pandemic, the Jordanian government did not have adequate policies to support the Jordanian universities to incorporate elements of modern educational technologies such as those used in distance learning into their courses. Distance learning has two main approaches that existed traditionally, namely: (1) synchronous and (2) asynchronous. The first approach is where learners learn together in live settings such as classes, allowing greater participation at the expense of scheduling and technical challenges, and a sense of community. The second one, asynchronous learning, on the other hand, enables students to study and discuss content on their own in forums such as emails or message boards, allowing time for material synthesis at the expense of group interaction (Offir, Lev, Bezalel, 2008; Watts, 2016). Online learning through electronic learning (e-learning) is a type of learning used for distance learning, British and American universities have been using e-learning since the mid-1960s (Abdullah, 2018). E-learning is a teaching and learning method that enables teachers to use internet media, intranets, or other computer network media to provide teaching materials to their students (Ompusunggu, Sari, 2019). E-learning is a digital transformation of the traditional education system and content into a digital one.

Zamani (2009) as cited in Kolog et al. (2014) points out that email is an ideal platform or medium for people with different time schedules, providing an opportunity for introspective responses. Nevertheless, sending email is associated with security issues

which makes it difficult to guarantee a water-tight confidentiality. Ralls (2011) as cited in Kolog (2014) worries about the confidentiality issues associated with the use of email and cautions that email conversations are not secured without any means to protect it. However, he advocates that confidential information on the internet can be shared over a secured server; otherwise, only general information could be requested and provided. Indeed, emails can also be encrypted over the internet for secure confidential materials.

2.3.1 Learners' perspective on online learning

Behaviour is strongly influenced by an individual's attitudes. Positive attitudes result in positive behaviour and negative attitudes always cause negative behaviour (Hazwani et al., 2020). This observation corresponds with the nature of students' engagement with e-learning (online learning). Several studies have highlighted the challenges and opportunities associated with e-learning during the pandemic (Mailizar et al., 2020). Researchers endeavour to understand the benefits and obstacles that various stakeholders involved in e-learning have experienced. Based on the work of Mailizar et al. (2020), the student's voice is a significant consideration in this context. Therefore, further research is necessary to identify the challenges that restrict students' abilities to achieve their goals.

Hazwani et al. (2017) have concluded that students' attitudes influence the effectiveness of e-learning. Accordingly, students that are optimistic and enthusiastic will not experience e-learning as an obstacle to their academic success. Adnan (2020) found that students felt that conventional learning differed greatly from online learning. Furthermore, students felt that face-to-face learning is crucial for effective learning, and that group assignments are difficult to complete online. According to Hazwani et al.

(2020), not all students and organisations enjoy e-learning. To ensure that e-learning can be used extensively, independently, and to the greatest effect, it is important to identify which factors affect its use. E-learning also demands that users be more self-motivated to learn. The findings of the previous study are supported by Surjono et al. (2015), who state that e-learning can produce a flexible and distributed learning system. Students will be able to choose the time and location in which they study because they are not required to attend a certain place at a specific time. Distributed learning describes a process whereby instructors, students and learning materials are located in different areas so that students can learn the level of time and place limitations.

The process of learning is complex and it involves the auditory, visual, and tactile senses. The traditional way of learning at a campus university is not for everyone. Online learning is for those who wish to study for a degree alongside work or other commitments. Online learning has been referred to as a form of distance education and as web-based learning, e-learning, and digital learning. It is offered over the Internet and uses web-based materials and activities (Adrian, 2018). Students need to be technologically savvy to use technology tools that may be required. Students of the digital age appear to be independent, more technology disciplined, and technology savvy, well suited for online environment. Online learning at your own pace is beneficial for a high-quality college degree. Whether offered on campus or delivered online, each course offering must meet the same rigorous criteria and the strict academic standards. The only difference is in the way the course is delivered. Generally, students are required to have access to a computer system with high-speed Internet connections. They may also expect electronic academic support services such as registration, financial aid, libraries, tutoring, and advisement (Donna, 2020).

2.3.2 Benefits and challenges of online learning

According to Wildana et al. (2020), the online learning models used during the COVID-19 pandemic equipped students with knowledge in a similar way to face-to-face learning. However, online learning provides more experience will be the importance of process learning that balances the development of time and technology based on self-regulatory capabilities, which is definitely owned by each student. According to Wildana et al. (2020), the regulations enforced by the head of an educational institution are most important when delivering online learning. The availability of the internet and the cost of internet packages determine the continuity of online learning. However, in practice, this study found that students experienced limited internet access because of their geographical location, or as a result of limited finances with which to purchase internet packages. Students' level of literacy, and their ability to access online learning, is also crucial to the effectiveness of online learning.

Hazwani et al. (2020) found that internet connection was the most significant factor to influence the effectiveness of e-learning. Hazwani et al. (2020) contend that management personnel need to improve dormitory areas to provide all students with access to the internet. Internet connection must be moderate or good in order to suffice. Moreover, students need to experience modern technologies in order to adapt to current circumstances. Never using this application does not mean not having to take note of technology. Students should familiarise themselves with various online applications so that their knowledge is up-to-date. Digital technology is extremely useful and benefits students that use it in a positive way (Hamimi, 2018). The spread of COVID-19 has triggered the development of new pedagogical models and online learning applications to facilitate the achievement of learning goals (Schneider & Council, 2020). In

response, innovation in the field of education should continue to ensure that this development does not cease (Verawardina et al., 2020).

According to Nurul Haidah et al. (2020), students keep pace with social change by adapting to the availability of new technologies. This adaptation is crucial, as modern life is embedded in technology. Once these skills have been attained, students are able to adapt regardless of their circumstances and respond to the emergence of new or familiar problems. Consequently, students will possess a variety of technology skills that they can apply in the future. This initiative has encouraged the use of ICT and social media applications as an important platform to help teenagers and students engage in remote learning. These initiatives and recommendations prioritise students that will take important examinations, such as the SPM, PT3 and UPSR, which impact the instructions introduced during the CMCO. However, the existence of social media and modern communication applications still allows teachers to direct students' online learning experiences (Nor Shela & Mohd Shafi, 2020).

Online education provides great opportunities and great challenges. It has benefits for the students and instructors. It offers the convenience of time and space, cost-effectiveness, and flexibility. Online learning allows student to pursue an internationally recognized degree without the need to attend classes on campus. Online education is preferred by students who cannot participate in traditional classroom settings. It is convenient since it allows one to study anywhere that has an Internet access. Online courses are available 24/7.Over the past decade, the number of online courses have also grown rapidly. Although online education may work for everyone, some less-developed countries see the online education as cost effective. It is needless to say that online teaching and learning (in either synchronous or asynchronous manner)

is applied in all disciplines such as engineering, computer science, medicine, nursing, business, music, and social sciences.

Online teaching and learning is becoming common even in business organizations. Issues facing an online instructor include being effective in delivering the course, responding to student emails, getting used to the online tools and infrastructure. Critics of online teaching and learning question its value, effectiveness, and quality. Since online teaching and learning systems have not been able to convey interactions between the instructor and students; its educational effectiveness is lower than the traditional face-to-face lecture. Responding to student email messages in a timely manner can be challenging since it requires significant amount of instructor's time. It takes a lot of time to prepare and teach an online course. The challenge of online education largely depends on online instructors. There is also the issue of intellectual property and ownership of materials placed on the web (Suryanarayananand, & Kyriakides, 2004). Issues facing online students include the requirement of self-directed learning and self-discipline which may influence the success or failure of online learners. They may be tempted to procrastinate in working on their assignments. The issue of quality in online learning has been raised and it is as complex as the reality of online learning itself. The Quality Matters Program based in the US has established national benchmarks for online courses and has become internationally recognized (Butcher & Wilson-Strydom, 2013).

2.3.3 Advantages of online learning

Instructional Technology is highly beneficial for students, especially students pursuing a professional course (Mehra & Mital, 2007). According to Dhull, and Sakshi, (2017), online learning is considered a boon due to the reasons given below:

Accessibility: Online learning provides accessibility due to which a student can learn from anywhere in the world. This is an especially important consideration for students who wish to study in a different country. It doesn't matter where a student lives and what he wants to study- he can always find a suitable course or even a Degree Program that can be followed from home. Students learning options are not constrained by their geographic location.

Personalised Learning: Online Learning system enables a student to determine and process his/her learning style, content, aim, current knowledge and individual skills. Therefore, person -specific education could be provided through creating individual learning styles. E-Learning enables the individual to plan and direct his/her own learning. It has the potential to motivate, develop confidence and self-esteem, overcome many barriers that learners encounter, personalize the learning experience, widen access and improve the learning experience, while also helping people to develop their ICT skills.

Develops cognitive abilities: In a study, it was found that e-Learning may be effective in developing cognitive abilities of pupil teachers (Singh & Mishra, 2009). It was found that students of e-learning program had higher achievement levels than their counterparts. A student can find unlimited information which he can access just by the click of a button. Many Online programs are offered by some of the most prestigious universities from all around the world. The student can take such a course online which can be helpful for the development of his cognitive abilities.

Cost-Effectiveness: Online Learning is cost effective because less money is spent in travelling and in buying books or spending money in college context. Since it can be carried out at any geographic location and there are no travel expenses, this type of

learning is less costly than learning at a traditional institute. Students who want to study through this mode need to have access to the necessary computer hardware as well as paying often substantial fees for access to an internet service provider (Kelllie & Ferguson, 1998).

Promotes Research: Students are excited to publish their work when they produce something of extremely high quality. With the permission of their teachers, they post the work on the web as examples for current and future students. Publishing students work helps form a classroom legacy and archive of successful products.

Basic Computer Skills: Both on and off campus students who choose to study online have an opportunity to gain technical skills in using Information Communication Technology (ICT). These skills are likely to be useful to them in their professional life and all future endeavours which may be in themselves marketable features of their education.

Equal Opportunity to all: All students are equal, they are not treated differently based upon caste, creed, race, sex, religion, and disability, etc. Rather Online Learning is a boon for learners who are disabled and face problems in commuting and for those sections of the society who live at far off places where the schools/colleges are at a distant place.

Self-Pacing: Due to individual differences, all learners are not able to complete the work/assignments at a given time due to which they have to face difficulties. Online learning allows students to work and learn at their own pace without the time restriction. The Learner is free to complete the course work according to his own will and he can take as much time as he requires without being termed as slow by the peers.

Globalization: New Technologies are narrowing geographical barriers in the way of education. The world has become a small village and the opportunities to have information about other nations are within our own access. Electronic Net world connects people all over the globe, therefore, it is vital to experiment with electronic learning situations wherein students share ideas and resources, access information about current events and historical archives, interact with experts, and use online databases. According to Dhull, and Sakshi, (2017), online learning have the following disadvantages which is outlined below:

2.3.4 Disadvantages of online learning

It is well said that technology is a good slave but bad master. Dhull, and Sakshi, (2017) suggested that when talking of technological advancements in the country delineated that technology has taught us to sail on the water, fly in the sky but it failed to inculcate the ability as to how to live on the earth. Excess use of technology, lack of careful planning and implementation of E-learning can actually lead to a number of problems like poor communication, sense of isolation, frustration, stress, in some cases, poor performance in learning and teaching, wasted resources and loss of revenue. There are two sides of the same coin. Online learning also shows its other not so good side as follows:

Poor communication: In online learning, one does not have the opportunity to have face to face interaction with the teacher which is very significant for establishing a bond between the student and the teacher. Research conducted by the International Review of Research in open and Distance Learning suggests that online learning can create misunderstandings between student and the teacher which may have detrimental effect

on the teaching learning process and students outcomes due to misinterpretation of tasks.

Feeling Isolated: Tim et al. (2021) stress the importance of interacting with fellow learners, citing learners' feelings of isolation as a definite drawback of online learning. Due to technological advancement in modern era, Social development of a child has taken a back seat. Students remain in touch with their online friends sitting at far off places through WhatsApp, Instagram & Facebook but fail to meet and greet a person sitting just next door to them. This tendency leads to a feeling of isolation. Studies show that feeling of isolation was a huge stress factor that prompted students to drop out.

Lack of motivation: Online learners lack motivation while studying because they easily get distracted towards any other thing. Working at their own pace becomes a disadvantage for students who have difficulty with time management and a tendency of procrastination. These students tend to be more successful with the structure of traditional learning.

Lack of Funds: Galusha (1991) points out that technology's downsides include cost, hardware issues, internet problems, production of course materials and worry about availability of funds. Researches reveal that most of the educational institutions typically don't anticipate connectivity costs which may later cause barriers to online learning.

Lack of quality: Online Learning sometimes results in lack of quality in teaching learning process. Galusha (1991) says that non-online faculty has problems with respect to the credibility of online courses. Too often, online instructors don't take their lesson preparations as seriously as they could, and this lack of commitment surely has a profound and negative effect on the quality of online learning.

Poor accessibility in Remote Areas: Hardware, software and connectivity facilities are pre requisites that enable online teaching and learning. In the absence of anyone of these, Online learning cannot achieve its objective Some people do not have ready access to a computer and internet connection, and some who do have the required equipment feel ill equipped to use it.

2.3.5 Psychological Impact of Online Learning

a. Frustration and online Learning

Frustration is the most pervasive emotion associated with online learning. Many learners experienced frustration of one kind or another with one aspect or another of online learning. Much of the frustration is associated with the technology. Many time learners cannot log on. Sometimes links can be frustrating because the links do not work. For some the frustration is associated with a lack of clear instructions for locating the required site. The learner is aspired that the information would be available online, on the web page, but it is really difficult to find the page. Frustration may be associated with the administrative processes, with instructions that are unclear and obscure. It is also related with the design, structure and relevance of the website content and computer anxiety with the learning processes, especially discussion groups (Suryanarayananand & Kyriakides, 2004).

b. Fear, Anxiety, Apprehension and Online Learning

Online learning sometimes poses problems related to computer anxiety among the learners if they are not able to manage it properly. Computer anxiety is a fear of interacting with computers that is disproportionate to the actual danger of the situation. Computer anxiety leaves the user in an uncomfortable mental state in which one experiences debilitating physical and emotional symptoms (Adrian, 2018).

c. Stress, depression and online learning

Greater use of internet is also associated with increase in depression. There have been reports of internet related deaths, such as cardiac arrests resulting from sleep deprivation and lack of personal maintenance or suicide due to net related stress. Online Learning is associated with behaviour and impulse problems like over-involvement in online relationships and compulsive web surfing or database searches (information overload).

2.4 Concept of Educational Technologies

Today, educational technology is the concept of applying and assimilating knowledge, taking into account technological tools and human resources in teaching. This includes various tools such as media, machines, and networking equipment, as well as considers the theoretical perspectives of their effective use. Simply put, educational technology is any concept or tool that facilitates learning with technological resources. This is a very broad definition, but it really defines what educational technology is. Ancient abacus with retractable beads for counting and math work is the same form of Educational technology as the modern classroom computer today. This is the basic definition of the term today, if it uses any technology for teaching, it is a type of Educational technology (Surjono et al., 2015).

2.4.1 Definitions of educational technology

Educational technology is the systematic application of scientific knowledge about teaching- learning conditions of learning to improve the efficiency of teaching and training (Spector, 2016). Educational technology is concerned with the application of modern skills and techniques to requirements of education and training. This includes the facilitation of learning by manipulation of media and methods, and the control of

environment in so far as this reflects on learning (Donna, 2020). Educational technology may be defined as the application of the laws as well as recent discoveries of science and technology to the process of education (Kulkarni, 1969).

According to Hazwani, et al. (2020) the use of different teaching tools to facilitate and diversify learning can be seen as far back as early instrumentals, such as wall paintings in caves or the use of different types of accounts for calculating. Various types of writing boards have been in use for at least a millennium. Since their inception, books and brochures have played an important role in education, and so now. Since the beginning of the twentieth century, copy machines such as the Gestetner mimeograph and stencil were commonly used to make small copies for use in the classroom or at home.

The use of the media for educational purposes usually begins in the first decade of the 20th century with the introduction of Sydney Press educational films and mechanical learning machines. Slide projectors were widely used in educational institutions in the 1950s. Online education began at the University of Illinois, although the Internet was not available for another nine years, students had access to classroom information through connected computer terminals. The first online course was suggested by the Electronic Universities Network in 1986, and computer learning finally became the first online course to offer real-time interaction. In 2002, MIT started offering free online classes and as of 2009, around 5.5 million students have completed at least one online course (Hazwani, et al., 2020).

The concept of distance learning was invented centuries ago in the history of online education and as a basis for understanding what needs it meets. The importance of online learning lies not in its ability to create a distance learning method, but in its

ability to make this type of learning process more effective by creating an environment in which the teacher and his or her students can interact with them in real time. The topic of online education emerged mainly in the late twentieth century, when institutions and businesses began to produce products to help students learn. These groups wanted to further develop educational services around the world, especially for developing countries (Hazwani, et al., 2020). In 1960, the University of Illinois created a system of connected computer terminals called the Intranet, so that students could access recorded lectures and course materials that they could view or use in their spare time. This type of concept, called PLATO (Programmable Logic for Automatic Learning Operations), was quickly adopted around the world. Many organizations have used a similar method during the development of the Internet. By the mid-1980s, access to course content had become possible in many college libraries.

In 1994, the first online school was established. Advanced Internet functionality has allowed new communication schemes with multimedia or webcams. The National Center for Education Statistics estimates that the number of high school students enrolled in online distance learning programs increased 65 percent from 2002 to 2005 due to greater flexibility, ease of communication between teacher and student, and quick feedback on lectures and assignments (Verawardina, Muhammad & Kainat, 2020).

Students growing up in this digital age are widely familiar with a variety of media. Large hightech companies are funding schools to enable them to educate their students with technology. Educational technologies are not limited to high technologies, but today e-learning technologies have become an important part of society. Modern Educational Technologies include e-learning, learning technologies, information and

communication technologies *(ICT)* in education, computer- mediated communication, cyber-learning and milti-modal instruction, virtual education, personal learning environments *(PLE),* networked learning, virtual learning environments *(VLE),* also called learning platforms, mobile learning, and digital education, learning technologies, multimedia learning, technology improvement *(TEL),* computer-managed instruction *(CMI),* computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI), computer learning (CBI), internet- based training *(IBT),* flexible Learning, web-based training *(WBT),* online education, digital Educational collaboration and distributed learning. These labels have been used and understood in different ways and relate to the wider field of Educational technology and e-learning. Using technology to align with evidence-based learning is at the heart of technology education, not just on an individual basis.

Today, some of the most influential and easily recognizable forms of EduTech can be seen in the vast and ever-growing worlds of e-learning and mobile learning. E-learning or virtual learning is the use of computers and the Internet for Educational purposes. Mobile learning is the use of mobile technologies such as mobile phones and tablets for learning. Distance learning or online learning at geographic distances uses both mobile and e-learning. All of these alternative descriptive terms are more restrictive than "Educational technology" because they individually emphasize a particular digitization approach, component, or delivery method. For example, mobile learning emphasizes mobility, but otherwise it is basically indistinguishable from Educational technology (Nor Fauziana, 2020).

The application of theories of human behaviour to educational technologies comes from learning theory, educational psychology, and technologies of human behaviour. Educational technologies encompass many types of media delivering text, audio, images, animation, and streaming video, and include technology applications and processes such as audio or videotapes, satellite television, CD- ROM, and machine learning, and local learning (Nor Fauziana, 2020).

Information and communication systems, whether autonomous or based on local networks or the Internet for Internet-based learning, are at the heart of many e-learning processes and can take place both in the classroom and beyond. This can be self-paced training, asynchronous training, or synchronous instructor-led training. It is suitable for distance learning and in combination with face-to-face training, which is called blended learning. Educational technologies are used by students and teachers at home, in schools for 12, and in higher education, in businesses and elsewhere.

In 2020, many schools around the world had to close due to the COVID-19 pandemic, which resulted in more and more elementary school students participating in distance learning and college students enrolling for online courses to ensure compliance with these organizations distance learning. Higher education has not improved as some expected today, and today many predict that schoolchildren and students will return to traditional learning formats once vaccination becomes ubiquitous. This puts start-ups in a quandary: If 2020 means the inclusion of video-based learning, what will happen in 2021-2022? (Zsohar & Smith, 2022).

2.4.2 Types and necessity of educational technologies

i. Synchronous

The workforce today is expected to be well educated and to constantly improve and acquire new skills through lifelong learning. Here, e-learning, defined as online and web-based learning, is one of the strongest answers to the growing need for knowledge. Some researchers have raised concerns about learning outcomes in e-learning, but a review of comparative studies shows that there is no significant difference in learning outcomes, as measured by grades or exam results, between traditional and e- learning. For e-learning initiatives to be successful, organizations and educational institutions need to understand the advantages and limitations of various e-learning methods and techniques. Research can help practitioners by examining the impact of various factors on e-learning effectiveness. Two main types of e-learning are compared: asynchronous and synchronous. Until recently, e-learning initiatives relied heavily on asynchronous teaching and learning tools. However, recent advances in technology and increased bandwidth have increased the popularity of synchronous e-learning (Dhull & Sakshi, 2017).

Synchronous learning is a learning environment in which all people participate at the same time. Lectures are an example of synchronous, face-to-face teaching where students and teachers are in the same place at the same time. Until technology made it possible to create a synchronous learning environment, much of online learning was done using asynchronous learning methods. Starting with synchronous tools that can be used during training (Dhull & Sakshi, 2017).

Being available, many people are turning to online education as a way to help reduce transactional distance problems. Some examples of synchronous learning environments are: students watching a live broadcast of a course in conversation, students and teachers participating in a lesson using web conferencing tools such as Blackboard Collaborate, Adobe Connect, WebEx, Skype, Zoom, Big Blue Button and more, designed to develop and strengthen the teacher-student relationship that can be challenging in distance learning programs (Arulsamy & Sivakumar, 2009). Although many online Educational programs began with the advent of web conferencing tools, people can read in different places at the same time. For example, the use of instant messaging or live chat, webinars and video conferencing allows students and teachers to collaborate and learn in real time.

ii. Asynchronous

The current discussions are about the usefulness of asynchronous and synchronous e-learning. Media such as e-textbooks, e-mail and forums are often supported, and members maintain a working relationship between students and teachers, even if they are not online at the same time. It is therefore an essential part of corporate e-learning. In fact, many people take online courses because of their asynchronous nature, which combines learning with work, family, and other commitments. Asynchronous eLearning allows students to log into eLearning at any time and upload documents or send messages to teachers or colleagues. Students can spend more time perfecting their material, which is generally considered more thoughtful than synchronized communication (Ashton, et al., 2004).

This approach combines self-learning with asynchronous interaction to facilitate learning and can be used to facilitate learning through traditional campus learning, distance learning, and continuing education. This interconnected network of students and the electronic network with which they communicate is known as an asynchronous learning network. Online learning resources used to support asynchronous learning include email, mailing lists, multi-threaded conference systems, online forums, wikis, and blogs. Course management systems such as Blackboard, WebCT, Moodle and Sakai are designed to support an interactive experience by allowing users to discuss, post and respond to messages, download and access multimedia content (Ashton, Beevers & Bull, 2004). Asynchronous forms of communication are sometimes complemented by synchronous components, such as text and voice conversations, telephone conversations, video conferencing, and even virtual space meetings, where groups of students can discuss.

iii. Linear learning

Computer-based training *(CBT)* is a self-paced learning activity sent to a computer or portable device such as a tablet or smartphone. CBT content is provided via a local CD-ROM and is usually linear content like reading a book or tutorial on the internet. For this reason, CBT is widely used to teach static processes like using software or running math equations. Computer-based training is similar to Web Based Teaching (WBT), which is provided over the Internet using a web browser. Frequent assessment of CBT training using computerized assessments such as multiple choice questions, drag and drop, radio buttons, simulations, or other interactive tools. Ratings are easily assessed and recorded using interactive software, which provides immediate end user feedback and readiness status. Users can often print completed records in the form of a certificate. CBT encourages reading outside of traditional teaching methods in textbooks, manuals,

or in the classroom. CBT can be a good alternative to printed materials that can include multimedia materials, including videos or animations, to improve the learning process. However, CBT presents some learning challenges. Building an effective CBT usually requires significant resources. A lack of human interaction can limit both the type of content suggested and the type of evaluation and must be complemented by interactive discussions or other interactive elements (Choudhary, 2010).

iv. Collaborative learning

Computer supported collaborative learning *(CSCL)* uses teaching methods that aim to motivate learners or get them to solve learning tasks. The concept of CSCL is similar to the terms eLearning 2.0 and Learning Network. Collaborative learning is different from traditional teaching methods, where teachers are the main source of knowledge and skills. For example, with the advent of Web 2.0 technology, information exchange between multiple people on the Internet has become easier and consumption has increased. Using Web 2.0 social tools in the classroom enables students and teachers to collaborate, discuss ideas, and share information. After an initial introduction to the use of the tools, the students reported improved knowledge and user-friendliness of Web 2.0. Collaboration tools enable students to develop the technology skills required by today's workforce (Davies & Graff, 2005).

Another type of tool is a collaboration program that allows students and teachers to interact while teaching. One of the examples is MathChat, which you can use to work together to solve problems and respond to reviews. Some apps may allow you to browse new topics or learn on your own by simulating in class. Another example is the Khan Academy, which offers materials in math, biology, chemistry, economics, art history, and more. It has the benefit of combining learning styles as the app has more imagery

for visual and face-to-face learners, as well as training and assignments for kinaesthetics. Other post-game apps offer an interesting way to check this out. When it's fun, students become more active. The game is usually accompanied by a sense of development which helps students stay motivated and constantly strive for improvement (Davies, & Graff, 2005).

Collaborative learning is a group learning approach in which learners interact to achieve a learning goal or to solve learning problems. The latest advances in smartphone technology allow you to develop and use applications faster with the computing power and storage capacity of a modern cell phone. Many app developers and education professionals view smartphone and tablet apps as collaborative learning environments. A supportive learning environment can support and encourage people to acknowledge their attendance and participation. Ancestry students learn most thoroughly and effectively, and the material is presented in a logical and orderly manner. The ability to work together by encouraging students to reach out to each other to solve problems and share knowledge not only promotes teamwork, but also leads to learning and better understanding (Frank Reich, & Humphreys, 2003),

v. Virtual reality (VR)

Virtual Reality, or *VR*, gives the user to interact with a 3D model or virtual environment created by a computer. This environment can be real in the sense that it is known to us on a visible scale, it can be real in the sense that it depicts the physical world known to science but normally invisible, or it can be used to describe a completely fictional one visualize the world. Thus, virtual reality is used in many areas of education including science, archaeology, history, and architecture. The benefit of VR over traditional description methods is that it gives students the opportunity to familiarize themselves

with a topic that would be difficult, if not impossible, to illustrate or describe using conventional methods (Jaiswal, & Gupta 2010).

According to Jaiswal and Gupta (2010) modern education often requires the student to understand complex or abstract concepts or to understand situations that no longer exist. To this end, the usual mechanisms for conveying abstract concepts, especially in the natural sciences, are the use of metaphors and analogies. By analogy, we describe an event or an abstract concept in relation to a generally observed reality. That is, we relate concepts to experience. Experience provides material for building a mental model of the concept, which in turn leads to the basis of knowledge. People learn from their own experience, interact with their environment and use their senses to get information from the world.

Virtual Reality is a technology that replaces touch input from the real world with touch input generated through computer simulations. It provides interactivity by responding to people's movements and natural behaviour in the real world. In this regard, virtual reality can prove to be a powerful resource that can aid learning by providing an environment that allows the learner to experience scenarios and situations instead of imagining them. The empirical nature of virtual reality systems arises from three sources: immersion, interactivity and multi-sensory feedback. The benefit of immersion is that it gives a sense of presence or the feeling that the person is really in the world being depicted. The goal of VR is therefore to replace the real world with a virtual one and to enable the user to behave like in the real world (Jaiswal & Gupta, 2010).

vi. Augmented reality (AR)

Augmented Realities *(AR)* and Virtual Realities (*VR)* use similar hardware technologies and have several factors in common, such as computer-generated virtual scenes, 3D objects and interactivity. The main difference between the two is that virtual reality seeks to replace the real world, while augmented reality complements it. The main augmented reality devices are displays, computers, input and monitoring devices (Kim, & Bonk, 2006). The new "Augmented Reality" environment currently offers us unique opportunities to merge the physical and virtual worlds. This is a new way of manipulating how we interact with this world. Without replacing the real world, you find yourself in this technology that expands virtual information to the forefront of the real world, with continuous and implicit monitoring of the user from a point of view and interactive.

Augmented reality technology is not a new problem. It has been used in fields such as military; medicine; engineer design; robot; telerobot; applications for production, service and repair; consumer design; psychological procedures, etc. The display of information using virtual things that the user cannot directly perceive with his or her own senses can enable a person to interact with the real world in ways previously impossible. We can change the position, shape and/or other graphical properties of virtual objects using interaction methods supported by augmented reality (Kim & Bonk, 2006). With our fingers or movements of a handheld device such as shaking and tilting, we can manipulate both virtual objects and physical objects in the real world. Augmented Reality can be used for learning, entertainment, or learning to improve the user experience and improve interaction with the real world. The user can move around the virtual 3D image and view it from any point like a real object. The information transmitted by virtual objects helps users to perform real tasks (Mehra, 2007).

It is very important to coordinate a specialists for the possible resolution of augmented reality problems in educational matters. Educators need to work with researchers to develop augmented reality interfaces. Software and hardware technologies play an important and central role in the creation of augmented reality applications. There are engineers who can design different augmented reality environments. For learning in educational technology, however, there is a great need for learning material manufacturers who can design learning materials for augmented reality (Mutlu, Ozogut Erorta & Yilmaz, 2004),

2.5 Educational Technologies and Pandemics

The coronavirus disease 2019 (COVID-19) was detected in China in December 2019, spread throughout the world within a few months and was declared a pandemic by the World Health Organization on 11th March 2020. Universities around the world had to close their campuses down in the spring of 2020 and shift all their academic programs online (Bao, 2020). Universities were not prepared for such a transition from classroom-based education to completely online education. Most universities initially lacked infrastructure and strategies (Zhang, Wang, Yang & Wang, 2020).

There has been a lot of advances in educational technology in the last few decades and the same proved to be immensely useful during this pandemic (Chatterjee & Chakraborty, 2020; Dhawan, 2020). Several online platforms to support online education were available (Nash, 2020). Nevertheless, it was a challenge for universities to map their educational activities in an online space. Additionally, professors and students faced a wide range of logistic, technical, financial, and social problems (Lassoued, Alhendawi & Bashitialshaaer, 2020; Peters et al., 2020).

The pandemic and the lockdowns to contain it have affected the mental health of people around the world. Many students are suffering from stress and anxiety (Cao et al., 2020; Islam, Barna, Raihan, Khan & Hossain, 2020). Such psychological issues often hinder students from adapting to online education. Moreover, not all students have equal access to and expertise on, digital technologies. Although these inequalities existed earlier, the COVID-19 pandemic has exposed this digital divide (Jæger & Blaabæk, 2020).

The 2019 coronavirus epidemic has affected educational arrangements globally, leading to the near-total closure of schools, colleges and universities. As of 27 April 2020, nearly 1.725 billion learners were affected owing to schools' closing in response to the epidemic. According to a monitoring report by UNICEF one presently engaging national closures and are engaging local closures, impacting about 98.5 percent of students' population in the world. On 23 March 2020, Cambridge International Examinations (CIE) made a pronouncement that the annulment of Cambridge O Level, Cambridge IGCSE, Cambridge AICE Diploma, Cambridge International AS & A Level, and also Cambridge Pre-U examinations for the May/June 2020 series all over the world. International Baccalaureate exams have also been annulled (UNESCO, 2020). School closings impact not only teachers, students and families, but have extensive economic and societal costs. School closings in response to COVID-19 have thrown light on numerous social and economic issues, including isolations, digital learning, student debt and food insecurity as well as health care, access to childcare, housing, disability services and internet. The impact was severe for underprivileged families, and their children, causing intermittent learning, conceded nutrition, childcare complications, and resultant economic cost to families who could not work (UNESCO, 2020).

To date, COVID19-driven schools' closure have impacted over one billion students. In response to the coronavirus pandemic, UNESCO estimated that 107 countries had implemented national school closure related to COVID-19 by 18th March 2020 affecting 862 million children and young people, roughly half the global student population (Russel et al., 2020). Even more seriously Bozkurt and Sharma (2020) reported that more than 1.5 billion learners of all ages from around the globe are affected due to the school and university closure owing to COVID-19 pandemic (UNESCO, 2020). The affected number of students equal 90% of the world's enrolled students (UNESCO, 2020) and the shutting down of schools have widened learning inequalities and hurt vulnerable children and youth disproportionately.

Despite the low rates of the infections among children, schools closures are critical pillar of the social distancing tools to mitigate the spread of the disease and avoid an acceleration of cases that will put a strain on health services. Its effectiveness as a measure to slow down the spread of contagion will depend on the exact timing of the closure, the age structure of the population and the length of the closure (World Bank, 2020). Around mid-March 2020, governments across Africa through the Ministry of Health announced that all schools, colleges and universities closed indefinitely amid fears of the Coronavirus (COVID-19) outbreak that had reportedly ravaged most parts of China, United States of America, Italy, Spain and other parts of Europe and Africa (Sintema, 2020).

2.6 The Concept of Teaching and Learning

According to Smith (1997), teaching is a system of action involving an agent, an end in view, and a situation including two sets of factors-those over which the agent has no control (such as class size, size of classroom, physical characteristics of pupil) and those

that the teacher can modify (such as ways of asking questions or ideas gleaned). Smith therefore defines teaching as undertaking certain ethical tasks or activities, the intention of which is to induce learning. Tamakloe, Amedahe and Atta (2005) have defined teaching as directing knowledge towards the learner.

To Kochhar (2004), teaching is not a mechanical process but a rather intricate, exacting and challenging job. Though teaching is poorly paid, Kochhar explains that its riches are of a different order, less tangible but more lasting - that is satisfaction of personal fulfilment. Farrant (1996) explains teaching as a "process that facilitates learning". Teaching and learning are therefore described as the two sides of a coin because teaching does not happen without a learner (Amissah, Sam-Tagoe, Amoah & Mereku, 2002). Some other definitions given to teaching by Amissah et al are as follows:

Teaching is the means whereby an experienced member of a group guides and directs pupils in their total growth and development.

1. It is also the activity that the teachers demonstrate to reflect their philosophy of education.
2. Teaching is an interpersonal influence aimed at changing the way or behaviour in which other persons can or will behave.
3. It is a system of actions intended to induce learning.
4. It is an activity aimed at the achievement of learning and practiced in such a way as to respect the learner's intellectual integrity and capacity.

The above definitions show how teaching has been subjected to a variety of descriptions and definitions. While some authors describe teaching as an art because it gives the teacher an opportunity to do something creative like moulding personalities and the mind, others describe teaching as a science because it hinges on a specified body of

knowledge - psychology. In this sense, Kochhar (2004) asserts that “teaching is a complex art of guiding pupils through a variety of selected experiences towards the attainment of a widening field of learning”. Hence teaching directs growth and development. As the art involves the mind, the heart and the hand, so is teaching (Amissah et al., 2002).

The authors assert that teaching is the art of inducing students to behave in such ways that are assumed to lead to learning. This connotes that teaching is all about creativity because the personality is at play. It is out of passion that a person can teach effectively and it takes a creative teacher to impact on the learner. Therefore teaching can be defined as the art and a conscious act of transmitting knowledge, skills, attitude and values in a systematic and an orderly procedure to induce learning for positive growth and development.

A good teacher is one who knows the capabilities of his learners and has understanding of what his or her students need to learn. This implies that the skill of teaching lies in knowing who, what and how to teach and above all to be able to judge when (Farrant, 1996). Good teaching demands great skill irrespective of the level of teaching. It does not depend on the learner any more as Amissah et al. (2002) indicate. Thus teaching has become complicated due to the increasingly intricate phase of human personality and society. The idea is that a teacher must bear in mind certain principles of good teaching whiles dealing with the students.

According to Kochhar (2004) good teachers exhibit the following characteristics:

1. Recognize individual differences among people,
2. Create the learning situation,
3. Challenge the child to learn,

4. Encourage general development,
5. Cause, facilitate and promote learning.

It is clear from the above discussion that efficient or good teachers must have a sound knowledge of what their people must know and have the ability to relate the content, method, sequence and pace of work to individual needs; to use the environment and appropriate media to support learning, use a range of teaching strategies skillfully and have enthusiasm for the subject (Farrant, 1996). It is the teacher's duty and vital responsibility to motivate students in ascertaining their inner strengths and abilities and to discover what truly inspires them. The good teacher is therefore the one who has the willingness and passion to teach; respects and understands the individual learner, and creates learning situations that build up values in the individual learner for personal and societal satisfaction. It is vital therefore for the teachers to teach what they can teach better in order to facilitate effective learning for the students (Siaw, 2009).

Learning is defined as a relatively permanent change in behaviour that occurs as a result of prior experience (Brown, Amuah, Anyage, Frimpong & Koomson, 2000). To Brown et al., learning is understood as the modification of behaviour through practice, training, or experience. This is supplemented with five important components of learning:

1. Learning involves change, but not all changes reflect learning.
2. Learning is reflected in behaviour, the change in behaviour should occur as a result of experience, practice or training and the practice or experience must be reinforced in order for learning to occur. Learning, according to Farrant (1996), is the process by which we acquire and retain attitudes, knowledge, understanding, skills and capabilities that cannot be attributed to inherited behaviour patterns or physical growth.

To Farrant, capacity for learning is innate and is based on psychological factors whiles rate of learning is based on both inherited and environmental factors. In contrast to this assertion, Skinner (as cited in Farrant, 1996) opines that learning is seen as a series of experiences, each of which influences behaviour. Learning results should therefore be considered in terms of understanding the core processes within the content standards. Farrant further explains that as much as the teacher's job is concerned, it is his duty to help the learner go through each of the learning stages in an efficient manner. Efficient learning therefore requires readiness, motivation and involvement on the part of the learner.

Teaching and learning in the Universities and their affiliate colleges in Ghana have also suffered a shock. Even though, online learning on educational platforms such as Google classroom, Telegram, Zoom etc. are not entirely new ways of engaging and interacting with students in our universities but the shift from traditional face-to-face to 100% online teaching and learning threatens continuity and requires much efforts to sustain high academic standards. The decision to go online was not immediately welcomed by all students and lecturers. Some university students through the students' Representative Council demanded for the supply of internet data to enable them participates in the online learning. The decision also meant that lecturers needed enhanced knowledge in emergency remote teaching to be able to have effective online interaction with their students (Nantwi & Boateng, 2020).

Online training for University and College of Education lecturers was then organized by the Digital Society School, Amsterdam University of Applied Sciences in collaboration with T-Tel from 1st– 8th May, 2020 and the programme was worthwhile according to the participants. Currently, teaching and learning for university students is

ongoing amidst infrastructural and technological challenges however, there are lessons to learn from this pandemic for the future (Nantwi & Boateng, 2020).

2.7 Online Education Strategies

The pandemic forced various organizations to suddenly modify their workflow strategies and adopt new technologies. In most cases, these organizations did not get enough time to reflect upon how the new strategies and the associated technologies should be introduced and integrated to their existing setup (Carroll & Conboy, 2020). Universities around the world were no exception. Bao (2020) was perhaps the first to describe how universities were moving from classroom-based education to online education because of the raging pandemic. Researchers have tried to understand the viewpoint of students on online education during the COVID-19 pandemic using empirical studies in India (Mishra, Gupta & Shree, 2020), Serbia (Bojovic, Bojovic, Vujosevic & Suh, 2020), and USA (Patricia, 2020).

There existed substantial infrastructure for online education in many countries before the pandemic (Mishra et al., 2020). However, no university was ready for a complete shift to online education. Empirical studies have found that students feel that they learn better in physical classrooms than through online education (Bojovic et al., 2020). Students miss the help they receive from their peers in classrooms and laboratories and access to library (Patricia, 2020). Nevertheless, students feel that online education helped them to continue their study during the pandemic (Mishra et al., 2020). Universities are now using innovative strategies to ensure continuity of education for their students (Zhu & Liu, 2020).

Professors are now delivering course content through various platforms. Professors are using online educational platforms, videoconferencing software, and social media to teach their courses (Patricia, 2020). Online educational platforms, like Google Classroom and Blackboard, allow professors to share notes and multimedia resources related to their courses with students. The online educational platforms also allow students to turn in their assignments and professors to keep track of the progress of the students. Videoconferencing tools, like Google Meet, Zoom, and Microsoft Teams, help in organizing online lectures and discussion sessions. Such tools typically support slideshows and a chatbox. Some universities are also disseminating course material through their websites (Chatterjee & Chakraborty, 2020) and their own learning management system (Mishra et al., 2020). Additionally, professors are taking help of virtual laboratories to teach science courses (Ray & Srivastava, 2020). Virtual laboratories allow students to simulate experiments related to their courses online (Diaz & Walsh, 2020; Vasiliadou, 2020). Such tools were being used for simulation and data visualization for many years (Jain, Chakraborty & Chakraverty, 2018), but their use have now become widespread.

There is a lack of studies on how efficiently students can interact with professors and fellow students through various online tools and how effective online assessment techniques are. Only a few researchers have covered these issues. For example, Patricia (2020) reported that students prefer face-to-face interaction with professors and Bojovic et al. (2020) reported that many professor lack confidence on online assessment techniques.

2.7.1 Strategies

Facilitating an engaging online course requires educators to develop strategies that enhance student participation and build a sense of community. This leads to collaborative learning and developing relationships and fosters educator feedback while facilitating independent networking and self-directed proactive learning (Garrison & Anderson, 2003; Hammond & Wiriyapinit, 2005; Kanuka & Garrison, 2004; Mann, 2014; Melrose & Bergeron, 2007; Munich, 2014; Plante & Asselin, 2014; Rogo & Portillo, 2015). In addition, educators' need to enhance and encourage complex-reasoning skills while assisting students' in developing a sense of reflective self and a personal and professional ethos that eventually translates into increased confidence (Benner, Tanner, & Chesla, 2009; Elledge, Houltaon, Hacekett & Evans, 2018; Chadha, 2017; Peisachovich, 2016; Peisachovich, Murtha, Phillips, & Messinger 2016). All educational disciplines expect students to translate content to work-related environments.

Learning should be transformational and provide students with opportunities to explore and reflect upon their assumptions, to critically analyze their beliefs and judgements, and to integrate new thought patterns into their personhood. By sharing ideas and personal and professional values, new knowledge can develop and become translational in practice.

There have been numerous studies that explored various aspects to virtual online learning, such as:

1. student perceptions of online courses (Papillion & Aaron, 2017);
2. faculty perceptions of the effectiveness of online courses (Cherry & Flora, 2017);
3. students preferred online instructor caring behaviours (Mann, 2014);

4. academic integrity in the online learning environment (Azulay Chertok, Barnes, & Gilleland, 2014; Tayaben, 2014); and
5. teaching the practice of compassion (Hofmeyer et al., 2016).

Faculty development is needed to further enhance the integration of e-learning. Not only do students need to be aware of the time commitment and comfortable with technology, but faculty need to be educated regarding the pedagogical methods appropriate for an online course (Kowalczyk, 2014). Faculty members and programs that utilize e-learning need to be cognizant that the educators' online presence is essential to fully disseminate the course content and that prompt and frequent feedback and faculty interactions are vital, as is detailed guidance to students' questions regarding assignments and course process (Gaudine & Moralejo, 2011; Mann, 2014). Collaborating with students in discussions and encouraging peer-topeer collaboration is an important feature to an engaged virtual learning dynamic. Peer interactive design promotes collaboration and facilitates a sense of community (Chadha, 2017). Attention to detail and clarity of the course, the syllabus, and the criteria to succeed is mandatory. For a student to accomplish course objectives and outcomes, faculty need to be organized and structured in their online content development, and they need to establish clear and defined deadlines and participation and course expectations. Otherwise, students may perceive their online learning to be less than they would if they took the course face-to-face in a classroom (Gaudine & Moralejo, 2011).

The outcomes of the instructional design process (Baker, 2010; Kim & Hannafin, 2011), as defined by the educator, who dictates the interaction and engagement with the students while promoting regular communication, are essential to facilitate online teaching-learning success (Carter, Hanna, & Warry, 2016). And as with all

learning outcomes and course assessment, measurement is based on the university's evaluations. Faculty need to expand their educational processes to integrate technology as a tool and not as a pedagogical methodology. There needs to be a focus on providing quality educational learning experiences for students while integrating online educational design practices (Kowalczyk, 2014). As in any classroom environment, the educators' awareness of diverse types of learning styles is important and even more so with online learning. Varying the learning strategies can be an effective tool to providing a broad base for different learning styles. Typically, an online course is asynchronous, yet it may have aspects of synchronous real-time interfaces, such as specific deadlines for assignments and engagement, online quizzes/examinations, and specific content pertaining to weekly discussion.

Varying this flexibility of online teaching activities by blending these defined strategies can be helpful in promoting learning outcomes and experiences. This article discusses the process of one educator who was an early adopter of online teaching. Its purpose is to provide an overview of this educator's experience, process, teaching style, and creative diverse teaching/learning practices that have led to successful online participation. By incorporating proactive and collaborative pedagogical practices, students' engagement, motivation, commitment, and "reflection, knowledge acquisition" is encouraged and supported, thus nurturing the learning process (Freeman et al., 2014; Peisachovich et al., 2016, p. 114).

Adoption of online teaching and learning has increased in in recent years. From early timid experiments using a hybrid format to fully-fledged online offerings, institutions and learners have come to recognize the possibilities of this Mode of Instruction (MoI) as a catalyst to democratize access to education. Online is now seen as a more inclusive

MoI that aligns with contemporary living standards and that can be a more suitable solution for learners who need to balance work obligations and family commitments while skilling, reskilling, and upskilling to improve their career perspectives.

While online teaching and learning made significant inroads into the mainstream between 2010 and 2020, it remained a steady second to on-ground formats. This situation changed drastically in March 2020 with the sudden change to remote instruction necessitated by the COVID-19 pandemic. Due to public health restrictions imposed by governments, educational institutions across the world were required to close campuses and deliver instruction through whatever remote means they had available (Moralista & Oducado, 2020). For some institutions, the situation meant a shift to an online learning environment that was already supporting their face-to-face instruction, while for others, it was more of an emergency intervention. In addition to technical considerations, teaching faculty were at various levels of skill in teaching remotely or online. The reality for most institutions was a diverse range of learner preparedness and learning preferences, institutional culture and support, and the ability of teaching staff to upskill for the design and implementation of online teaching strategies.

In this sense, online teaching and learning became front and centre in the strategic response to COVID-19 as institutions scrambled to create continuity for learners and consistency in helping them achieve their goals. As a natural reaction, strategies for effective online teaching and learning have had an unprecedented opportunity to evolve in support of this massive increase in demand. A new generation of instructors now sees online with renewed interest, and content areas that disregarded this MoI in the past now recognize it as a suitable alternative. This chapter will delve into the most

effective strategies in online teaching and explore how they factor into the success of online instruction.

Proponents and critics of online teaching and learning (Schwerdt et al., 2010) have long debated its effectiveness and appropriateness compared with traditional on-ground settings for a range of disciplines. The intense debate has created significant division among faculty members and academic administrations, with battle lines also drawn among learners (Palvia et al., 2018). Some of the more contentious points gravitate around questions like:

1. Do learners have access to real-time support and feedback from teaching staff?
2. Is there a comparable level of institutional support for all actors?
3. Can learners create connections between new and prior knowledge without formal supervision?
4. Can learners successfully engage in learning activities in an individual capacity and as part of a group?
5. Can we trust that learners will uphold academic integrity policies in an unsupervised environment?

Ultimately, the critical question is whether online learning offers comparable results in terms of achievement of learning outcomes and reaching defined performance standards in assessment. Negative opinions are often formed based on specific approaches to online instruction (e.g., massive open online courses, self-directed courseware) that generally provide an unassisted learning experience that relies exclusively on the instructional design of the course to meet learning outcomes. While the effectiveness of online learning can be subject to debate and considerations, the realities and needs of learners have increasingly aligned with a mode of instruction

that does not require them to be in one location at a specific time in order to gain access to high-quality instruction. When online education became a choice for learners looking for flexibility and a better work-life-study balance, prestigious institutions led the way by creating academic offerings in modalities driven by this demand. Amidst the debate around issues of academic curriculum and assessment, promotion of online education was driven by other factors. For example, potential increases in enrollment and revenue, mitigation of risks related to instructor availability, and optimization of the use of infrastructure, among other factors, has driven the adoption of online instruction and offerings. In addition, many online programs operate separately from their on-ground counterparts, so faculty are rarely confronted by their negative assumptions. At the same time, learners continue to demand more flexible formal higher education options across the degree levels and programs. At this point, most higher education institutions in North America have now adopted some form of online learning, even if on-ground is still the primary mode of instruction (Sibirskaya et al., 2019).

2.8 Recognizing the Emergence of a New Form of Online Teaching and Learning

When the World Health Organization declared a global COVID-19 pandemic in March 2020, higher education institutions that had not broadly adapted online modalities faced a challenge like no other in their history. Educational systems around the globe started working on academic continuity plans that in many cases did not exist. With the risk of millions of students experiencing a major disruption in their learning paths, instructor-led online learning became an obvious response to the challenge, and institutions began a process of reformatting their entire on-ground course offerings to online platforms. The response was not online teaching and learning; rather, it became its own distinctive practice and term: emergency remote teaching (ERT). ERT describes a temporary mode of instruction that attempts to replicate face-to-face

instruction with the tools of online learning. ERT is not new, as countries experiencing social or civil unrest and economic struggles have used it in the past and still use emergency remote teaching/delivery to provide some form of academic continuity (Hodges et al., 2020). Throughout history, we can find examples of the use of television, radio, and even postal service as vehicles to reach learners and provide the necessary materials and guidance in difficult times.

As ERT in the context of the COVID-19 pandemic is considered a specific form of online learning, it is important to distinguish it from online and to recognize that it does not follow the typical path of online course development. Online-first programs are designed from inception to be delivered in that mode of instruction, while ETR programs are migrated from in-person/in-class programs due to exigent circumstances. Understanding and communicating this distinction could be an important contributor to the future of online learning as it can clarify expectations for institutions, teaching staff, and learners (Karakaya, 2020).

The primary challenge of the ERT implementation at the onset of the COVID-19 pandemic was the forced adoption of a new mode of instruction by learners. Online learning appeals to a student base that is looking for more flexibility and autonomy in the learning process, but most learners are still likely to choose face-to-face learning, and so faced ERT with varying degrees of acceptance and preparation. The expectations of what online learning means for these traditional in-person learners are varied, from a synchronous instructor-led experience to a self-paced, asynchronous one. In addition, the pivot to technologically mediated instruction requires a defined skill set and technical resources (e.g., internet access, computing devices) that many learners did not have, posing a barrier to adoption and success. Compounding this was

the unintended impact on learners who experienced isolation and other phenomena associated with prolonged screen time.

ERT in the time of COVID-19 demanded not only adoption by underprepared students, but by their on-ground instructors as well. While instructors may be subject matter experts and familiar with basic audio-visual technology, the transition to online teaching requires them to build capacity working with learning management systems and virtual classroom applications and to navigate intricate ways to work with learners in different time zones and a variety of access technologies. Without adequate guidance, teaching staff attempted to replicate in-person instruction, which is troublesome when in-class activities do not translate well to the online context. In an attempt to adapt to the change to the unfamiliar and sometimes increased demands of online instruction, some teaching staff opted to shut down communication practices and run mostly asynchronous courses, which further aggravated students' sense of isolation and disconnect between the instructor and their fellow learners.

From an institutional perspective, existing technology infrastructure may be insufficient to handle the increased demand for online resources and tools that were originally designed for a significantly smaller group of online learners. Staff providing instructional support also required hiring, training, and re-defining of job duties to accommodate the increased demand.

Clearly, the transition to ERT was more complex than many institutions had anticipated, and it posed major challenges for all actors involved. However, despite the challenges, it also has opened the door for a renewed focus on the learner, which is not always the case in higher education models of instruction. After spending a full year in this temporary mode of instruction under the pandemic, many institutions have taken

advantage of the lessons learned and taken steps towards refining their course offerings to present a more robust and real online experience to help their learners succeed.

2.9 Capturing Student Engagement

One of the most critical points in delivering effective online teaching is the promotion of high levels of student engagement. This level of psychological investment in the learning experience is a significant component of any learning intervention and is directly tied to the basic tenets of adult learning (Knowles, 1984):

i. Adult learners need a sense of involvement and ownership and so should be involved in planning and evaluating the learning experience. To achieve this principle, educators need to be willing to share the stage with learners and invest time and effort in learner involvement.

ii. Adults need to learn experientially and reflect on their mistakes. Providing practice opportunities allows learners to create connections between theory and its application. The self-reflection component can also be paired with feedback and guidance for deeper understanding.

iii. Adult learners need to understand the relevance and application of the subject matter. This is one of the most difficult elements to achieve for foundational subject matter early in a degree program. Making the connections between real-world cases and performance context in a way that makes them relevant to learners is critical to enable valid discussions and foster interest.

iv. Adults prefer problem-centred learning rather than content-driven experiences. Traditionally, post-secondary education has been perceived as a content-based instructional activity where educators engage in long lectures and provide learners with significant reading lists. This practice is based on the assumption that the design of these content delivery strategies and tools allows for self-

> directed learning and continues to perpetuate the premise of the "empty vessel." Research shows that problem-solving is a biologically primary skill and that learners are more interested in these experiences (Kirschner et al., 2018).

Retaining student attention and engagement was a challenge for many institutions during the first months of the COVID-19 pandemic. Students who thrive in the face-to-face classroom environment struggled to achieve similar results in the online environment. Where previously they relied on their instructor's stage presence, mastery of group dynamics, and high learner involvement to create a successful on-ground learning environment, they now faced lack of instructor knowledge and skills specific to online learning. The disconnect between student and instructor was often amplified because the experience of the structured lecture could not be replicated in the virtual classroom. In short, the lecture format does not work as well in the online space due to the lack of the sentient connection that learners and instructors experience in the presence of one another (Shenoy et al., 2020).

Perhaps the key to understanding engagement in online teaching starts with recognizing that the opportunities to host longer synchronous sessions are limited by the shorter attention span in the online setting. Even if instructors depart from the traditional lecture format and design in-class sessions that will include attention-grabbing activities, content presentation, opportunities for practice, and interactive moments, synchronous online sessions need to be much shorter and less content-packed. The sources of distraction are simply too many and learners may not feel the same pressure to focus on the only speaking voice in the classroom, often overestimating their abilities for multitasking. Rather, a good design would include highly interactive activities that seek the involvement of the learner at the outset and the use of the "flipped-classroom"

strategy while including elements to promote a safe learning environment, like the use of backchannels and alternative means of communication.

Yet, even for more established programs, one of the main criticisms of online education is that expanding class sizes prevents more individualized instruction, which is the key to more effective learning. Educators continue to grapple with the 2-Sigma question of finding methods of group instruction that are as effective as one-to-one instruction (Bloom, 1984). Now that millions of learners are taking online classes, higher education stakeholders must ask: What have we learned about student engagement in this new reality? We must consider whether student engagement or providing greater access is the priority. One possible path to addressing such concerns is the combination of individualization and adaptive components in online learning combined with relationship building and monitoring by instructors.

2.10 Prioritizing Communication Practices and Interaction Strategies

In face-to-face instruction, student and instructor communication occurs naturally and almost without any direction before, during, and after the class and during dedicated office hours, practices enshrined in tradition and established over centuries. This style of providing instructional feedback and communicating with students is an anticipated part of the on-ground academic culture (Misra & Mazelfi, 2021).

In order to be effective, online instruction and mentoring require a more intentional effort with advanced planning to promote communication among students and instructors to mitigate the impact of the transactional distance. In addition, they require attention to the tenets of adult learning.

For instance, to address learners' needs to understand the relevance and application of the subject matter, the strategic use of announcements (or class-wide messaging) to offer welcome remarks, weekly summaries, reminders, clarifications about assessments, and wrap-up comments can create a sense of belonging to a community while keeping learners informed and on track of the course progress. Instructors should always remain vigilant for signs of stress and vulnerability, for example, excessive silence or increased number of individual messages requiring clarifications. If needed, group messaging and individual touchpoints can be used to benefit specific sub-groups that may have other needs and requirements. Another common strategy for consistent communication practice and to help ensure students know what to expect and when in online classrooms is to develop a calendar for class-wide messages that can be adapted every term, as well as templates to facilitate the task.

Yet, tools like announcements, group messages, and scheduled calendar communications are primarily one-way methods of communication, disallowing for a true dialogue between the instructor and the student. As adult learners need a sense of involvement and ownership, online instructors must also provide means for interaction, dialogue, and even negotiation for students. The use of discussion forums has become a mainstay of online education to achieve just this, with learners engaging in topical discussions that resemble in-class conversations.

The practice of discussion forums is generally quite democratic and inclusive as the asynchronous nature allows for students to consider responses before posting and to leverage assistive technology as needed. Educators, however, need to distinguish for themselves and for the learners the differences between general open classroom discussions and targeted, intentional discussions that require engagement with subject

matter, with the instructor, and with one another with the understanding that all written responses will be assessed for specific learning outcomes. The delineation of clear ground rules for students on how forums are intended to work is crucial to ensure seamless implementation.

The use of discussion forums as a communication practice and a means to develop a stronger sense of community should promote meaningful connections and/or conversations. As such, conversation starters play a major role in ensuring early success in developing a connection and sense of community between students in an online course. Effective conversation starter discussions may include a scenario to situate learners in a particular context, and then include questions that begin with words like "what", "where", "why", "who", "when" or "how," inviting elaboration rather than asking students for facts or shorter responses:

i. **What** would you have done differently?
ii. **Why** do goals need to be 'attainable?'
iii. **Where** would you build it?
iv. **When** would you start this particular activity?
v. **How** can it be devised?
vi. **Why** is this solution more expensive?

Online educators can also use discussion forums as a strategy to assess learning, participation, and group work (Delaney et al., 2019). To achieve this, online instructors need to consider the efficacy of running multiple discussions at the same time (generally, this should be avoided if possible). Keeping learners hyper-focused on a single discussion for a shorter period before opening the next one will yield better results.

Like discussion forums that require peer-to-peer interaction, the use of collaborative reading tools is garnering more attention as access to digital books becomes more prevalent (Lee & Yeong, 2018). In the online format, learners can engage with one another in chapter reading and use annotations to explore content in a collaborative group, which will naturally lead to the creation of a community and spark conversations in addition to self-reflection. As part of class activities, instructors can assign study groups or allow for students to form them organically, then assign collaborative reading and define specific outputs from the exploration of content. This may occur in the form of questions that invite individual exploration, collaborative reflection, problem-solving, and group dissemination. Through an elegant integration of collaborative readings and discussion forums, "reading circles" can devote time every week to divide readings and engage in a highly productive review of literature and even the production of new knowledge.

As in the on-ground classroom setting, not all online learners feel confident or safe participating in group discussions or activities, emphasizing the importance of creating a "safe learning environment." Even with all the different approaches to communication, some learners struggle with the pressures of being in a digital space with or without telepresence aids (e.g., microphones, video cameras) as they share their thoughts and experiences with their peers, and many decide to stay silent due to fear of "not being at the class' level" or concerns about negative reactions to voicing their thoughts. When instructors use backchannels during live synchronous sessions, learners may feel more supported and therefore more inclined to open up and connect or communicate with one another.

Other backchannel communication approaches, such as polling and student response tools as well as collaborative documents and "parking lots" can also relieve the pressure of speaking up and asking questions in front of peers, especially when the participation is anonymous. For example, a "start/stop/ continue" survey midway through the course allows instructors to temperature check the communication practice (and other course features) and quickly assess what needs to be changed:

i. What should we **start** doing?
ii. What should we **stop** doing?
iii. What should we **continue** doing?

In short, backchannel tools allow for robust conversation, don't interrupt the flow of the class, are inherently democratic, and prevent dominant learners from monopolizing the conversation to the detriment of others. They promote sharing of ideas, thoughts, and feelings in a written form allows more time to reflect and refine a message, which often helps learners to communicate their thoughts more clearly. Finally, as they are a more individualized communication strategy, they also enhance the dialogic feedback experience for the learner and can promote a lessening of online learners' sense of transactional distance.

Outside of the online classroom "space," instructors can foster communication by adapting traditional "office hours" into even more effective models. For example, virtual "Ask Me Anything" sessions may help create a similar experience where learners take turns to ask their questions to their instructors and receive timely answers and feedback. Instructors may also add Q&A segments during their classes to address questions about graded assessments, course activities, or content-based inquiries. Finally, the use of "General Questions" forums serves a similar purpose but in an

asynchronous mode, allowing learners to receive additional explanations, detailed feedback, and resources. The range of options in online instruction goes well beyond the limited scope of in-person office hours and offers students and faculty a deeper range of connection points directly linked to assignments.

In summary, a carefully defined online communication strategy is critical to ensure a successful online learning experience. However, this strategy should be responsive and nimble, easily adjusted based on student feedback and the nature of the subject matter.

2.11 Mastering Content Taxonomy

Traditionally, content for higher education courses has included a mixture of textbook readings, instructor-owned or designed materials, and a curated trove of both printed and digital resources. The increasing rise of online learning over face-to-face instruction in recent years, as well as the decline in printed textbook sales over the last few years, has forced publishers to pivot to eBooks and digital-first editions (Carbaugh, 2020). The mandate to move immediately to remote instruction forced instructors and institutions to rethink the need for printed materials and the realities of limited access to them, and so the transition to eBooks increased exponentially during the COVID-19 pandemic. Publishers were eager to meet the demand and course designers began to think more intentionally about structure, and the opportunity to move beyond the bare minimum set of resources to help students achieve the learning outcomes of their courses.

Effective online course design streamlines materials to align with the defined learning outcomes. This is a first step to ensure that learners are not inundated with “good to have” resources and superfluous materials that increase their workload. However, instructors still want to provide resources that capture the full range of the subject and

meet the needs of learners who seek enriched learning opportunities. One technique for ensuring that all students' needs are catered to is to sort materials into three main categories:

- **Required materials.** These are resources that align with the learning outcomes and are considered core. The content is usually included in learning activities and assessments; therefore, mastery is critical to the success of the learner.
- **Suggested materials.** The resources in this category are also closely aligned with learning outcomes but respond to the premise of "learn more" about the topics of the course. The content would not be included in assessments nor be factored in the general workload of the course.
- **Optional materials.** These resources include materials that may be on the same subject matter but not necessarily aligned with the learning outcomes. The goal of this content is to offer a path to those learners motivated to learn more.

While many courses still feature textbooks or course reading packets, the range of resources has expanded significantly over the last few years to include more multimedia options, open-source literature and research, collaborative knowledge banks, and constructive learning approaches to content. Moreover, courses can leverage a variety of content tools embedded in their LMS to make content exploration easier and more accessible. In fact, the use of open educational resources (OER) is rapidly increasing as a source of accessible content in online education (e.g., learning materials, activities, formative assessments) that learners can freely use, reuse, retain, remix, and distribute while reducing the associated costs with textbooks and other commercial publishing products. OER have a positive impact on learners' grades and retention (Tang, 2021), especially when their production is associated with a robust design and development process.

A phenomenon loosely associated with the migration of courses to the online or remote delivery modes of instruction is the production of pre-recorded lectures. A mainstay in massive open online courses (MOOCs), this practice only appeared recently in other forms of online education to help in- class instructors pivot towards a highly interactive synchronous practice rather than sticking to lecturing in its most unidirectional format. If an instructor insists on the importance of delivering content in this way, the lectures can be recorded using one of a variety of available programs, including screen-capture tools, virtual classroom, and video conferencing applications, and even audio recording or podcasting tools. Learners can access these tools and recordings on-demand at a time that suits them, which allows for more substantial conversations during class. The concept of clustering (dividing presentation materials into small "chunks" to manage cognitive load) is critical to the success of this strategy, as short segments of 5-10 minutes are easier to consume and stream than a fully-fledged 60-minute class. Video and audio content should include accessibility features like captioning and audio transcripts to ensure that the materials are accessible for individuals with diverse abilities

2.12 Empirical Studies

2.12.1 Technology-related experiences of students in studying online during Covid-19

The transition to online learning during the COVID-19 pandemic revealed a significant gap between institutional goals and the lived reality of students. While Zhong (2020) highlights that top-tier global universities took positive steps to facilitate remote transitions, this perspective often overlooks the systemic inequalities present in developing contexts. For instance, Alsoud and Harasis (2021) found that in Jordanian universities, the impact of poorly resourced institutions and economically marginalized

learners severely impaired the capacity for a successful online experience. This suggests that institutional "readiness" is irrelevant if the socio-economic reality of the learner is not addressed, indicating a failure in the organizational response to ensure equity.

The disparity is further evidenced by the speed of the transition. Chen, Kaczmarek, and Ohyama (2020) noted that while developed countries already utilized an 80% distance learning model pre-pandemic, Jordan stood at only 25%. Although the Jordanian Prime Minister viewed this as an "opportunity" for growth (Jordantimes, 2020), the literature suggests that rapid adoption without a cultural shift in pedagogy may be counterproductive. This is demonstrated by the Harvard School of Dental Medicine study (Chen, Kaczmarek & Ohyama, 2020), where 70% of students reported that their learning had "somewhat" or "significantly" worsened. Despite the use of synchronous live lectures, stress increased while retention and engagement plummeted. This leads to the critical conclusion that digital delivery does not equate to effective learning; rather, it can exacerbate student burnout if the format is not adapted for the virtual environment.

Furthermore, while Semenikhina et al. (2019) argue that online lectures offer technical advantages such as playback speed control and subtitles—Alsoud and Harasis (2021) observe a persistent lack of motivation among students to attend synchronous sessions. This contradiction highlights a fundamental flaw in current e-learning strategies: technical features cannot compensate for a lack of human engagement. Consequently, the recommendation by Alsoud and Harasis (2021) for a "revolution" in distance education through interactive asynchronous methods is vital. Without such a shift, the "feeling of exclusion" and "inequity" identified in the literature will continue to drive high dropout rates and academic vulnerability.

2.12.2 Lecturer-related experiences of students in studying online during Covid-19

Research into the lecturer's role reveals a heavy reliance on traditional tools that may not meet the demands of a digital-first pedagogy. Hebebci, Bertiz, and Alan (2020) found that lecturers primarily use PowerPoint, Prezi, or OneNote to disseminate information. While these tools facilitate the delivery of content, they often fail to foster the "quality interaction" necessitated by educational technology (Singh et al., 2010). A notable barrier to this interaction is the reluctance of students to show their faces or participate actively (Hebebci et al., 2020). This suggests a psychological "digital wall" that lecturers have yet to penetrate, despite having the technical tools to do so.

The literature also exposes a lack of institutional foresight regarding faculty training. While Zhu and Liu (2020) argue that the pandemic allowed faculty to build competencies in virtual collaboration, Alsoud and Harasis (2021) point out that most students were entirely unprepared for this shift, having never attended online classes before. This indicates that the "competency" claimed by institutions may be superficial, focusing on tool usage rather than effective digital instruction. Mahmood (2020) suggests that lecturers must provide more flexibility, yet this is difficult to achieve when both staff and students are suffering from the mental health toll of the pandemic.

Perhaps the most critical oversight in early e-learning adoption was the neglect of the student's psychological state. Studies across Bangladesh, China, France, and the UK (Khan et al., 2020; Jiang, 2020; Essadek & Rabeyron, 2020; Savage et al., 2020) confirm a surge in depression, anxiety, and distress among students. These "negative emotions" (Patricia, 2020) make focusing on education nearly impossible, regardless of how "personalized" the technology claims to be (Sra & Chakraborty, 2018).

Finally, the persistent "digital divide" between urban and rural areas (Lembani et al., 2020; Grishchenko, 2020) serves as a reminder that technology can be a barrier rather than a bridge. The literature collectively suggests that while some professors improved their online teaching skills during the pandemic (Mahmood, 2020), the fundamental issues of home environment, mental health, and digital access remain largely unresolved. Therefore, future online education models must move beyond technical delivery and address the holistic needs of the learner.

2.12.3 How studying online during Covid-19 affected students' academic performance

Alsoud and Harasis (2021) research also showed that many students face immense e-learning barriers and a large proportion of students have not been able to attend online classes. For example, the poor economic conditions and learning environments, as well as poor Internet connectivity, have challenged students from rural and remote areas. The study showed several difficulties and challenges that students have faced during the pandemic, mainly the feel of anxieties, not having a device to attend the online classes, not having a separate room to study at home, and Internet connectivity issues. Universities have social responsibility roles (USR) aimed at bridging the educational and social challenges of their surrounding societies through four main dimensions, namely: management, research, teaching, and extension (Carrillo-Pacheco, Leal-García, Alcocer-Gamboa, Muñoz-Cornejo, 2012). This is why it is the university that has to drive the change to improve the community readiness for such mode of learning.

Some empirical studies have revealed that students are suffering from stress and anxiety during this pandemic (Arora, Chakraborty, Bhatia, & Mittal, 2020; Islam et al., 2020). According to Toquero and Talidong, (2020) there are many homes where there are a

limited number of digital devices and more people need to use them simultaneously. This is a new form of digital divide. The structural equation modelling of the authors showed that different constructs are influencing the social issues related to online education. The social impact of online education needs to be studied carefully (Toquero & Talidong, 2020).

The impact of COVID-19 was not limited on the educational systems, it has also affected the student's learning experience when it comes to accessing research and study materials; for example, students' ability to access textbooks and resources they need to review can be hampered by a lack of copyright limitations and exceptions. Hebebci et al. Sadeghi (2020) conducted a study in Turkey to find out what teachers and students thought about the COVID-19 pandemic's distance education applications. According to the study, students in distance learning mode have difficulty doing group projects due to a lack of on-campus socialization, as stated by 42.9 percent of those surveyed.

Sadeghi (2019) have argued that the online learning have some cons such as the high chances of distraction, the use of complicated technology, no social interaction, the difficulty staying in contact with instructors, and that the job markets do not accept online degrees. There are also several disadvantages of online education, such as: internet browsing issues, computer compatibility, or technical issues Sadeghi (2019). At the beginning of the COVID-19 pandemic, students had to reorganize their daily schedule to adapt to a situation of isolation. Those studying abroad had to go back home, but, at the same time, many of them were blocked due to the closure of airports and borders. The lack of socialization affected students and their socio-emotional

balance suffered, especially in young people with pre-existing problems of this nature. Students claimed that main the effects of isolation were anxiety and depression.

2.12.4 Support systems for enhancing online teaching and learning in the advent of Covid-19

The World Bank, UNESCO and other development partners have already rolled out a number of education resources that developing countries can readily deploy. The Edutech industry in general is also providing free online platforms to engage directly with students and to assist school administrators and governments to identify technological solutions that support remote learning. On a larger scale, the countries should explore international loan and grant facility for education as part of mitigation and recovery plans in weathering the COVID-19 crisis (UNESCO, 2020).

Reaching the vulnerable population in Ghana will require adopting multiple learning delivery modalities ranging from television, radio and SMS-based mobile platforms that are more easily available to the poor. With over 80 percent of the adult population having access to radios and phones, it would be possible to reach most children left behind with targeted instructions via these mediums. However, while online platforms offer personalized learning, other delivery modalities require a central planner, as well coordination between all three tiers of government, and the private sector. This is where the role of the Ministry of Education will crucially extend beyond traditional policy making and regulations. The commissioners of education could help in the deployment and use of these tools within states, while the federal government coordinates the state efforts by plugging capacity and finance gaps. The government could draw on the experience of Sierra Leone, where the Ebola crisis led to school closures for about 9 months. To reach the most vulnerable and excluded children, the Government of Sierra

Leone harnessed radios and televisions to deliver lessons. Whatever strategy the government chooses to incorporate, they must ensure that it is cost-effective (at least available within the home) and easy to use (children and their parents/guardians have some knowledge of it before hand or can easily learn to use them) (Upoalkpajor & Upoalkpajor, 2020).

As part of efforts to mitigating the pandemic, a multi-disciplinary panel of experts was convened to develop evidence-based country-specific guidelines (MOH, 2020). This guideline was to help reduce the spread of the virus across many areas. The wake of the COVID-19 pandemic which has posed an intense fear and panic globally has encouraged many practitioners in various fields to join the fight to contain it in order to making sure the human existence is not deeply affected. Seemingly, as technology is booming, most lecturers are considering e-learning as an alternative way of giving tuition support to their students

Furthermore, Amos et al. (2020) opines that the technological boom of the twenty- first century has opened up new possibilities for e-learning allowing teachers and students to communicate remotely without having to meet in person. According to Pew Research (2013), the internet has become so integral in people's lives that only 15% of Americans do not use it at all. This has made online teaching and learning very phenomenal especially during the COVID- 19 pandemic. Research conducted in Ghana have stated that students use the Internet a lot (Brafi & Arthur, 2013; Oluwatimilehin, 2014) and that mobile phones are the most used devices to access the web all the time (Frimpong, 2015).

The Internet has become possibly the most popular medium to connect with others particularly through social networking tools like emails, WhatsApp, Facebook, zoom, video conferencing among others in our current dispensation of COVID-19. This projects that, many people zooming into the future will embrace and actively patronize e-teaching and learning as a means of pursuing education and therefore incumbent on educationist to embrace the new changes that has come with the dreaded COVID-19 pandemic. The internet has become an important part of some young people's life, with many of them spending a significant amount of time on social media to contact with friends and family (Mesch, 2012; Campbell & Colmar, 2014).In our current dispensation, online teaching and learning can be delivered via computers or smartphones (Andersson, 2018) and therefore most of these young people are likely to take advantage of online teaching and learning services. In addition, according to Nwachukwu et al. (2014), study reveals that everyone is becoming conversant with cellular phones and their associated text messages, email and subsequently becoming computer literate

Google meet, what's app and skype, Email, chat, video-conferencing, and text messaging or short message system (SMS) are among the most commonly used online teaching and learning tools. Suler (2011) argued that video conferencing can be used in our educational system for both students and teachers for online lectures and distance learning. However, Down (2009) and Suler (2011) describes video conferencing as synchronous and provides participants with the visual and spoken communication. The platform allows simultaneous interactive communication between users. In addition, it enables users to be able to closely monitor progress during the interactive session through observation of verbal and non-verbal cues.

According to Down (2009) a basic video conference requires a television camera to capture images of the participants, a microphone to pick up their speech and a means of transferring sound and vision information to the remote location. Zamani (2009), postulates that video Conferencing requires the participants to sit in front of a camera and are indeed expected to have compatible video equipment. Suler (2011) discussed the importance of video conferencing for which he discovered that video conferencing provides multiple sensory cues, such as visual appearance, body language and vocal expression that can provide valuable information for understanding the users. Zamani (2009) also argued that video conferencing may be less ambiguous than typed text, which may lead to fewer misunderstandings. As much as speaking is faster than typing, video conferencing conveys information more quickly, and readily has a consequential benefit to those who express themselves better through speaking than writing. Down (2009) indicated that the quality of the received images can be compromised by the technology. The body language can be lost if movement is jerky or picture quality is reduced (Down, 2009).

In addition, there may be delays in the sound. When this happens, it is not good to continue exchanging information using the platform. The session becomes inappropriate because the sound comes in pieces and it becomes extremely difficult to put the pieces together in order to understand each other (Down, 2009). Electronic mail, widely known as email, is a form of communication transmitted electronically using computers (Kolog et al., 2014). It is tremendously faster than all previous means of communication, for instance sending letters using the traditional postal system. It is therefore not surprising that email has been widely adopted by a large section of the world's population as their preferred means of communication. It is widely used in business communication because of its nearly instantaneous nature. Sending email is

free, except the cost of paying for the infrastructure such as a computer and Internet connection.

Alsoud and Harasis (2021) recommend Jordanian universities truly adopt e-learning to give their students a chance to be familiar with the online learning environments. According to Alsoud and Harasis (2021) majority of the Jordanian universities have relied on web conferencing tools to continue the education process; it is time for them to explore their LMS potential. LMS enables universities to keep all data in a single location, and students can use compatible devices to access them anytime, anywhere. This reduces administrative problems related to the maintenance of learning materials in various places. The authors argued that it is time to revolute Jordan's educational systems through adopting an online learning environment. Jordan's higher education system should have a unified emergency plan for the universities, this plan should clearly state educational continuity plan to continue the learning process as soon as any emergency or pandemic occurs.

The study of Alsoud and Harasis (2021) further showed that students from rural and remote areas faced enormous challenges such as technological accessibility, poor internet connectivity, and harsh study environments. The authors recommended that universities should invest in the technological infrastructure and facilities that can support e-learning which can facilitate the e-learning process during any future emergencies. Furthermore, they recommended Jordan's government should have a tailored plan to create an adequate online environment among disadvantaged students from remote areas.

Educational technologies have improved over the years. Today, there are several sophisticated online education platforms and many specialized educational resources for various courses. Some online educational tools also facilitate collaborative learning (Adhikary, Gupta, Singh & Singh, 2010). However, self-reflection on the part of students is extremely important in online education. Students feel that there is a need for periodic assessment to keep the teaching-learning process on the right track. Lecturers may use innovative tools and techniques for the same.

2.13 Summary of Literature Review

The lockdown of COVID-19 has caused major disruptions to academic activities. Online education has been on the fringe for a long time. The COVID-19 pandemic made it the mainstream. Various researches have been conducted to know the opinion of students in universities in different part of the world on different aspects of online education during the COVID-19 pandemic. Most of these studies found that the students considered online education a viable alternative under the current circumstances. They however think that there is scope for improvement. Lecturers try to make online education better acceptable among students. Techniques like flipped classroom, case studies, and gamification were introduced in online education and their effects were studied.

A significant proportion of students use digital learning tools, many of them face immense online learning challenges such as Internet connectivity issues, dedicated space for studying, personal device for attending the online classes, and the feel of anxieties. The vast majority of the surveyed students have never attended online courses before the pandemic. Online education could transform the distance learning environments into innovative and more effective learning environments. Governments,

policymakers, and universities are making investment to develop resilient education systems that supports electronic and distance learning for the future of their educational system. In short the COVID-19 pandemic has led to adoption of online education on a large scale around the world for the first time. The lessons about online education during this pandemic will be useful during future exigencies. The next chapter delves into the research methodology applied to this study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter delves into the research methodology applied to this study. The chapter includes the research paradigm, research approach and research design, population of the study, sample and sampling techniques, data collection methods, validation of the instrument, piloting of the instrument, data collection procedure, data analyses procedure, researcher's positionality, trustworthiness of the study and ethical issues.

3.2 Research Paradigm

A research paradigm is the philosophical framework that guides a researcher's approach to inquiry, shaping the assumptions, beliefs, and methods employed throughout the study (Creswell, 2014). It encompasses the researcher's ontological and epistemological stance essentially, their beliefs about the nature of reality and how knowledge is constructed (Creswell & Creswell, 2017). According to Gray (2009), a paradigm provides the map for what can be understood about a phenomenon and how that understanding is reached.

For this study, the interpretivist paradigm was adopted. While positivist paradigms seek objective, empirical evidence to validate hypotheses through quantitative means (Creswell, 2014), the interpretivist paradigm prioritizes the exploration of subjective meanings and lived experiences (Denzin & Lincoln, 2018). The choice of interpretivism is justified by the study's objective to explore and analyze the "differently constructed social realities" of postgraduate students at the University of Education, Winneba (UEW). Since the study investigates how students experienced online learning in the post-COVID-19 era, it assumes a subjectivist perspective and a nominalist ontology.

This perspective argues that reality is not an external, objective truth, but is instead mediated through human construction and personal interpretation (Bailey, 2016; Crotty, 2008). In the context of UEW, "online learning" is not a singular, uniform variable; rather, it is an experience that varies from student to student based on their unique circumstances, making the interpretivist lens the most appropriate framework for capturing these nuances.

3.3 Research Approach

This study employed a qualitative research approach. Unlike quantitative methods that focus on measurement and generalizability, the qualitative approach assumes an inter-subjective ontological and epistemological stance, relying on first-hand accounts to describe phenomena in rich, "thick" detail (Babbie, 2010). The qualitative approach was selected because it allows the researcher to "get inside" the participants' perspectives to understand their world from within (Willig, 2013). This was essential for this study, as it required working directly with postgraduate students to uncover the depth of their experiences with online pedagogy. The choice of a qualitative approach is further justified by the following three pillars:

Naturalistic Inquiry: In line with Bryman (2006), this approach allows the research to be conducted in a naturalistic setting. Rather than testing variables in a controlled environment, this study regards UEW students as active agents who construct their social world and assign personal meanings to the post-pandemic digital shift. Subjective Epistemology: Following the views of Punch (2005) and Kusi (2012), it was crucial not to impose external interpretations on the participants. A qualitative approach ensured that the students' own interpretations of their social world remained central, allowing

for an empathetic understanding of the meanings they attached to online learning (Creswell, 2015).

Ontological Alignment: The study treats the participants' subjective experiences as the primary "reality" (Creswell, 2013). By using a qualitative approach, the researcher was able to treat the students' narrations as valid constructions of reality, providing a comprehensive analysis of the post-COVID-19 educational landscape at UEW.

3.4 Research Design

Bryman (2010) describes a research design as the outline plan, or strategy the researcher is going to use to seek an answer to the research question or questions. In other words, when one gets to the stage of designing an experiment, one has to identify the plan or strategy to be used in collecting the data that was adequately answer research questions or test the hypothesis. Creswell (2013), on the other hand, defines a research design as a procedural plan that is adopted by the researcher to answer the questions objectively, accurately and economically. A research design is the arrangement of conditions of collection and analysis of data in a manner that aims to combine relevance of the research to the research purpose with economy in procedure. In addition, Creswell (2013) emphasizes that through a research design the researchers decide for themselves and communicate to others their decisions regarding what study design you propose to use, how you are going to collect information from your participants, how the information is going to be collected, analysed and the findings communicated.

A phenomenological design was chosen for this study. According to Creswell (2014), a phenomenological study describes the meaning for several individuals of their lived experiences of a concept or phenomenon. This study focused on the participants' experiences of studying online during the post COVID-19 era at the University of

Education, Winneba. As a phenomenologist, the researcher described what all participants have in common as students in order to determine the universal essence. Phenomenological research is a design of inquiry coming from philosophy and psychology in which the researcher describes the lived experiences of individuals about a phenomenon as described by participants. Although it is a challenging, exciting, and at times exhaustive process, but the final research product might be very satisfying for the researcher (Creswell, 2014).

3.5 Study Area

The research was conducted at the University of Education, Winneba (UEW), located within the Effutu Municipality in the Central Region of Ghana. The Effutu Municipality has a population of 68,592, representing approximately 3.1% of the regional total, with a demographic distribution of 48.8% males and 51.2% females (Ghana Statistical Service, 2014). The municipality is characterized by a youthful population and a diverse economic landscape dominated by manufacturing, retail services, agriculture, forestry and fishing. (Ghana Statistical Service, 2014). The municipality has 60 Nurseries/Kindergarten, 52 Primary Schools (24 Public and 28 Private), 32 Junior High Schools and 7 Senior High Schools. The Winneba Senior High School is the public second cycle institution in the municipality. There is one major tertiary institution, the University of Education, Winneba which has its main campus in Winneba Township with a satellite campuses at Ajumako. UEW offer various programmes at distance level, sandwich, regular and evening session. A total of 12,200 students were admitted into UEW with 10,639 being undergraduates and 1,561 being postgraduate students.

The choice of the University of Education, Winneba as the study area is strategically significant for several reasons:

Pioneering Role in Distance and Digital Learning: UEW is a lead institution in Ghana for teacher education and has long integrated distance and sandwich programmes into its academic structure. This institutional history provided a unique foundation for the rapid shift to online learning during and after the COVID-19 pandemic, making it an ideal environment to study the transition's long-term effects on postgraduate students.

Diverse Postgraduate Demographic: For the current academic cycle, UEW admitted 12,200 students, of which 1,561 are postgraduates. This substantial postgraduate population comprises professionals, educators, and researchers from across the country who utilize various learning modes, including regular, evening, and sandwich sessions. This diversity ensures that the study captures a wide range of "socially constructed realities" regarding online pedagogy.

Technological Infrastructure and Adaptation: As a major tertiary institution, UEW implemented specific Learning Management Systems (LMS) to sustain academic continuity during the post-COVID-19 era. Investigating this specific site allows the researcher to explore how postgraduate students—often balancing professional roles with advanced studies navigate the specific digital infrastructure and institutional support provided by UEW.

Socio-Economic Context: The location of the university within the Effutu Municipality, which features a blend of urban and peri-urban characteristics, reflects the broader Ghanaian challenges of internet connectivity and digital access. Studying UEW

provides a realistic microcosm of how postgraduate students in a developing economy experience the shift from traditional to digital-mediated learning.

By focusing on UEW, this study gains access to a rich, lived context where the tensions between traditional face-to-face instruction and the new "post-COVID" digital reality are most visible and impactful for postgraduate learners.

3.6 Population

The target population represents the specific group to which the researcher intends to generalize or apply the findings of the study (Silverman, 2009). For this study, the target population comprised all regular and sandwich postgraduate students at the University of Education, Winneba (UEW). According to the School of Graduate Studies Annual Enrollment Statistics Report (2021), the total population of postgraduate students stood at three thousand one hundred and sixty-four (3,164) for the 2020/2021 academic year.

The accessible population—those members of the target population who were realistically available for the researcher to contact—consisted of all regular postgraduate students in UEW. Based on official records retrieved from the UEW Student Information Systems (SIS) and the School of Graduate Studies (2021), this group had a numerical strength of two thousand one hundred and forty-one (2,141) students. From this population, the study purposively sampled ten (10) postgraduate students drawn from the Department of Educational Administration and Management and the Department of Arts and Design at the University of Education, Winneba.

3.7 Sample Selection

A sample is defined as a set of participants selected from a larger population for the purpose of a research study (Willig, 2013). In qualitative inquiry, a sample often consists of a restricted, small number of participants who are representative of the broader population, allowing the researcher to understand the phenomenon under study in greater detail (Creswell, 2013). For this study, the researcher selected ten (10) postgraduate regular students from two specific departments: the Department of Educational Administration and Management and the Department of Arts and Design at the University of Education, Winneba.

The choice of ten (10) participants from an accessible population of 2,141 is justified by the qualitative nature of this research. Willig (2013) asserts that a sample of 6 to 9 interviews for qualitative case studies is often sufficient to enable the development of meaningful themes, especially when there is a high level of homogeneity among the population. Similarly, Yount (2015) suggests a range of 8 to 15 participants for such studies. The "uniqueness" of these 10 participants lies in their shared status as "typical cases" who navigated the sudden shift to online learning within two distinct academic

environments—one purely social-scientific (Administration) and one practical/creative (Arts and Design). This provided a balanced yet manageable dataset to achieve data saturation, the point at which no new information or themes are observed (Guest, Bunce, & Johnson, 2006).

The selection was based on the following specific inclusion criteria:

1. Enrollment Status: Must be a regular postgraduate student during the 2020/2021 academic year.
2. Technological Engagement: Must have completed at least two full semesters of online learning post-COVID-19.
3. Departmental Affiliation: Must be registered under the Department of Educational Administration and Management or the Department of Arts and Design.
4. Accessibility: Must be willing to provide a detailed account of their lived experiences during semi-structured interviews.

3.8 Sampling Technique

Sampling is the process of selecting a suitable representative part of a population to determine the characteristics of the whole (Creswell, 2013). While various variations of purposive sampling exist such as maximum variation, extreme case, and snowball sampling (Ary et al., 2002) this study specifically employed Typical Case Purposive Sampling.

Unlike maximum variation sampling, which seeks outliers, or snowball sampling, which is used for hidden populations, Typical Case Sampling was used here because the researcher aimed to describe and illustrate what is "typical" for a postgraduate student at UEW during the post-COVID-19 era (Patton, 2015). The 10 participants were

selected because they reflect the average experience of the 2,141 students in the accessible population regular students attending scheduled online lectures, using the university's Learning Management System (LMS), and facing standard infrastructural challenges.

The use of this technique is justified because it provides rich, in-depth information into cases where the specific characteristics of the sample depend on the study's purpose (Agyedu, Donkor, & Obeng, 2013). By focusing on the Department of Educational Administration and Management and the Department of Arts and Design, the researcher was able to capture a "typical" cross-section of the university: one department representing theoretical/administrative coursework and the other representing practical/studio-based learning. This ensured that the 10 participants provided a holistic view of the online learning phenomenon without requiring a large, statistically representative sample that would be unmanageable for a qualitative phenomenological study.

3.9 Data Collection Method

The primary method for data collection in this study was semi-structured interviewing. This approach was selected because it allows for a controlled yet flexible exploration of the participants' lived experiences, motivations, and attitudes regarding online learning (Keats, 2000).

3.9.1 Semi-Structured Interviewing

The research utilized a Semi-Structured Interview Guide designed specifically for this study. The guide was structured into four (4) main sections to ensure a logical flow and comprehensive coverage of the research objectives:

Section A: Demographic Information: This section contained five (5) items aimed at gathering background data on participants, including age, gender, department, and level of study.

Section B: Technological Accessibility and Readiness: Comprising six (6) subsections, this part explored the tools and internet connectivity available to students during the post-COVID-19 era.

Section C: Experiences and Challenges of Online Learning: This was the core of the instrument, consisting of eight (8) open-ended items designed to solicit in-depth narratives regarding pedagogical shifts, engagement, and barriers encountered.

Section D: Coping Strategies and Recommendations: This section included four (4) items focusing on how students navigated challenges and their suggestions for improving the University's online infrastructure.

The semi-structured interview guide was deemed the most appropriate instrument because it offers a "middle ground" between the rigidity of a structured interview and the potential lack of focus in an unstructured one. According to Willig (2013), it serves as a flexible tool that allows the researcher to use multisensory channels verbal and non-verbal to capture deep and complex issues. Unlike a questionnaire, which limits responses to pre-defined categories, the interview guide allowed for probing and follow-up questions, which were essential for uncovering the nuanced "how" and "why" behind the students' experiences at UEW.

3.10 Validation of the Instrument

3.10.1 Face Validity

Face validity ensures that the interview guide appears to measure the intended constructs and that questions are phrased appropriately (Cohen, Manion & Morrison, 2011). This was established by submitting the guide to the researcher's supervisor and a peer researcher for scrutiny, resulting in adjustments to the wording of three items to ensure clarity.

3.10.2 Content Validity

To establish content validity, the instrument was scrutinized by subject matter experts within the Department of Educational Administration and Management at the University of Education, Winneba. These experts evaluated the extent to which the interview items were representative of the research questions and the theoretical framework of the study (Creswell, 2012). Based on their expert feedback, two items in Section C were merged to avoid redundancy, and the technical terminology was simplified to ensure participants could provide accurate responses.

3.11 Piloting the Instrument

In line with Fraenkel and Wallen (2012), a pilot study was conducted to reveal defects in the research plan and identify ambiguous items. The pilot test was conducted at the University of Cape Coast (UCC) among four (4) postgraduate students who shared similar characteristics with the study population but were not part of the final sample. UCC was chosen as the pilot site to prevent "content contamination" among the actual participants at UEW.

The pilot exercise was instrumental in shaping the final instrument. For instance, it revealed that several questions in Section C were double-barreled, leading to participant confusion. Consequently, these were split into single, focused questions. Furthermore, the pilot highlighted that the initial phrasing of questions regarding "LMS usage" was too technical; these were revised to more accessible language. These modifications ensured that the instrument was robust and capable of generating the required qualitative data (Opie, 2004).

3.12 Data Collection Procedures

Prior to the commencement of data collection, an introductory letter was obtained from the Head of the Department of Educational Administration and Management at UEW. While this letter introduced the researcher to the departments, the researcher took independent steps to ensure ethical compliance and participant comfort.

The data collection followed these steps:

Access and Consent: All study participants were personally contacted via telephone or visited at their respective departmental common rooms or private offices on the Winneba campus to schedule appointments.

Ethics and Recording: Before each session, the researcher provided an Informed Consent Form clearly stating the study's purpose. Explicit verbal and written permission was sought and obtained from each participant before the use of any audio-recording device.

Confidentiality: To ensure confidentiality beyond the HoD's introductory letter, the researcher utilized pseudonyms (e.g., Participant A, Participant B) for all transcriptions and ensured that all digital recordings were stored in a password-protected file accessible only to the researcher.

Interview Setting: Interviews took place in quiet, neutral locations chosen by the participants primarily empty lecture halls or the university library study carrels—to ensure they felt safe to speak freely. Three sessions were conducted via Zoom for participants who were off-campus.

Soliciting Data: The researcher used the interview guide to solicit (rather than measure) the opinions of the participants. Each session lasted between 55 and 60 minutes.

Upon completion, the researcher expressed appreciation and informed participants of their right to review the transcript for accuracy (member checking).

3.13 Data Analysis Procedures

The data were analyzed using Thematic Analysis. Transcripts were read iteratively to achieve immersion in the data. Concepts were assigned codes, which were then manually grouped into descriptive themes (Willig, 2013). This manual coding process involved "cut and paste" techniques and color-coding to ensure that the findings directly reflected the authentic voices and language of the postgraduate students.

3.14 My Positionality

The researcher is currently a final year Master of Philosophy student at the Department of Educational Administration and Management, University of Education, Winneba (UEW) anticipating completion. Through the researcher's preliminary interaction with some colleague students on their experience in studying online motivated the researcher to explore more especially during the post COVID-19 pandemic. The researcher is however an insider but has bracketed his emotions, ideals and thoughts about the phenomenon under study. In analysing the data, I was cautious that I did not impose

my views. I presented the interview data using verbatim quotes so that the participants' perspectives and original words are brought into focus.

3.15 Trustworthiness of the Study

According to Creswell (2013) the reliability of research instruments in qualitative data, focuses on the researcher since he or she is the primary instrument. Both validity and reliability of research instruments in qualitative studies are treated together in what is referred to as trustworthiness. Creswell (2013) asserted that, trustworthiness of qualitative research is done through developing standards of quality which involves four criteria.

First, is the credibility the (true value) accuracy, established confidence in the truth of the findings from the informants, the context in which the study was undertaken and the authenticity of the information collected? This was ensured by use of member check in which the participants were asked to corroborate findings and made segments of raw data available for other readers who analysed it. Creswell (2003) posits that participant validation is where the result of the research is submitted to the participants for confirmation as a means of establishing credibility.

Bryman (2004) also holds the view that the establishment of credibility of findings demands that the research is carried out according to good practice and by submitting it to the social world that were studied for confirmation that the researcher understood that social order correctly. Guba and Lincoln (as cited in Kumar, 2014) suggested that prolonged engagement is a technique to ensure credible and interpretation of findings. To achieve credibility in this study, the researcher engaged in prolonged engagement by spending 2 months in the field collecting data. Also, the researcher took the research findings to those who participated in the research for confirmation, congruence,

validation and approval. It is noted that the higher the agreement of the participants with the findings, the higher the validity of the study (Kumar, 2014).

Transferability is equivalent to generalizability of findings in qualitative study (Kusi, 2012). This refers to the degree to which the results of qualitative research can be generalized or transferred to other contexts (Trochim & Donnelly, 2006; Bhattacherjee, 2012). Transferability or applicability is a criterion of the fittingness, showing that findings could be applied to other contexts and settings depending on the degree of similarity between the original situations to which it was transferred (Creswell, 2013). The researcher achieved this in this study by extensively and thoroughly describing the process that was adopted for others to follow and replicate. Thus, the researcher kept all relevant information and documents regarding the study.

Also, in this study, the research context, and methodological processes was provided. These could enable other researchers to apply the findings of this study to similar settings of their choice thereby regarding the findings in this study as answers in their chosen contexts. Furthermore, there was adequate background information about the participants; the research context and setting that allow others to assess how transferrable the finding is. The researcher kept accurate record of all the activities while carrying out the study. These include the raw data (transcripts of interviews) as well as details of the data analysis. The researcher presented reports that provided sufficient details to other readers for assessment.

Dependability corresponds to reliability of findings in qualitative research (Merrian & Associates as cited in Kusi, 2012). Guba and Lincoln (1985), admit there could be no credibility without dependability in qualitative research. Also, it is concerned with whether we would obtain the same results if we could observe the same thing twice

(Trochim & Donnelly, 2006). Dependability (consistency) ensured that the findings were steady if the study would be repeated (Babbie, 2010). An extensive and detailed evidence of the process in which the research is conducted was documented in order that others can replicate and ascertain the level of dependability. To ensure dependability, interpretive researchers must provide adequate details about their phenomenon of interest and the social context in which it is embedded in order to allow readers to independently authenticate their interpretive inferences (Bhattacherjee, 2012).

In this study, dependability was established through the establishment of appropriate enquiry decision. This included review of interviewer bias to resist early closure and at the same time prevent the provision of unreliable data due to boredom on the part of the participants because of prolonged interview sessions. In addition, information from literature assisted the researcher to develop questions that elicit appropriate responses to answer the research questions that are formulated to guide the study. There was a systematic data collection procedure that reached the point of saturation, the extensive documentation of the data (transcriptions of interview narratives), methods and decisions in the memo are steps in proving the dependability of the data. Thesis supervisors assessed the work to find out whether or not the findings, interpretations and conclusions are supported by the data. This criterion was ensured through auditing the research process, documenting all the data generated and assessing the method of data analysis.

Finally, Confirmability ability (neutrality) is the objectivity of data, the degree of neutrality of data, and the extent to which the study findings were shaped by the participants' motivations and perspective, with another researcher agreeing about the

meanings emerging from the data (Bryman, 2010). Trochim and Donnelly (2006) declare confirmability to mean the degree to which the results could be confirmed or corroborated by others. Also, confirmability refers to the extent to which the findings reported in interpretive research can be independently confirmed by others, typically, participants. This is similar to the notion of objectivity in functionalistic research. Since interpretive research rejects the notion of an objective reality, confirmability is demonstrated in terms of "inter-subjectivity", i.e., if the study's participants agree with the inferences derived by the researcher.

In order to establish confirmability, the researcher after coding and transcribing the audiotapes, interview questions, and all other relevant information and documents regarding the study, it was given back to the participants to confirm the responses. The researcher effected changes where necessary and give the transcribed data back to the participants again for them to authenticate the inferences derived by the researcher. The researcher then took the final transcribed data from the participants as a true record of what the participants factually provided. The researcher ensured neutrality in the study by scrutinizing the data from the study participants. The next chapter presents the results from the analysis of the data collected during the field work. It focuses on presentation and discussion of the findings from data gathered from interviews conducted.

3.16 Ethical Considerations

Ethical issues arise from the kind of problems that social scientists investigate and the methods used to obtain valid and reliable data. Ethical considerations were pertinent to this study because of the nature of the problem, the methods of data collection and the kind of persons serving as research participants (Robson, 2011). It is imperative to

adhere to ethical issues in a research of this kind in order to avoid participants withholding vital information from the researcher. The researcher up-held all ethical aspects of the research through the following:

Access

The researcher first requested for a letter of introduction from the head of Department of Educational Administration and Management, University of Education, Winneba to the participants (graduate students) for their permission to carry out the study with them.

Informed consent

Consent was obtained from the participants to be used in the study and ensure that they participate voluntarily. Before the interviews, persons used for this study had to consent to the involvement of this study (Creswell & Creswell, 2018).

Confidentiality

The participants were assured of confidentiality. The researcher was opened and honest in dealings with participants. Before the start of the interview (s), the researcher explained the purpose of the research and the purpose of the interview. In addition, the researcher stored all information from the study safely. Hard copies were locked in a cabinet and soft copies stored in files protected with a password which was only accessible to me.

Anonymity

Anonymity was also another ethical issue that was considered in conducting the study. Here, the researcher ensured that identities of participants were not identified from the information they provided. In doing so, the personality of participants was detached from the findings by providing no form of trace to the specific sources of information.

Again, the names of participants were not contained in the report. I assign them pseudonyms during the writing of the report.

Voluntary participation

The nature of the study was explained fully to the participants before the interviews. The need to collect data from the participants was justified.

No harm to participants

The researcher made sure that all participants are physically and psychologically protected by arranging for them a conducive and safe venue for interviews.

Betrayal

In this wise, data gathered from participants was reported honestly without altering the findings to satisfy certain interest groups or preconceived notions. In the process of data interpretation I remained faithful to the commitments of research ethics to ensure that the presentation of the data did not constitute any form of betrayal of participants. Regarding the language for reporting, the report was free of jargons and as much as possible understandable to those being studied.

3.17 Summary

This chapter delves into the research methodology applied to this study. The chapter includes the research paradigm, research approach and research design, population of the study, sample and sampling techniques, data collection methods, validation of the instrument, piloting of the instrument, data collection procedure, data analyses procedure, researcher's positionality, trustworthiness of the study and ethical issues. The research paradigm adopted for the study was interpretivism. Qualitative phenomenological design was chosen for the study. The next chapter however deals with the presentation of results, analysis and discussion of findings.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION RESULTS

4.0 Introduction

This chapter presents the results from the analysis of the data collected during the field work. It focuses on presentation and discussion of the findings from data gathered from interviews conducted. The purpose of this section was to lay bare the experiences of students in studying online during the post COVID-19 era at the University of Education, Winneba, the focus of the study was technology-related experiences of students in studying online during the post COVID-19 era, lecturer -related experiences of students in studying online during the post COVID-19 era, how studying online during COVID-19 affected students' academic performance and support systems students think the management of University of Education, Winneba should put in place to enhance on-line teaching and learning in the advent of Covid-19. Ten students were involved in the study. The researcher therefore present the findings of the study as derived from the themes that emerged from the data and research questions.

4.1 Analysis of Interview Data

The interview data were transcribed based on the code for each research interview. The thematic contents were formulated based on the research questions and the data gathered were grouped together and analysed under each thematic content and then discussed with the findings of other related studies. Participants' verbatim responses were also used where necessary. Participants were also assured of protection of their identity so that they remained anonymous. In attributing quotations to the interviewees, the participants were given the serial numbers P1 – P10 (where P stands for Participant).

4.2 Demographic Information of Participants

The table below provides a profile of the ten (10) postgraduate participants interviewed. To ensure a comprehensive view of the postgraduate experience at the University of Education, Winneba (UEW), participants were drawn from the Department of Educational Administration and Management and Department of Arts and Design.

Table 4.1: Demographic Information of Participants

Participant Code	Gender	Level of Study	Department	Student Category	Mode of Study
P1	Male	M.Phil (Year 2)	Educational Administration and Management	Regular	Blended
P2	Female	M.Ed (Year 1)	Arts and Design	Sandwich	Distance/Online
P3	Female	M.Phil (Year 2)	Arts and Design	Regular	Blended
P4	Male	M.Ed (Year 2)	Educational Administration and Management	Sandwich	Distance/Online
P5	Female	M.Phil (Year 1)	Educational Administration and Management	Regular	Blended
P6	Male	M.Ed (Year 1)	Arts and Design	Sandwich	Distance/Online
P7	Female	M.Phil (Year 2)	Arts and Design	Regular	Blended
P8	Male	M.Ed (Year 1)	Educational Administration and Management	Sandwich	Distance/Online
P9	Male	M.Phil (Year 2)	Educational Administration and Management	Regular	Blended
P10	Female	M.Ed (Year 1)	Arts and Design	Sandwich	Distance/Online

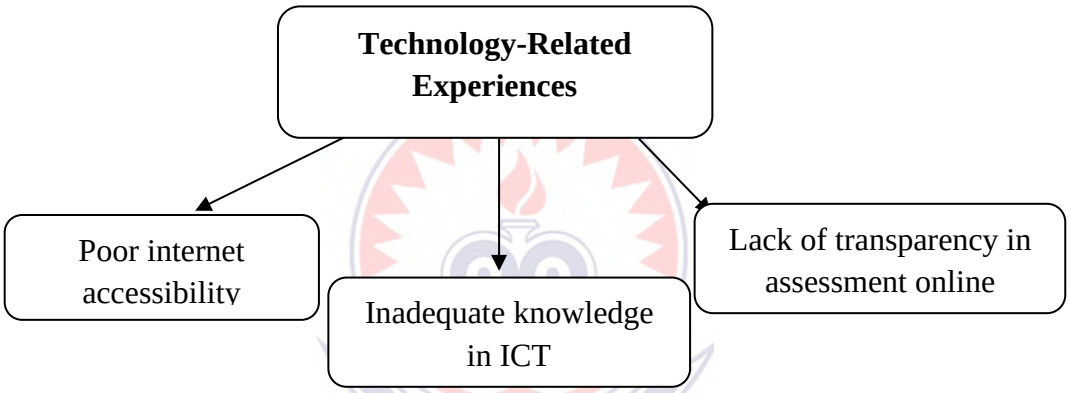
Source: Fieldwork data (2024).

4.3 Research Question One

What are the technology-related experiences of students in studying online during the post COVID-19 era at the University of Education, Winneba?

The first research question sought to find out from the study participants the technology-related experiences in studying online during the post COVID-19 era at the University of Education, Winneba. The theme discussed below assisted to find answers to this question.

Theme One: Technology-related experiences of students in studying online during the post COVID-19 era.



Source: Fieldwork data (2024).

Figure 4.1: Technology-related experiences of students in studying online during the post COVID-19 era.

It was discovered through the participants' comments that, poor internet accessibility, inadequate knowledge in ICT, lack of transparency in assessment online were their technology-related experiences in studying online during the post COVID-19 era at the University of Education, Winneba.

Poor internet accessibility

Comments from participants suggest that they encountered poor internet accessibility.

The following declarations were made by some participants to support this claim.

For example, one participant said:

> As postgraduate students, we need high speed internet to aid in our advanced research, online seminars and studies but the signal in my area was consistently poor and unreliable. During the Covid era, I was staying at Somaya and the situation was so bad that I eventually travelled to Dodowa to stay with my uncle specifically for the network, yet I faced the same problem [P: 1].

Moreover, participant 3 said:

> At times I wanted to use the internet to search specific peer-reviewed journals for my assignment but the speed was really poor. It delayed the completion and submission of my term papers because a search that should take ten minutes ended up taking two hours due to the loading circles. This led to a lot of unnecessary pressure and I was always worried that the student portal would close before my files could upload or my research data would lost. [P: 3].

Also, participant 2 said:

> There was poor internet connectivity even when I had enough data. My brother it was really difficult sometimes to join the zoom meeting for lectures [P: 2].

As well, participant 5 said:

> I have a problem with my laptop so I reply on our phone. Hmm trust as for the internet it is on and off and this negatively affects my online lectures [P: 5].

Additionally, participant 10 said:

> There was a time I called my lecturer and pleaded with him to give me more time because of poor internet connection [P: 10].

In fact, these comments from participants attest to the fact that there was poor internet accessibility in the places they were. Students require good internet connectivity and accessibility to be able to search for literature and other related information for their online lectures, assignments, term paper, thesis etc. If students do not have access to good internet it becomes difficult for them to gather information from different sources

to complete their work on time. Concerning the gathering information from the internet, Adeuji (2017) found that some students face some difficulties. One of these challenges is that the internet is not always accessible to some students. When students search for any information, they cannot find anything because of the slow and weak internet connection.

The findings run parallel with Heyneman's (2014) findings. In his assessment some students encounter some challenges with regard to unavailability of the internet, students are not exposed to materials related to work due to poor internet connection. When students search for any information, they cannot find anything because of the slow and weak internet connection at home or college which delays the completion of their research.

Inadequate knowledge in ICT

Among the themes which emerged from interview data was inadequate knowledge in ICT. According to the interview data, some of the participants have little or no idea as to how to access lecture notes online or even join zoom meetings for tutorials. One of the participants articulated:

> I find it very difficult to use my phone to join postgraduate seminars and lectures online because I am not technologically inclined at all. I didn't get much training on thesei specific platforms before the school moved everything online, so now my friend has to sit by me and assist me every time i need to log in, otherwise, I would completely lost and unable to attend any of scheduled tutorials or interact with the digital course materials provided by my lecturers. [P: 1].

One of the participants commented:

> Most often I find it difficult to access all the information the lecturers post online because my knowledge in ICT is little. This affects my ability to submit work on time. [P: 4].

Another participant also expressed:

> Hmmm. I was struggling with my assignments. I wish our department will organize a workshop and train us to acquire skills in ICT. [P: 9].

A participant stated:

> It is also good as students to have knowledge in ICT because lack of understanding in ICT will lead to poor research online. A lot of us are at a loss when it comes to ICT. [P: 7].

A participant expressed herself:

> To be honest with you my knowledge in ICT is very limited, I don't have any experience searching for academic or using digital archives online. I even miss lectures because i get confused by different links and passwords provided by the department. I don't even know the basic steps of how to search for information on the internet effectively, which makes me feel very behind compared to my classmates who are more tech-savvy. [P: 3].

The data presented suggest that almost all the participants do not have adequate knowledge in ICT. It appears they did not have a strong foundation in ICT. Some even have challenges with joining lectures online and even searching for information too. The last participant was honest to admit that she does not even know how to search for information on the internet.

The finding is in line with Baldwin (2015) who argues that some students do not have any proper background in ICT. Taskeen et al. (2014) also state that some students do not have enough training in ICT. Moreover, some students are hesitant in acquiring ICT skill they think it is a specialized area meant for only ICT experts. More so Safari et al. (2015) also found in his study that lack of skills in ICT affected the level of interest and participation of students in research activities.

Lack of transparency in assessment online

Participants indicated that lack of transparency in assessment online in the university was one of the technology-related experiences of students in studying online during the post COVID-19 era at the University of Education, Winneba.

For example, one participant said:

> As I speak to you now our results are not online, I have checked severally I don't know what is going on' [P: 7].

Further, participant 3 said:

> My friend was very frustrated, she said she does not know what the lectures are keeping the results for. When you call the lectures they will tell you they have posted it online but you will go and check and is not there [P: 3].

More so, one participant said:

> "Personally my results were changed two times any explanation from the department. The first time I checked the online portal, I saw a 'B' for my course, but when I logged in the following week to double-check, it had been changed to a 'C'. This lack of transparency makes me wonder if the system is actually grading us correctly or if someone is manually interfering with the data behind the scenes, which is very discouraging for a postgraduate student whose future depends on these grades. [P4].

Participant 1 also said:

> The ICT department of the University need to sit up because the complaints about results are becoming too much for us to handle at this level. Why should our results keep changing or disappearing from the portal after they have been published? The complains about result is becoming too much. Why should our results keep changing or disappearing from the portal after they have been published? There is no transparency at all, and it makes us feel like our hard work is being toyed with by a system that isn't fully ready to handle the volume of postgraduate data we have here. [P: 1].

It could be realised from these comments that some students are frustrated. The third participant was of the view that the lectures are keeping the results to themselves. The first participant disclosed that the results have still not been posted online. The finding corroborates with University of Dar es Salaam (2013) study that found that unavailability of open assessment system online was one of the technology-related

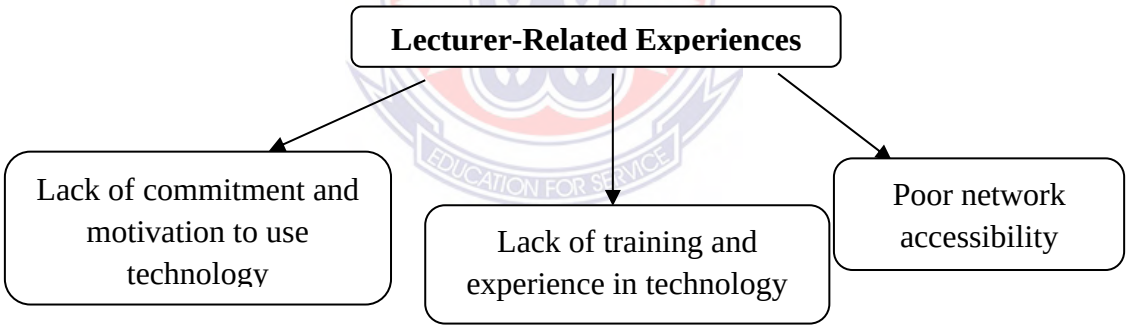
factor militating against timely publication of students results. In the same vein, Patricia's (2020) study reported that students prefer face-to-face interaction with professors and Bojovic et al. (2020) reported that many professors lack confidence on online assessment techniques.

4.2 Research Question Two

What are the lecturer-related experiences of students in studying online during the post Covid 19 era at the University of Education, Winneba?

The second research question had the primary intents of identifying the lecturer-related experiences of students in studying online during the post Covid-19 era at the University of Education, Winneba.

Theme Two: Lecturer-related experiences of students in studying online during the post Covid-19 era



Source: Fieldwork data (2024).

Figure 4.2: Lecturer-related experiences of students in studying online during the post Covid-19 era

Lack of commitment and motivation to use technology

Another major concern that appeared from the interview data was related to lack **of** commitment and motivation on the part of lecturers to use technology. Firstly, the data suggested that some of the lecturers were not motivated to use technology and were

only doing it because was mandatory at that time. One of the participants articulated that:

> Hmm I think some of the lecturers do not have the motivation at all for online lectures they are used to the classroom lectures. At times too when you are doing something and you are not motivated it pushes you back. [P:2].

Another participant commented.

> The truth is some of the lecturers were not even teaching us. You call and they will give excuses, I don't know whether they didn't like the online mode of teaching. [P: 5].

One participant expressed her experience that;

> ''You know I am the course rep. I called to remind our lecturer that the lecture begins at 10 am. He told me his laptop has low battery, he was not committed to the online lectures at all but before the Covid while we were on campus he was always coming to class to teach us.'' [P: 8].

Another participant added;

> Please if you are not really committed to your work, people will know. I know two lecturers who were not committed at their at all during the pandemic. We had lectures with them only twice throughout the period. [P: 10].

The interview data presented also suggested that some of the participants have cause to believe that their lecturers were not fully committed to give lectures online during the pandemic. The fifth participant affirmed that some of the lecturers were not teaching. They lack the personal drive to lecture online. The finding corroborates Mahmood (2020) study which revealed that professors are accustomed to teach in physical classrooms and most of them had no experience of teaching online before this pandemic. They have learnt new techniques and adjusted to online teaching in the last 6 months. Due to the low level of exposure to technology and online teaching, some of them were not finding it interesting, hence their level of commitment was poor as compared to the traditional/ face-to-face lesson delivery.

Lack of training and experience in technology use

Conferring to the interview data, it was revealed that some of the lecturers lack training and experience in the use of technology. The following explanations were given by some participants to back this proclamation. For example, one participant said:

> There was a time one of the lecturers was finding it difficult on how to use a Microsoft Excel so I had to assist her [P: 7].

A participant articulated:

> I am surprise a certain lectures don't know what SPSS is about hmmm in this age. His knowledge in ICT is very very low, he needs training a lot [P: 1].

Another participant commented:

> Hahaaaahaa some of the lecturers were born before computer ooo so they are not competent when it comes to ICT. [P: 3].

More so a participant stated;

> I know a lecturer who cannot even type 20words in 20minutes. A friend has been typing his lecture notes for him. My friend taught him how to organize zoom meeting and goggle meeting [P: 6].

Participant 4 added that

> My lecturer told me that she was born before computer so she is still trying to get use to computer. [P: 4].

This response highlights the surprise and concern regarding the low level of ICT knowledge among some lecturers. In today's digital age, where technology plays a significant role in various aspects of academia, including data analysis (as implied by the mention of SPSS), it's indeed startling to find educators lacking in such basic technological competencies. It illustrates a more specific example of a lecturer's struggles with basic ICT skills, such as typing and organizing online meetings. It also highlights the role of peer support in bridging the digital divide among educators.

According to Bucic, et al. (2010), in their study on ICT competencies among university staff, they found that while there is an increasing emphasis on integrating technology into higher education, there is still a gap in ICT skills among educators. This gap could stem from various factors such as insufficient training opportunities, resistance to change, or simply a lack of awareness.

Research by Selwyn (2011) emphasizes the importance of considering generational differences when it comes to digital literacy. Individuals who did not grow up with technology may not possess the same level of comfort and familiarity with it compared to digital natives. This can influence their attitudes towards and adoption of ICT in educational settings.

A study by Helsper and Eynon (2010) suggests that while younger generations may have an inherent advantage in digital literacy due to their exposure to technology from an early age, older individuals can still develop these skills through formal and informal learning opportunities. However, it requires a supportive environment and willingness to engage with technology.

These interview responses highlight the complex interplay of factors influencing digital literacy among lecturers, including generational differences, access to training, peer support, and individual attitudes towards technology. Addressing these challenges requires a multifaceted approach that encompasses both structural changes within educational institutions and individual efforts to embrace lifelong learning in the digital age.

Poor network accessibility

> Referring to the interview data, it was revealed that majority of the lecturers experience poor network. The following explanations were given by some participants

To back this proclamation. For example one participant said

> hmmm! Infact, some of the lecturers have challenge with their network and this causes destruction in the delivery of the lessons

Participants 3 also said that

> I think the lecturers should do something about their network because it is not helping us at all. When we are having class online, then the network will be breaking. You can't hear anything they say

Participants 5 also said that

> I don't know the network the lecturers are using. It always destroys the class. There is no free flow of transmission when we are having online class. They really need to work on that

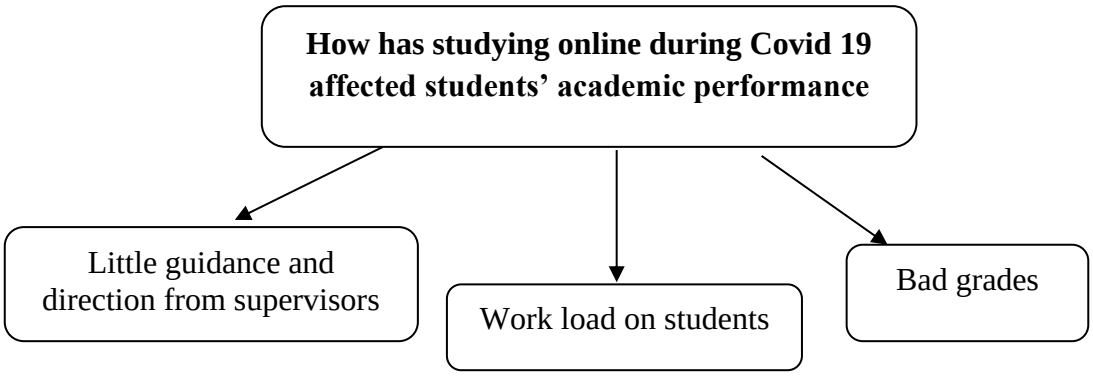
The interview data presented also suggested that some of the participants have cause to believe that their lecturers were not having proper network to give lectures online during the pandemic. The fifth participant affirmed the network they were using is really bad. The finding is in line with Alsoud and Harasis's (2021) work that concludes that students face immense e-learning barriers and a large proportion of students have not been able to attend online classes. For example, the poor economic conditions and learning environments, as well as poor Internet connectivity, have challenged students from rural and remote areas.

4.3 Research Question Three

How has studying online during COVID-19 affected students' academic performance?

The objective of this question was to explore how studying online during COVID-19 affected students' academic performance. It was discovered through the participants' comments that their academic performance was actually affected.

Theme Three: How has studying online during COVID-19 affected students' academic performance?



Source: Fieldwork data (2024).

Figure 4.3: How has studying online during COVID-19 affected students' academic performance?

Increased stress and mental health challenges

Referring to the interview data, it was revealed that students experiences increased stress and mental health challenges. The following explanations were given to back this proclamation.

Participant 3 said that,

> I found myself overwhelmed by the constant barrage of online assignments and deadlines. The lack of structure and routine that I had in traditional classroom settings made it difficult for me to manage my time effectively. I often felt like I was drowning in a sea of virtual coursework, which led to increased anxiety and panic attacks. It was challenging to focus on learning when my mind was consumed by worries about meeting deadlines and keeping up with the demands of online classes [P: 3]

One participant also said:

> The isolation of studying online during the COVID-19 pandemic took a toll on my mental health. I missed the social interactions and support systems that I had in face-to-face classes. Being confined to my home for long periods without any physical contact with peers or instructors left me feeling lonely and disconnected. I struggled with feelings of depression and hopelessness, which made it difficult to find motivation to engage in coursework. The lack of human connection exacerbated my sense of isolation and made it harder to cope with the stress of academic demands. [P: 9]

Participant 6 highlighted that

> The constant screen time and virtual interactions during online learning exacerbated my anxiety and impacted my ability to concentrate. I experienced frequent headaches, eye strain, and difficulty sleeping due to prolonged exposure to screens. The blurring of boundaries between home and school life made it challenging to disconnect and relax, leading to burnout and exhaustion. Despite my best efforts to practice self-care and set boundaries, the relentless demands of online learning took a toll on my mental and physical well-being [P: 6]

Participant 4 also said:

> The uncertainty and fear surrounding the COVID-19 pandemic added an extra layer of stress to an already challenging academic environment. Concerns about the health and safety of myself and my loved ones, coupled with the disruption of normal routines and activities, made it difficult to focus on coursework. I found myself constantly worrying about the future and feeling overwhelmed by the weight of the pandemic. It was hard to prioritize academic responsibilities when my mind was preoccupied with worries about the state of the world and the uncertainty of what lay ahead [P: 4]

These extracts vividly illustrate the profound impact of studying online during the COVID-19 pandemic on students' mental health and well-being. Participant 3's experience highlights the overwhelming nature of virtual coursework, with the lack of structure and routine exacerbating feelings of anxiety and panic. Similarly, Participant 9 underscores the detrimental effects of social isolation on mental health, emphasizing the importance of social interactions and support systems in mitigating feelings of loneliness and depression. Participant 6's account sheds light on the physical toll of prolonged screen time and virtual interactions, with symptoms of headaches, eye strain, and sleep disturbances adding to the burden of online learning. Furthermore, Participant 4 eloquently articulates the additional layer of stress brought about by the uncertainty and fear surrounding the pandemic, which compounded the challenges of academic responsibilities. These comments underscore the multifaceted challenges faced by students during this unprecedented time, emphasizing the need for comprehensive support systems and strategies to address the mental health implications of online learning.

This aligns with existing literature indicating that the shift to online learning during the pandemic has led to increased stress and anxiety among students (Son et al., 2020). The lack of structure and routine in online learning environments can disrupt students' time management skills and exacerbate feelings of academic pressure, ultimately impacting their mental well-being (Al Lily et al., 2020). The absence of face-to-face interactions and support systems in online learning environments can contribute to feelings of loneliness, disconnection, and depression, as echoed in the literature on the social and emotional challenges of remote learning (Loades et al., 2020). Furthermore, Participant 6's account sheds light on the physical toll of excessive screen time and virtual interactions, corroborating research findings that prolonged exposure to screens can lead to symptoms such as headaches, eye strain, and sleep disturbances (Twenge & Campbell, 2018).

Little guidance and direction from supervisors

It was further revealed by the comments from students that they receive little guidance and direction from lecturer and supervisors. It was realised from the comments some of the students made. For instance, participant 5 said:

> With the supervision the little that I can say is my supervisor could not do much to help me because we were not meeting face to face during the pandemic and that delayed my thesis very well [P: 5].

Similarly, Participant 2 also said:

> Before the pandemic I use to see my supervisor very two weeks and I was making progress with my work but when the pandemic broke out, it became difficult to see my supervisor regularly. [P: 2].

Further, participant 3 said:

> I lost focus because I was not getting the needed direction from my supervisor. Sometimes when I call him he will not pick the call"Apart from that in some of the courses too I didn't do well [P: 3].

One participant also said:

> I was supposed to submit my work by July but because I was not see my supervisors regularly I sent the work in December [P: 4].

Moreover, a participant said:

> Studying online was not easy at all. Some of the lecturer did not make their instructions clear enough. We always calling our course rep for further explanations [P: 4].

These comments from some of the students indicate that they were not guided enough by their supervisors and lecturers. The pandemic made it difficult for their supervisors and lecturers to help and guide students to time complete their thesis on time. If this was the case then management of the university should have put in place strategies for lecturers so that they could have provided the needed support, guidance and direction for their students. Supervisors are supposed to work hand in hand with their supervisees and offer comments and suggestion to put their students on track. If they fail to provide feedback on their students work, it will retard the progress of the student's project and consequently delay the completion of the work.

It is worth noting that writing a research project or thesis is not an easy task. It is essentially the product of effective training and proper guidance. In line with the finding Nyawaranda (2005), Shumba (2004), and Pearce (2005), noted that some learners encounter hindrances with their advisor when writing their research. Some of these obstacles include: supervisors do not give so much guidance and direction to their students, they do not return the students' work on time and they do not give the students much practical help concerning the gathering information from different sources.

Work load of students

Again, comments from students signify that they were overburdened with a lot of assignments. The following comments by some students were advanced to imply that. One of the students said:

> I couldn't belief how the assignment were coming in. There were assignments everywhere. At a point I became frustrated and that really affected my grades [P: 1].

Also, another participant said:

> The stress alone was enough to kill me. The work was too much preparing for online lectures, individual assignments, group assignments, mini project, term papers etc. It was really stressful [P: 9].

Moreover, participant 4 said:

> My husband had to come in to assist with some of the assignments. He has finished his Mphil so he is good, he was helping me to search information online because he saw that the work was too much for me [P:2].

Participant 1 highlighted the overwhelming nature of the assignment load experienced by the student, leading to frustration and academic consequences. The sudden transition to online learning during the COVID-19 pandemic has indeed intensified the workload for many students, as they navigate new digital platforms and adapt to remote learning environments. Participant 9 explained the significant mental health toll associated with the workload imposed by online learning. The diverse array of assignments mentioned, ranging from individual tasks to group projects and term papers, reflects the multifaceted demands placed on students in virtual learning environments. Participant 2 illustrated the necessity for external support systems to cope with the demands of online learning. In this case, the student's spouse stepped in to provide assistance, leveraging their academic background and expertise to aid in information retrieval and assignment completion.

Research by Son, et al. (2020) indicates that the shift to online learning can exacerbate stress and anxiety among students, particularly when coupled with an increased volume of assignments. The lack of face-to-face interaction and direct support from instructors can further amplify feelings of isolation and frustration. Studies by Regehr, et al. (2013) emphasize the detrimental impact of excessive academic workload on student well-being, including increased levels of stress, anxiety, and burnout. The combination of academic pressure and the challenges of adapting to online instruction can exacerbate these negative effects, highlighting the importance of implementing strategies to support student mental health during times of transition.

According to research by Margolis and McCabe (2006), family support can play a crucial role in facilitating student success in higher education, particularly during periods of academic stress or transition. However, reliance on external assistance may also underscore systemic issues related to workload management and accessibility of resources within the educational institution.

The researcher however conclude that, the interview responses shed light on the pervasive challenges faced by students in managing the workload associated with online learning, including the influx of assignments and the resulting stress. Addressing these challenges requires a holistic approach that prioritizes student well-being, fosters resilience, and provides adequate support structures to navigate the complexities of virtual education.

Bad grades

Bad grades emerged as one of the themes in the interview data. The following comments were declared by some participants to support this claim: participant 2 stated that;

> I am still wondering why I had those poor grades. I don't know what really happen. The online tuition did not help me at all [P: 2].

One participant also said:

> Some of my grades were very bad. I was not satisfied at all [P: 5].

Participant one had this to share:

> Till now I have not seen some of my grades the ones I have seen is not encouraging at all. [P: 8].

Again, participant 6 said:

> Before the Covid my grades were ok but during the Covid I was struggling with the online lectures so it affected my grades badly [P: 6].

Besides, a participant lamented;

> The frustrations were too much. I was very disappointed with my grades because some were very bad. When you are in the house studying is difficult compared to when you are on campus [P: 10].

The response from participant 2 reflects the frustration and confusion experienced by students who struggled academically during the transition to online learning. It suggests a perceived lack of effectiveness in the online teaching format.

Participant 5 echoed the dissatisfaction experienced by students with their academic performance. Poor grades can have significant emotional and psychological effects on students, leading to decreased motivation and confidence in their abilities. The response from participant 8 highlights the anxiety and disappointment experienced by students when they receive poor grades. The delay in receiving grades can exacerbate these feelings, as students are left in uncertainty about their academic progress. Participant 6 explained the impact of the transition to online learning on students' academic performance. The sudden shift in learning modalities, coupled with the challenges of

remote instruction, can disrupt students' study routines and hinder their ability to engage effectively with course materials.

Also, participant 10 emphasized the unique difficulties students faced with remote learning, particularly in creating a conducive study environment at home. The lack of separation between home and school environments can blur boundaries and make it challenging for students to focus on their studies effectively.

Research by Means et al. (2010) suggests that students' academic performance in online courses can be influenced by various factors, including their readiness for online learning, the quality of instruction, technological issues, and personal circumstances. Students who are not adequately prepared for online learning may experience difficulties adapting to the new format, which can impact their grades negatively.

According to Dweck (2006), students' perceptions of their own abilities, often referred to as their "mind-set," can play a crucial role in their academic performance. Students with a growth mind-set believe that their abilities can be developed through effort and persistence, while those with a fixed mind-set believe that their abilities are innate and unchangeable. Encouraging a growth mind-set can help students cope with setbacks and persevere in the face of challenges. Research by Hodges et al. (2020) highlights the need for flexibility and support in online learning environments, particularly during times of crisis such as the COVID-19 pandemic. Educators must adapt their teaching strategies and provide additional resources to help students navigate the challenges of remote learning successfully.

The interview responses however, highlight the multifaceted challenges students faced during the transition to online learning, including dissatisfaction with academic performance, difficulty adapting to the online format, and disruptions to study routines.

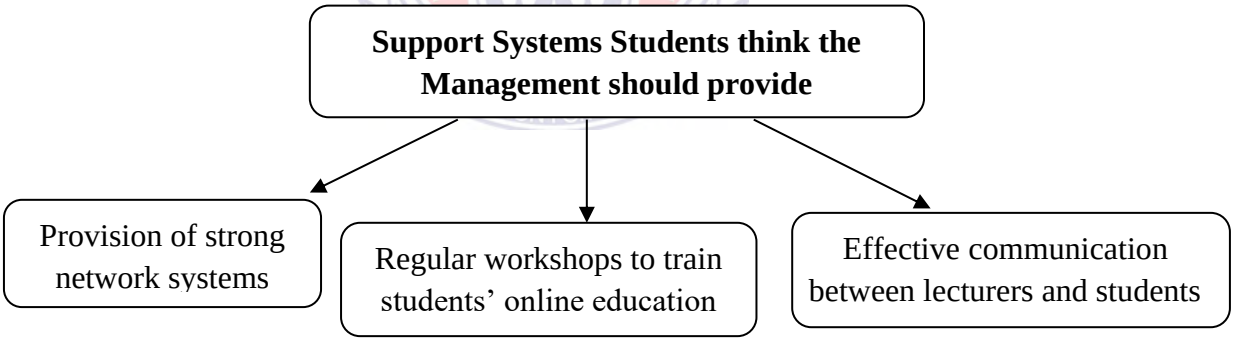
Addressing these challenges requires a holistic approach that encompasses support for students' emotional well-being, enhancements to online teaching strategies, and the provision of resources to facilitate remote learning effectively.

4.4 Research Question Four

What are the support systems students think the management of University of Education, Winneba should put in place to enhance on-line teaching and learning in the advent of Covid-19?

The objective of the last research question was to identify the support systems students think the management of University of Education, Winneba should put in place to enhance on-line teaching and learning in the advent of Covid-19.

Theme Four: Support systems students think the management of University of Education, Winneba should put in place to enhance on-line teaching and learning in the advent of Covid-19



Source: Fieldwork data (2024).

Figure 4.4: Support systems students think the management of University of Education, Winneba

Provision of strong network systems

Responding to the above issue during the interview session

Participant 2 said:

> The university management must ensure that all the network systems within the university is very strong to enable students and lecturers to get access to data and information at all times. I am aware they are doing something in that regard [P: 2].

Participant 3 also said:

> The university management should educate students on online education or e-learning mode of learning while ensuring good networking so that they can use it effectively [P: 3].

Furthermore, one participant said:

> The university management should get strong internet connectivity for lecturers so that they can deliver e-learning effectively [P: 6].

Another participant said:

> The heads of department should ensure that all libraries in their department have strong internet connectivity to assist students in their research. There is no internet in our library. I always go to faulty library at north campus [P: 1].

Additionally, participant 4 said:

> I am of the view that if the university provides better network the students and lecturers will be more committed to e-learning approach. I know they university is investing a lot in ICT [P: 4].

It is evident from the comments given by these participants that they require a strong network system from the university. According to the students, the internet they need to help them gather information for their research work are not available at the library. One of them said he resort to the Faculty Library at North Campus in UEW. According to Adeyemi (2010) a well-equipped library provides assortment of material resources like books, journals and CD ROM. Thus, the library is a reference source for any school and a point of individual studies in schools where relevant information from primary

and secondary sources can be extracted. Good internet connectivity and adequacy of library resources and their usage by students will help students to complete the project work on time.

Regular workshops to train students online education

Again, comments from students signify that they require regular workshops to train them in online education. The following comments by some students were advanced to imply that.

One of the students said:

> The university should organize more workshops and seminars for both students and lecturers. Our lecturers have to bring in expert from other university to teach and train us more [P: 2].

Also, another participant said:

> Students should be educated on online learning through regular workshops [P: 8].

Moreover, participant 4 said:

> The school management should organize training work shop for us every month so that we can upgrade our skills and knowledge in online method of teaching and learning [P: 4].

This response emphasizes the need for enhanced training and support for both students and lecturers to navigate online learning effectively. Research suggests that providing adequate training and support is crucial for successful online education implementation (Hew & Cheung, 2014). Workshops and seminars can offer valuable opportunities for participants to learn new tools, strategies, and best practices for online teaching and learning. Similarly, there was an explanation on the importance of educating students about online learning through continuous workshops. Students may require guidance on how to effectively manage their time, engage with course materials, collaborate with

peers, and utilize online resources (Bao, 2020). Regular workshops can help students develop essential skills and competencies for online learning success.

Also, one of the participants highlighted the necessity for ongoing training and skill development among students to adapt to the evolving landscape of online education. Continuous professional development opportunities can empower students to navigate technological advancements and pedagogical innovations in online teaching and learning (Janssen et al., 2020). Regular workshops can serve as platforms for students to enhance their digital literacy, critical thinking, and problem-solving abilities in an online context.

It is however, concluded that, the responses accentuate the importance of providing adequate training and support to students and lecturers for successful online learning implementation. By organizing workshops, seminars, and training sessions, educational institutions can empower stakeholders with the necessary skills, knowledge, and resources to thrive in the digital learning environment.

Effective communication between lecturers and students

Effective communication between lecturers and students further emerged as one of the themes in the interview data as means of enhancing on-line teaching and learning. For instance one of the students said:

> There should be proper, quality and effective communication between students and lecturers. So that lecturers and students can work together effectively [P: 4].

Once more, participant 8 said:

> Communication is very important between a lecturers and their students because they are work together. Students should communicate the challenges they are having to their lecturers [P: 8].

Again, participant 1 said:

> If you are not communicating with your lecturer or your lecturer is not communicating with you. How can you work effectively? [P: 1].

More so, participant 10 said:

> My lecturer complained that I have not been calling him. So now I have changed my attitude, we have been talking almost every week. [P: 4].

The interview data presented suggested that communication is very important between a lecturer and a student. Lecturers and students should establish good lines of communication right from the beginning and work on continued and open communication, they should schedule regular meetings and try and keep their scheduled meetings. Students should express their needs, roadblocks, and intentions while lecturers assist their student to process and clarify their intentions which, in turn, will allow the lecturers to give more thorough feedback. Students should not avoid their lecturers and supervisors, they should communicate about factors (family, illness, etc.) that may take them from their work.

Delamont *et al*. (2004) points out that it is very crucial for students to maintain communication with their lecturers throughout the study tenure. As pointed earlier, the lecturers have the task of guiding the students through their study. Delamont et al. (2004) noted that guiding students can be easily attained if there is good communication between students and lecturers. Students are encouraged to maximally utilize online sources of literature. Students must be clear about their responsibilities, follow instructions meet and deadlines. Students must give serious consideration to lecturer's advice and criticisms.

4.5 Summary of Chapter

In summary, this chapter presented the findings and discussions of the study. The study sought to explore the experiences of students in studying online during the Covid-19 era at the University of Education, Winneba (UEW). The study used interviews as diagnostic tools to collect and gather data from post-graduate students of the University of Education, Winneba. The study found that technology-related experiences of students in studying online during the post COVID-19 era at the University of Education, Winneba were poor internet accessibility, inadequate knowledge in ICT. Also students had little guidance and direction from lecturers and supervisors, lots of work load and bad grades. The next chapter presents the summary of the entire research, conclusion and recommendations.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Overview

This is the final chapter, which comprises an ephemeral overview of the study, emphasising on the major findings to draw conclusions. This chapter also dealt with the recommendations of the study and suggested areas for future research.

5.1 Summary

The main purpose of this research was to explore the experiences of students in studying online during the post COVID-19 era at UEW. To achieve this purpose, the following research questions were formulated:

1. What are the technology-related experiences of the students in studying online during the post Covid-19 era at UEW?
2. What are the experiences of the students in interacting with lecturers when studying online during the post Covid-19 era at the University?
3. How does studying online during Covid-19 affect students' academic performance?
4. What are the support systems that the students think the management of the University should put in place to enhance on-line teaching and learning in the advent of Covid-19?

Literature was reviewed on the theoretical underpinning of the study, online learning, concept of educational technologies, educational technologies and pandemics, the concept of teaching and learning, technology-related experiences of students in studying online during Covid-19, lecturer-related experiences of students in studying online during Covid-19, how studying online during Covid-19 affected students'

academic performance and support systems for enhancing on-line teaching and learning in the advent of Covid-19.

The philosophical and theoretical perspectives or an assumption underpinning this study was interpretative worldview or constructivist epistemology. The study adopted a qualitative research approach and phenomenological research design. The target population of this study comprised all post-graduate regular and sandwich students in UEW.

A sample of ten (10) regular post-graduate final year students were sampled through purposive sampling procedure. The instrument used in the data collection was semi-structured interviews. Data were analysed thematically.

5.2 Key Findings of the Study

The following findings emerged from the study:

1. Students experienced both opportunities and challenges with technology in online learning. On the positive side, many students appreciated the flexibility, convenience, and exposure to various digital tools that enhanced their technological literacy. However, poor internet connectivity, high data costs, frequent power outages, and occasional system breakdowns hindered smooth participation in online learning activities.

2. Students' interaction with lecturers varied across programmes and courses. Some students described their lecturers as approachable, supportive, and responsive through emails, WhatsApp platforms, and virtual meetings. Others, however, reported delayed feedback, limited online engagement, and minimal supervision during assignments and thesis guidance, which sometimes led to frustration and disengagement.

3. Online learning had mixed effects on students' academic performance. A section of students indicated that it improved their research skills, information retrieval, and self-directed learning habits. On the other hand, others found it difficult to manage workloads, focus during virtual sessions, or meet deadlines, resulting in stress and reduced academic performance.

4. Students suggested that the university should enhance the online learning environment by strengthening internet infrastructure, providing digital learning resources, organizing regular workshops on online learning skills, and ensuring effective communication between students and lecturers. They also emphasized the importance of technical support and academic counselling to sustain interest and improve learning outcomes.

5.3 Conclusions

1. It can be concluded that postgraduate students' experiences with technology were mixed. While online learning enhanced flexibility and digital competence, persistent internet and power challenges limited students' ability to fully benefit from online education.
2. Students' interactions with lecturers during online studies were uneven. Although some lecturers provided adequate support and timely feedback, others were less responsive, affecting effective supervision and academic engagement.
3. The study concludes that online learning influenced academic performance both positively and negatively. Students who were disciplined and adaptable thrived, while those who struggled with time management and motivation performed poorly.

4. The effectiveness of online learning depends on the availability of institutional support systems. Continuous investment in infrastructure, capacity building, and communication channels is essential to sustain quality e-learning at UEW.

5.4 Limitations of the Study

Although the study provided valuable insights into the experiences of postgraduate students in studying online during the post COVID-19 era at the University of Education, Winneba, certain limitations could have influenced the trustworthiness and reliability of the findings.

First, the study relied on participants' self-reported experiences through interviews. As such, the findings are based on subjective perceptions, which may be influenced by personal biases, selective memory, or social desirability tendencies. This may limit the extent to which the data fully represent all possible experiences of postgraduate students.

Second, the study employed a qualitative phenomenological design with a relatively small sample size, which focused on depth rather than breadth of understanding. While this approach provided rich and detailed insights, it may not capture the full diversity of experiences among all postgraduate students at UEW or in other institutions, thereby limiting transferability.

Third, the data collection instrument the semi-structured interview guide — might have been slightly skewed toward exploring challenges rather than successes. This could have inadvertently emphasized negative experiences more than positive ones, even though both emerged from the data.

Finally, the interpretation of data was subject to the researcher's analytical perspective. Although efforts were made to ensure credibility through careful coding, member checking, and validation by peers, complete elimination of researcher bias in qualitative analysis is difficult to achieve.

5.5 Recommendations

1. It emerged that technology-related experiences of students in studying online during the post COVID-19 era at the University of Education, Winneba were poor internet accessibility, inadequate knowledge in ICT and lack of transparency in assessment online. Therefore, the management of the University of Education, Winneba, should improve digital infrastructure by expanding and stabilizing the campus internet network and partnering with telecommunication companies to provide affordable data packages for students.
2. The study found that lecturer -related experiences of students in studying online during the post COVID-19 era at the University of Education, Winneba were identified as the lack of timely responses to emails or thesis drafts which created a "mentorship void. On the other hand, many lecturers have adopted new digital competencies, providing recorded sessions that allow students to revisit complex theories at their own pace—a major plus for Sandwich students who work full-time. It is therefore recommended that lecturers should adopt more interactive and student-centered online teaching approaches. The University should also establish clear feedback timelines and encourage the use of virtual office hours to strengthen lecturer–student communication.

3. It emerged from the study that students had little guidance and direction from lecturers and supervisors, lots of work load and bad grades. Therefore, it is recommended that the University should organize regular orientation programmes on study skills, time management, and self-motivation in online learning to help students adapt better and improve academic outcomes.
4. The study found that provision of strong network systems, regular workshops to train students online education and effective communication between lecturers and students were support systems students suggested the management of University of Education, Winneba should put in place to enhance on-line teaching and learning in the advent of Covid-19. It is however recommended that the internet network system within University of Education, Winneba should be made stronger enough for students to effectively utilize it to search for information. This could be done by expanding the internet network infrastructure.

5.6 Suggestions for Future Research

1. This present study sought to explore the experiences of postgraduate students in studying online during the post COVID-19 era at the University of Education, Winneba using a qualitative research approach. Future studies should consider employing mixed method designs and increase the sample size to enhance the generalization of the findings. A mixed methodological approach, will provide a deeper understanding of their experiences.

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APPENDIX A

Introductory Letter

UEW/EAM/M.Phil/6

Date: 1st April, 2021

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

LETTER OF INTRODUCTION

We write to introduce **Bright Atsrim** a student on the M.Phil. Educational Administration and Management programme of the Department of Educational Administration and Management.

Mr. Atsrim is currently working on a research project titled:

'EXPERIENCES OF STUDENTS IN STUDYING ONLINE DURING POST LOCKDOWN ERA OF COVID 19: THE CASE OF UNIVERSITY OF EDUCATION, WINNEBA'.

Please, give him the necessary assistance and co operation.

Thank you.

Yours sincerely,

Salome O. Essuman (Prof.)
Head of Department

cc: Dean, School of Graduate Studies

APPENDIX B

Interview Guide for Post-Graduate Students

UNIVERSITY OF EDUCATION, WINNEBA

FACULTY OF EDUCATION STUDIES

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND MANAGEMENT

Introduction

This interview schedule is aimed at gathering information for my academic research purposes

The information will therefore be used purposely for academic work only. Data gathered will be handled confidentially and your identity will be handled with maximum confidentiality. Kindly feel free and give your candid opinion.

SECTION ONE

1. **Experiences of students in studying online during the post lockdown era of COVID-19 at the University of Education, Winneba**

a. Did you use online learning during the post lockdown era of COVID Pandemic to support your academic work? **Probe:** If yes, how was the feeling?

b. Can you please share your experiences with me?

c. How often do you use online learning during the post lockdown era of COVID -Pandemic to support your academic work and why?

d. What technologies or mediums do you use during online learning in this new normal and why do you use them?

e. What were some of the problems presented by the technologies or mediums you used for online learning during the COVID-19 pandemic?

f. What academic supports or services did you receive from your lecturers, department and the university as a whole during the post lockdown era of COVID Pandemic?

SECTION TWO

2. Effect of Covid-19 pandemic on teaching and learning in the University of Education, Winneba

a. Were you struggling with issues of poor internet accessibility or connectivity?

b. What were some personal challenges you faced during the post lockdown era of COVID Pandemic regarding teaching and learning in the University of Education, Winneba?

c. To what extent did the problems mentioned above affected your academic work?

d. Among these challenges you faced using on-learning during the COVID -19 pandemic, which one was your worst experience? And why?

e. What duration does your e-learning usually take?

f. Which electronic means of platforms did you prefer for e-learning? and why do you think you prefer those?

g. During the post lockdown era of COVID Pandemic, were you showing more or less interest in the use of on-learning and why?

SECTION THREE

3. **The coping strategies adopted by students studying online during COVID-19 in the University of Education, Winneba.**

a. With all these challenges you enumerated, how were you able to overcome?

b. Were there some peculiar challenges you were not able to solve using e-learning during the COVID-19 pandemic?

c. What do you think you could have done differently to gain maximum benefits from e-learning during the COVID-19 pandemic?

SECTION FOUR

4. **Strategies that management of University of Education, Winneba should put in place to enhance effective teaching and learning in the advent of Covid-19 pandemic?**

a. Did you encounter any difficulty uploading assignments and semester paper on the University's Learning Management System [LMS] platform? If yes how can UEW help students to overcome this problem?

b. Do you spend more money on internet data during on-line learning? If yes how can the UEW help students to overcome this problem?

c. Do you think as a result of this new normal University of Education, Winneba should organize in-service training for lecturers, students and administrator to upgrade their skills in information communication technology?

d. Generally, what do you think should be done by the University of Education, Winneba to respond to such future pandemic or any other challenge that can bring education to a halt going forward?