UNIVERSITY OF EDUCATION, WINNEBA

DIGITAL DIVIDE AMONG UNDERGRADUATE STUDENTS DURING THE COVID-19 ERA: A CASE STUDY OF THE GHANA INSTITUTE OF JOURNALISM

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DIGITAL DIVIDE AMONG UNDERGRADUATE STUDENTS DURING THE COVID-19 ERA: A CASE STUDY OF THE GHANA INSTITUTE OF JOURNALISM

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DECLARATION

STUDENT'S DECLARATION

I, **Eva Kuupuolo** declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my 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 Dissertation as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: PROF. ANDY OFORI-BIRIKORANG

SIGNATURE: ……………………….

DATE: ……………………….…

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DEDICATION

This dissertation is especially dedicated to my children, parents and husband.

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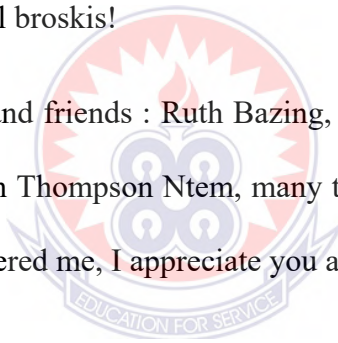
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ABSTRACT

Digital divide is the gap in social and economic equality that occurs when some segments of a given population do not have equal access to Information and Communications Technology (ICTs) and reliable high-speed internet service. The digital divide is problematic because it creates a disparity in social and economic opportunities between people who have access to ICTs and those who do not. This study investigates digital divide among undergraduate students of the Ghana Institute of Journalism (GIJ) during the COVID-19 era. The study also examines the forms of digital divide, the strategies deployed by the students in response to the forms of digital divide encountered as well as the implications of the divide on students' learning at GIJ. The study applied the Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of New Technologies to help explore the phenomenon of digital divide encountered by undergraduate university students. The study used the qualitative approach, employed the case study design and gathered data through interviews and focus group discussions conducted with students of GIJ. The study found that access, usage, financial, connectivity and motivation divides were faced by the students. The study also found that while some students sought for information as a strategy to curb the digital divide encountered, others saved money, relocated to areas with stable internet connectivity and some others motivated themselves. The study also revealed unfair competitive advantage, poor performance, lack of understanding and inconvenience in learning as some of the implications of the divide among students. The study concludes that indeed digital divide exists among undergraduate students of GIJ and it may deepen if effective measures are not put in place. The study recommends that students, universities and governments should all make a conscious effort and collaborate productively at all times to help curb the divide.
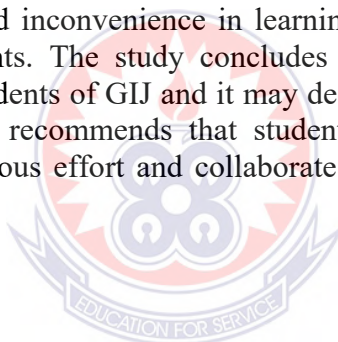
CHAPTER ONE

INTRODUCTION

1.0   Background of the Study

The emergence of the Coronavirus Disease of 2019 (COVID-19), a global pandemic, has led the world to an unprecedented public health crisis and further affected all sectors of societies all over the world (Chaturvedi et al., 2021). COVID-19 has greatly impacted our day-to-day life, disrupted businesses, world trade, movements as well as educational, political, social, religious, sporting and entertainment activities (Chaturvedi et al., 2021). The manufacturing sector has not been spared: the pharmaceuticals industry, solar power sector, information, tourism, and electronics industry have all been affected (Haleem et al., 2020). For Abrams and Szefler (2020), the novel COVID-19 is a prime example of a development challenge for all countries because, through the virus, all nations will get to know how weak or strong their health sector is. The pandemic has highlighted the falsity of any assumption that the Global North has all the expertise and solutions to tackle all problems in the world.

The United Nations (2020) asserts that digital technologies have been essential to the functioning of economies and societies worldwide, though some citizens have been disadvantaged at the same time. Today, communications technologies are being used more and more intensively for productive education, social, health and entertainment-related activities. For instance, in the educational sector, communication technologies are used for online learning to help connect students to their teachers (UN, 2020). This has further resulted in progress in digitization which was expected to take years to materialize but has developed highly within a short space of time due to the pandemic and the constant usability of these technologies. To buttress this, the United

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Nations (2020) indicated that between the first and second quarters of 2020, the use of networking solutions shot up by 324 per cent and distance Education grew by 60 per cent, especially in Latin America. Also, about the movement of people, the number of people who frequented food outlets and pharmacies fell by 51 per cent, movements to non-essential foods and entertainment outlets fell by 75 per cent and movements to workplaces by 45 per cent (UN, 2020).

Li and Lalani (2020) argue that the pandemic resulted in over 1.2 billion children staying out of School worldwide. For University and college students, because of the pandemic, approximately 1.723 billion learners representing 80 per cent of the world's student population were out of School due to its closure (Crawford et al., 2020; UNESCO, 2020; UNICEF, 2020). This according to Dhawan (2020) led to the intensification of online activity and the use of digital technologies in all aspects of life worldwide. It has also resulted in online learning becoming a necessity and not an option in the educational sector. To a greater extent, online learning has come to stay. Even after the complete eradication of COVID-19, most educational institutions are likely to continue with online learning (Li & Lalani, 2020). Carey (2020) is however concerned about the quality of education the online teaching methods provide since most educational institutions focus more on just massively adopting the platforms. It is for this reason and more that this study seeks to examine the forms of digital divide that undergraduate students of GIJ encountered during the COVID-19 era. The study further seeks to investigate the strategies deployed by the students in response to the forms of digital divide encountered during the COVID-19 era and to explore the implications of the unearthed digital divide on teaching and learning at GIJ in the era of COVID-19. The study would in the end be ceded in literature based

on some of the postulations of scholars or may stand on their own to add to the literature in the area of digital divide among undergraduate University students.

According to the United Nations Children's Fund (UNICEF) 2021 report on primary and secondary impacts on COVID-19 on children in Ghana, the closure of schools during the pandemic affected approximately 9,253,063 learners between pre-primary and secondary education levels. Data gathered from monitoring and evaluation based on the Research for Effective COVID-19 Responses (RECOVR) rapid response panel survey conducted in May 2020 found that 60 per cent of children in Ghana found time for their education after the closure of schools with an average of 5.9 hours per week on their education (The Presidency Republic of Ghana, 2020). This was due to a lack of supervision from parents and guardians. 32 per cent of households with a child in the school had received communications from the child's school. 60 per cent of school-going children in households resorted to reading their school books as opposed to other educational materials including internet content and Ghana learning television (The Presidency Republic of Ghana, 2020). According to a report by UNICEF (2021), among children attending primary and high school in Ghana, 39.4 per cent of their households lacked access to basic tools such as computers or mobile phones, 32 per cent lacked learning materials including textbooks and 28 per cent of households reported that children's lack of interest in taking lessons was a leading learning difficulty. For students in Senior High Schools (SHS), almost half of their households representing 45.3 per cent had a lack of access to basic tools like computers and phones. This was also the main difficulty for the students. 27.6 per cent lacked learning materials including textbooks whilst 25.6 per cent lacked access to the internet to access learning materials (UNICEF, 2021).

In the educational sector, the pandemic has also highlighted the need for multi-directional learning and transformation worldwide to enable all countries to achieve sustainability and equitability (Abrams & Szefler, 2020). The pandemic has had adverse effects on pre-university and university education in Ghana. Teachers, pupils and students of most of the educational institutions in Ghana do not have access to the internet and Information and Communication Technologies (ICTs) at all. Those who even have access do not know how to use them efficiently (Nantwi & Boateng, 2020).

In today's world, digitisation is at an increasing rate yet not everyone is moving with it at the same pace, which makes it a big challenge. Lane and Levy (2019) are of the view that as humans, we are participant observers in this ever-changing digital world. Over the past two decades, digital technologies have deeply altered education, marketing, and consumption. This change will, however, continue in expected and unexpected directions in the decades to come. Educators, marketers, consumers, entrepreneurs among others are constantly creating and updating the digital world with their innovations shared and adopted around the globe at an unmatched speed (Battisti et al., 2022).

The exponential growth of the use of ICTs has had a great impact on the many aspects of human everyday life. ICTs have transformed societies and economies around the world to the extent that today, they have formed an integral part of society and cover almost all aspects of life (Acilar, 2011). Due to the high rate of advancement in ICTs, the knowledge gaps that exist between the information-rich and information-poor has deepened over time and has excluded certain parts of the world from duly enjoying the fruits of the global village (Iskandarani, 2008).

The digital divide has always been a part of our everyday lives. It could exist in different forms depending on a particular situation. According to Dubey and Dubey (2020), the digital divide which has been in existence and regular use since the mid-1990s is referred to as the gap between people with effective access to digital and information technology and those with very little or no access at all. Today, the digital divide has heightened in exposure due to COVID-19 (Dubey & Dubey, 2020). Zaidi (2003) is of the view that ICTs have become less expensive and more accessible nevertheless, there is an invisible line that separates the rich from the poor, educated from the uneducated, men from women and the connected from the disconnected.

Developing countries and underprivileged groups have difficulty in "connecting" and using Information Technology (IT) effectively due to: illiteracy, poverty, low level of skills, high cost of access, and even, poor mastering of the English language (Dubey & Dubey, 2020). According to Bomah (2014), in Ghana, there are some areas where individuals cannot easily access ICTs due to factors such as low income and poor networks.

Today's world has increasingly become digital but not completely so. This digital revolution has impacted nearly every corner of modern life (Battisti et al., 2022). Over the years, there has been a rapid improvement in the field of technology with special attention to the field of computers and the internet. Digital technologies are gradually transforming all facets of life, especially the educational sector. However, there are a growing number of individuals who are beginning to feel highly exhausted from the constant effort that is needed to keep pace with the ever-changing digital world (Lane & Levy, 2019). Also, many lack the needed technical skills and financial resources to constantly upgrade, stay current or even catch up with the constant

evolution of ICTs in this digital world (Gonzales, 2015). According to Kennedy and Atkinson (2019), the emergence of the digital world has overwhelmed and scared many consumers, policymakers and companies who sometimes struggle to adapt and efficiently use ICTs and also get used to the new environment and lifestyle that these new technologies present. They also worry about privacy and cybersecurity concerns that accompany the technologies.

For Knyazeva (2015), the digital era cannot only be seen in education but also in politics, society, economy, culture and even management. This is mainly because the digital era provides a wide range of opportunities. Today, digital gadgets such as desktops and computers have expanded to laptops, smartphones and other internet-enabled devices. According to Hofacker (2019), there is a generation of not-yet-imagined digital technology and software applications that will soon further transform education, markets, society and everyday life. For   Dholakia (2019), the digital world has not only brought great opportunities and excitement to many but also, has overwhelmed many consumers who constantly have to keep up with the rapid growth in the magnitude and change of pace of these technologies. Stone (2020)   refers to today's world as a new world emerging with hyper technologies. She is of the view that this technological revolution has not even begun because of the different transformations that keep springing up. Stone (2020) opines that these digital technologies have entirely changed the way we do everything including our education.

Yoon (2015) recounts that digital learning was first proposed by Jay Cross in 1999. They are of the view however that with the advancement and development of technology tools, different explanations and terminologies have arisen such as online

learning, e-learning, internet-based training, web-based training, network learning and distance learning.

1.1   Digital Divide and Tertiary Education during the COVID-19 Era

The World Bank (2017) refers to tertiary education as third-level, third-stage or post-secondary education and defines it as the educational level that follows the completion of secondary education. Tertiary education also includes universities, trade schools and colleges. According to the United Nations Educational Scientific and Cultural Organisation (2018), tertiary education focuses on learning endeavours in specialized skills that most often involves higher academic education. It also leads to the award of certificates, Diplomas, and academic Degrees (UNESCO, 2018). The increasing role of technology has made tertiary education more relevant for workers to compete in the labour market (World Bank, 2019). The impact of COVID-19 has to some extent affected negatively tertiary education since some students had to drop out of school temporarily due to their inability to access ICTs for their education (World Bank, 2019).

COVID-19 has had negative consequences on the educational sector all over the world. The pandemic led to the temporary closure of schools worldwide thereby leading to the introduction of online or digital- learning models. In the United States of America (USA) for instance, after the closure of schools in March, the University of Washington and Stanford University were among the first to move classes online. Eventually, over eighty-four colleges and 1,400 institutions went virtual within the same month (Poth, 2020). According to Kara (2020), whilst some colleges fell back on their already existing online platforms, many others had to create impromptu online learning capacities. Some students were not happy about the migration of

classes to online platforms because the online platforms were unengaging and inferior to their typical face-to-face learning experience (Kara, 2020). In Ghana, schools had to close down for almost a year (Nantwi & Boateng, 2020). According to Gonzales (2016), the digital divide significantly impacts the educational sector and makes it extremely difficult for individuals to cope with the new demands of everyday digital life. The educated and relatively tech-savvy consumers are not left out since the majority sometimes find it to be a daunting task to fully utilize all new technology.

Keane and Provident (2017) asserts that, for online learning to be achieved effectively, some measures need to be put in place by the educational institutions, teachers or educators as well as students. Online teaching materials must be put in place by educational institutions and their educators for students to easily access them. These materials include e-books, digitalized data and other content presented with various digital methods. This is in line with the ideas of Collier et al. (2020) that schools and especially teachers should be responsible for the overall success of students during online learning by providing technical expertise, developing strong facilitation and using various digital technologies for the smooth running of all online learning activities for all students. Another measure, according to Keane and Provident (2017), is online tools that focus on the learners learning activity with tools such as desktop, notebook and tablet computers as well as smartphones. This measure, in the researcher's view, will pose a challenge for the majority of Ghanaian students. For Quaicoe and Pata (2015), even though ICTs continue to transform the lives of individuals, communities and nations, Ghana as a developing country still appears among the least digitally advantaged countries. They opine that this potential marginalisation coupled with some social and economic exclusion factors affect some universities in Ghana and the greater sufferers become the students. Buabeng-Andoh

(2012) indicates that one of the major challenges in the Ghanaian education system is the high inequality of education resources which include mainly the use of computers and other ICTs. This inequality leads to the digital divide that Ghana is currently faced with.

According to Mereku et al. (2009), as cited in Adarkwah (2021), there has been several strategies implemented by the government of Ghana to ensure that students in Ghana acquire basic ICT literary skills and apply these skills in their studies and other basic everyday activities. This was to be done at the pre-tertiary level. In a survey research conducted in Accra Polytechnic, it was revealed that students and lecturers had inadequate access to ICTs, inadequate time to access ICTs and generally, the usage of ICTs was poor (Amarnotsu, Dzandu, & Asabere, 2013). Another study conducted by Arthur-Nyarko and Karuiki (2019)   on the use of ICTs by students in Ghana revealed that lack of access to electricity was a major factor affecting online learning in Ghana. All these challenges continue to deepen the digital divide in Ghana.

1.2   The Ghana Institute of Journalism and Online Learning

The Ghana Institute of Journalism (GIJ) was established on 16th October 1959 by the Kwame Nkrumah government to provide training in journalism towards the development of a patriotic cadre of journalists to play an active role in the emancipation of the African continent. Currently, the university offers diploma, degree and master's programs (GIJ, 2021). Before March 2020, the university engaged in strictly face-to-face teaching and learning activities. However, after the outbreak of COVID-19, teaching and learning became strictly online for universities in Ghana from March 2020 to May 2020. After this period, all universities were

temporarily shut down.   On 3rd January 2021, after the President of Ghana, Nana Addo Dankwa Akuffo - Addo announced the ease of COVID-19 restrictions, GIJ started face to face lectures from 11th January to 24th January. However, on 22nd January 2021, the university's management issued a notice that lectures were to migrate online from the 25th of January 2021 for continuing students and the 27th of January for all first-year students (GIJ, 2021). Examinations were from 6th April 2021 to 21st April 2021 for all first-year students and from 6th April 2021 to 25th April 2021 for all continuing students. This move was necessary because the university recorded two (2) COVID-19 cases (GIJ, 2021; Pulse Ghana, 2021). Within this period, however, most Universities in Ghana still had face-to-face lectures (Pulse Ghana, 2021).

The researcher observed that the sudden migration of GIJ to online lectures brought about mixed feelings among lecturers and students because the situation was highly unexpected. The first-year students especially suffered a culture shock because of the migration which was entirely new to majority of them. Not only were they lectured online, but examinations for that semester (2021 Academic Year- First Semester) were also strictly online as well. For online lectures, the University developed its own Learning Management System (LMS). Secondary platforms like Zoom, Microsoft Teams, Google Meets, Telegram, YouTube and WhatsApp were also adopted in addition to the LMS for online lectures. For examinations, however, the University's LMS platform was strictly used (GIJ, 2021).

The researcher observed that online learning greatly affected most first-year students and unearthed the digital divide that had already existed in the University. For the first time, these students were to be taught online and also write exams online. In the

researchers view, assessment in this regard was therefore not going to be based on the innate abilities and intelligence of these students but rather on their ability to own ICTs for online learning. Basilaia and Kvavadze (2020) argue that the shift from face-to-face to online classes has a serious impact on the assessment and evaluation of students. This is because depending on the nature of the course and assessment type, it could be a challenge for not only the lecturers but most especially the students. Most lecturers, therefore, had to change their assessment to suit the online mode. There was also a difficulty in monitoring the students and how they were taking the course online. There was also difficulty in ensuring that students did not cheat during online exams (Basilaia & Kvavadze, 2020). The researcher is of the view that naturally intelligent students stood the chance of failing in this semester for the mere fact that they did not possess ICTs and therefore could not take part in online lectures and exams. For average and unintelligent students who possessed ICTs for online learning, they had a greater chance of excelling just for the fact that they had access to these ICTs.

1.3   Statement of the Problem

According to Chriscaden (2020), COVID-19 has led to a dramatic loss of human life worldwide and presents unprecedented challenges to all spheres of life. In the educational sector, for instance, teaching and learning activities have migrated online posing more challenges to some students and benefits to others (Chriscaden, 2020). COVID-19 also created a new arena for research where many academics developed research interests in the areas of COVID-19 and digital inequality (Adediran, 2020; Chriscaden, 2020). O'Hare and Menheux (2020) opine that the COVID-19 pandemic led to the closure of schools and drastically changed teaching and learning activities

for schools all over the world. Roese (2021) argues that the digital divide has always existed, but it has however been exposed by the COVID-19 pandemic. The author is of the view that many rural communities in countries all over the world including the developed ones lack reliable and affordable internet access. Moreover, these issues were barely talked about (Roese, 2021). In the UK, schools came up with contingency plans to help students who had a complete lack of access to ICTs and were faced with other forms of the digital divide such as the inability to use ICTs and lack of access to high-speed broadband (Roese, 2021).

There have been several studies conducted on digital divide and education as well as on COVID-19 and education (Adediran, 2020; Bomah, 2014; Kelly & Columbus, 2020; Nantwi & Boateng, 2020; Ocran, 2019; Ong, 2020; Tadesse & Muluye, 2020). Kelly and Columbus (2020) conducted a study in the United States of America (USA) that sought to find out the challenges facing American college students in the time of Coronavirus. Their study was mainly a quantitative one where surveys were conducted on 826 administrators and faculty across 641 American four-year public, four-year private and two-year public institutions on their preparedness towards online learning. They found out that by March 2020, most of the Colleges in America resorted to virtual learning due to the pandemic. However, this virtual learning was easily embraced by the colleges that already had online learning platforms. For colleges that did not have these platforms, they had to create impromptu online learning platforms for their students (Kelly & Columbus, 2020). Their study also revealed that a strong majority of faculty and administrators were of the view that online teaching and learning was not good in terms of quality, hence the majority of them preferred face-to-face teaching and learning because it was more

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effective for teaching and learning activities. The study did not focus on students therefore it is unclear what the perspectives of students were in this regard.

Ong (2020) also focused his study on the USA where he did a content analysis of survey data collected from the US Census Bureau Weekly Household Pulse Survey (HPS). The study aimed at quantifying the pattern and magnitude of COVID-19's effects on young students during the period of virtual learning. The study found that there was a significant number of households where children had limited access to a computer and the internet. The study also revealed that Black and Hispanic households were significantly more likely to experience limited access to technology as compared to Non-Hispanic Whites. Overall, Ong (2020) indicated that Asians fared much better in getting access to computers and the internet. Regarding educational attainment, those who had low education had limited access to computers and the internet for their children as compared to those who had high education. In terms of ages, Ong (2020) found that children who were in households with younger adults (18-35) had limited access to a computer and the internet because these younger individuals could not afford it as compared to children who found themselves in households with older adults. The study did not conduct in-depth interviews to ascertain the rationale for all the findings from participants. It only relied on the data collected from the survey.

Adediran (2020) focused his study on the impact of COVID-19 and online learning on education in the UK. His study was on different levels of education about the positive and negative impacts the pandemic presented. On the positive impact, the majority of the students were comfortable with online learning because most of them saw an improvement in their grades as compared to when learning was face-to-face.

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On negative impacts, his findings revealed that online learning was disadvantageous for the poor and vulnerable because they had limited access to ICTs. He also disclosed that parents whose children were in primary and secondary schools could not afford to homeschool. According to Adediran (2020), the lockdown put children who found themselves in abusive homes at higher risks.

In Africa, there have been several studies on digital divide and education as well as COVID-19 and education (Bomah, 2014; Nantwi & Boateng, 2020; Ocran, 2019; Tadesse & Muluye, 2020). Bomah (2014) conducted a study on the effects of digital divide on Education development in Africa. His focus was on the unavailability of ICTs in schools in Africa specifically in Nigeria and Rwanda where he did a comparative analysis of the availability and usage of ICTs, quality of Education, poverty and unemployment rates between the two countries. In terms of education, Nigeria is seen to be far better than Rwanda. Nigeria is a much richer country than Rwanda. Even though the two are African countries, Nigeria is more advanced than Rwanda in terms of better access to digital resources, economic wealth, more universities, infrastructure, the wider output of graduands, productivity and labour (NIS, 2014). Though Nigeria is doing better than Rwanda, both countries are however victims of the consequences of the Global Digital Divide which has left the continent of Africa lagging in today's digital age (Bomah, 2014).

Tadesse and Muluye's (2020) study focused on the impact of the COVID-19 pandemic on the education system in developing countries. The study sought to find out the measures that educational institutions put in place in developing countries to ensure the effectiveness of distance education during the pandemic. The study also aimed at examining how teachers, parents and students were coping with the situation

in developing countries since they were all affected. The study reviewed secondary data on COVID-19 in developing countries. It concluded that educational institutions in developing countries need to provide efficient platforms to serve the needs of their students and teachers for online learning during this period of the pandemic. The study further concluded that governments of developing countries should scale network infrastructure and internet connectivity across urban and rural areas to get everyone on board. The study however did not make use of primary data. There was therefore no attention on the perspectives of the primary benefactors of online or distance learning.

In Ghana, Nantwi and Boateng (2020) conducted a study on COVID-19 and education in Ghana where their focus was mainly on how the pandemic has hindered education in general in Ghana. The pandemic has had adverse effects on pre-university and university education in Ghana. Most of the teachers, pupils and students of most of the educational institutions in Ghana do not have access to the internet and ICTs at all. Those who even have access do not know how to use them efficiently (Nantwi & Boateng, 2020). Their study made use of secondary data and therefore did not present the findings made on the actual experiences of the respondents.

Ocran (2019) conducted a study on digital inequalities and new media technology usage among graduate students: A study of four departments in the University of Education, Winneba (UEW). Her study was a qualitative one that sought to investigate the factors that account for the use of new media technology among graduate students of the four departments. Her study also sought to explore the phenomenon of digital inequality even in the use of new media technologies. Her

study further conducted a comparative analysis on the use of new media technologies among graduate students of the four departments. Her study found that the social connection that is usually provided by an education system is manipulated by factors such as access and usage. The study also revealed that younger graduate students utilized new media platforms effectively as compared to older graduate students. The study further revealed that students in the Department of Communication and Media Studies made good use of new media technologies for research, personal communication and commercial transactions as compared to graduate students of the Departments of French, English and Applied Linguistics who used new media technologies for personal and social interactions. For her study, Ocran (2019) made use of interviews and qualitative surveys as her data collection methods.

In all of the aforementioned studies, it is evident that very little attention has been paid to digital divide among undergraduate students, especially during the COVID-19 era, none of the studies also concentrated strictly on students' perspectives on digital divide faced during the COVID-19 era. Most of the studies also made use of single data collection methods. The two studies that were related to digital divide centred their works on other areas (Bomah, 2014; Ocran, 2019). For Bomah (2014), the focus of his study was on digital divide in the education development in Africa where he did a comparative analysis of the divide faced in Nigeria and Rwanda. Ocran (2019) conducted her study on digital inequalities with a specific focus on graduate students of four departments of UEW. The other studies centred on COVID-19 and its impact on education where some focused their studies from the point of view of the educational institutions whilst others centralised their studies on strictly analysing documents and secondary data (Adediran, 2020; Kelly & Columbus, 2020; Nantwi & Boateng, 2020; Ong, 2020).

None of the studies reviewed on COVID-19 and education focused on digital divide among undergraduate students during the COVID-19 era and students' perspectives on digital divide during the COVID-19 era. There are also few studies on digital divide and education in Ghana. In literature, more attention is focused on developed countries like the United Kingdom and the United States (Adediran, 2020; Kelly & Columbus, 2020). There has also been no extended look at the implications of the digital divide on teaching and learning in Universities in Ghana. This study, therefore, seeks to unearth the digital divide faced by undergraduate students of GIJ, specifically during the COVID-19 era.

1.4   Research Objectives

The main objective of this study is to unearth the digital divide that undergraduate students of the Ghana Institute of Journalism (GIJ) face in their education during this COVID-19 era where teaching and learning are online. To achieve this, the study sets the following objectives:

1. To examine the forms of digital divide undergraduate students of GIJ encounter during the COVID-19 era.

2. To investigate the strategies deployed by the students in response to the forms of digital divide encountered during the COVID-19 era.

3. To explore the implications of the unearthed digital divide on students' learning at GIJ in the era of COVID-19.

1.5   Research Questions

The research was guided by the following questions:

1. What forms of digital divide did undergraduate students of GIJ encounter during the COVID-19 era?

2. What are the strategies deployed by the students in response to the forms of digital divide encountered during the COVID-19 era?

3. What are the implications of the unearthed digital divide on students' learning at GIJ in the era of COVID-19?

1.6   Significance of the Study

The study focuses attention on digital divide among undergraduate students during the COVID-19 era. The findings of the study will therefore add to scholarly knowledge and relevant literature in the area of digital divide, and will also pave way for more literature and further studies in the area globally.

For Policymakers such as the Ministry of Education, the study will provide them with students' perspectives and ideas that will lead to the formulation and implementation of policies to help better the education sector and fill the void of the digital divide. The study will also enable policymakers to train their staff effectively to become more proficient in this era of COVID-19.

It will also serve as a useful resource for educators in creating their awareness of the fact that there exists a divide and also draw their attention to the challenges of students in relation to online learning during this period of COVID-19. The study will further shape educators on how to teach, train and assess students during this period.

For Civil Society Organisations (CSOs) and other organizations specializing in the area of inequality and marginalisation, this study will help focus their attention on the area of digital divide among undergraduate students. It will further help them to

provide practical solutions to help bridge the divide faced. The study will also enable CSOs to be effective actors in social accountability processes in the country and also push them to follow up on generating quality educational policies in Ghana.

1.7   Delimitation of the study

The study is limited to Undergraduate students of GIJ, specifically first-year students (Level 100 and Diploma 1). First-year students were chosen because, for the majority of them, it was their first time experiencing online learning and also writing examinations online. The study was conducted within a period of four months specifically from 25th January to 25th April. This period was chosen because even after the President of Ghana, Nana Addo Dankwa Akuffo - Addo eased the restrictions on COVID-19 and schools reopened and continued with face-to-face learning, GIJ was still engaged in online learning. This is because the university recorded some COVID-19 cases hence teaching, learning and examinations were strictly online (Appiah & Bartels, 2021; Nyabor, 2021; Emmanuel, 2021).

1.8   Organisation of the Study

The study comprises five chapters. The first chapter which is the introductory part is made up of the background of the study, the objectives, research questions, significance of the study, delimitation of the study and organisation of the study. The second chapter tackles the literature review and the theoretical frameworks underpinning the study. The third chapter focuses on the methodology of the study. Thus, the research approach, design, sample and sampling technique, data collection methods and strategy for data analysis. Chapter four provides the findings and

analysis of the data collected. Chapter five summarizes, draws conclusions from the findings and makes recommendations for future studies.

1.9   Chapter Summary

This chapter outlined the purpose for undertaking the study of digital divide among university students during the COVID-19 era. It also provided a good justification for the study by clearly stating the research objectives, key questions, significance of the study as well as the delimitation of the entire study.

CHAPTER TWO

LITERATURE REVIEW

2.0   Introduction

This chapter reviews and critically analyses literature that are relevant to the study. Specifically, it prioritizes Coronavirus Disease of 2019 (COVID-19), COVID-19 and higher education, Information and Communication Technology (ICT), the use of ICTs in higher education, online learning during the COVID-19 era, digital divide, digital divide during the COVID-19 era as well as digital divide in Ghana. This chapter becomes highly relevant in understanding the scope within which previous studies have been conducted. The chapter further discusses the theories that underpin the study and their relevance to the entire research work. The chapter concludes with a summary**.**

2.1   Corona Virus Disease of 2019 (COVID-19)

By way of history, according to the World Health Organisation (WHO, 2020), an unknown aetiology was detected in Wuhan City, Hubei Province of China on December 31, 2019. The infected patients were mostly dealers and vendors in the Huanan seafood market. Interestingly, the report mentioned that there was no significant evidence of human-to-human transmission, and no healthcare workers were infected. The first infection outside China was detected in Thailand (WHO, 2020). On February 11, 2020, the first death from the Coronavirus was reported in the Philippines. WHO named the unknown case of pneumonia COVID-19. On March 11, 2020, within a month, it was declared as a pandemic (Cucinotta and Vanelli, 2020). The world responded by restricting travels and closing its borders, social distancing, health measures, and telling its citizens to stay indoors. In April 2020, 91% of the

world population lived in countries with restrictions on people arriving from different countries and 39% where borders were entirely closed (Pew Research Centre, 2020). As of July 2020, there were 15,296,926 confirmed cases, 628,903 confirmed deaths, in 216 countries and territories (WHO, 2020). The statistics proved that many lives were affected, not just the developing countries but the developed countries as well were even more affected. The pandemic affected the lives of the people of the world (Abrams & Szefler, 2020). Many families were separated, the death brought sorrows and griefs. The closures of businesses brought down the economies of many nations, and the educational institutions were not spared as well (Abrams & Szefler, 2020).

Sansa (2020) posits that the novel coronavirus also goes with the name Severe Respiratory Syndrome Coronavirus-2 (SARS-COV-2). According to the World Bank (2020), before the outbreak of the COVID-19 pandemic, the world was dealing with the learning crisis, evidenced by high levels of learning poverty (Sansa, 2020). The spread of COVID-19, among several disruptions to normal life, necessitated more than 160 countries to effect the temporary closure of schools (Abrams & Szefler, 2020). The World Bank (2020) estimates that the closure of schools has left 1.6 billion children and youth out of school. In South Africa, the government was forced to enact a national lockdown, which meant that there was total closure of all schools, including universities. This caused a halt to the learning process. There is concern among some individuals in society that the widespread school closures would lead not only to loss of learning, but also loss of human capital and diminished economic opportunities in the long run (The World Bank, 2020).

According to Abrams and Szefler (2020), the novel COVID-19 is a prime example of a development challenge for all countries because, through the virus, all countries will get to know how weak or strong their health sector is. The pandemic has highlighted

the falsity of any assumption that the Global North has all the expertise and solutions to tackle all problems in the world. The pandemic has also highlighted the need for multi-directional learning and transformation worldwide to enable all countries to achieve sustainability and equitability (Abrams & Szefler, 2020).

Pollack - Pelzner (2020) also asserts that the COVID-19 pandemic places in the spotlight the case for understanding contemporary development challenges through a global, rather than a narrow international, development paradigm. Whereas 'international' development focuses on inter-state relations, often via aid, and on problems *of* and *in* the global south, a broader global development approach should therefore consider processes and issues that cover all countries, including those in the global north (Marsicano et al., 2020). This is because the researcher believes that the global north is not as 'problem-free' as we are made to believe in the media but they are also faced with some challenges at some point (Ahmed et al., 2020). Global development should therefore focus on collective and shared challenges, with attention to their uneven nature and impacts. It should firmly recognise that a more sustainable and equitable world requires a transformation of and cooperation with all countries, rather than pushing the 'developing' world to become more like the so-called 'developed' world (Ahmed et al. 2020). This is because, in the researcher's opinion, the developing world faces a lot of obstacles that cannot make them attain development overnight in other to become like the developed world.

According to the World Bank (2020), countries in sub -Saharan Africa have managed to keep the coronavirus under control by recording relatively fewer cases as compared to other regions. However, the pandemic continues to take a massive toll on African lives, the economy and economic activities in general. Economic activity for instance

is projected to decline by 3.3% in 2020. This is the region's first recession in 25 years. The pandemic has caused so many losses that it could push close to 40 million people into extreme poverty and hunger (World Bank, 2020). This will erase at least the World Bank's five years progress of fighting extreme poverty and hunger. Similarly, the pandemic could set back progress in technological development, foreign trade in building human capital and in the educational sector. The closure of schools especially has affected nearly 253 million students by causing serious losses in learning. Ghana for instance saw a decline in the growth of the oil sector specifically with regards exporting oil to other countries (World Bank, 2020).

2.1.1   COVID-19 and Higher Education

According to the United Nations Educational Scientific and Cultural Organisation (UNESCO, 2020), most countries in the world closed down their educational institutions temporarily in response to the pandemic, and 60% of the world's students were greatly affected. There were 1,184,126,508 affected learners, 67.6% of enrolled learners, and 143 countries were impacted by the pandemic (UNESCO, 2020). The response of education in this pandemic was online learning and internet education (Stern, 2020). An article written on the World Economic Forum (WEF) website stated that there was a dramatic change in education brought about by the pandemic, and that is the rise of online learning, wherein teaching was remotely undertaken on digital platforms (Li and Lalani, 2020). Furthermore, the article mentioned that research showed online learning increased retention of information in less time. This meant that it was helping the students effectively. In the same study, the researchers mentioned that an amount of US$18.66 billion was invested in educational

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technology. The technology included: language apps, virtual tutoring, virtual conferencing tools, and online learning software (Li and Lalani, 2020).

On March 11, 2020, universities across America shut down to slow down the spread of the virus, and on March 6, 2020, the University of Washington cancelled all in-class classes (Iwai, 2020). In Ontario, the province launched online learning for students in March 2020, and the learning materials were made available on a new e-learning website (D'Mello, 2020). In British Columbia, the Ministry of Education secured funding for the Zoom application. In a press release, the ministry indicated that the app would allow consistent access for educators who choose to use it, giving them more ways to communicate with students and parents (Smith, 2020). However, the students and parents who were mostly affected by this transition to online learning were frustrated. According to Wong (2020), a parent admitted with frustration that the new learning portal was like pulling teeth trying to get his son to do even small parts of his assignments. The researcher is of the view that indeed, online learning unearthed the digital divide in the educational sector worldwide.

2.2   The Use of ICTs in Higher Education

Some years back, the educational curricula depended strictly on printing and transporting outdated books to students (Nureni, 2014), Today, however, ICTs have enabled a unique opportunity for world-class education anywhere in the world through the rapid dissemination of quality content to end-users at a reduced cost (Nureni, 2014). Through the beneficial nature of ICTs, development is seen not only in the educational content of schools but also in student learning and teaching pedagogy as well as in professional development (The Earth Institute, 2016).

According to Nureni (2014), the term ICT is used to refer to the internet and the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system. ICTs play an important role in fostering strong online communities of practice that enhance the learning abilities of students as well as their interactions. This is in line with the assertion of Yekini and Oyeyinka (2012) that online learning platforms show a great deal of promise in the acceleration of literacy and numeracy efforts since a large number of students and users can engage with content on the platform simultaneously.

According to Ratheeswari (2018), there are numerous opportunities associated with the use of ICTs in teaching and learning environments. He relates his assertion to the fact that teachers play an integral role in the educational field of society through professionalism and in training their students to be great leaders. New technologies have impacted greatly in all spheres of life: politics, sports, social, however, the impact is drastic in the educational sector. According to Yilmaz (2011), the rapid development of Information and Communication Technology (ICT) has brought both challenges and opportunities to the world, especially in the educational sector where equal learning opportunities have been provided for all. He emphasized how developed countries have always attached great importance to the application of ICTs in education. Citing the United Kingdom (UK) for example where the Government spent £2.5 billion on educational ICT from 2008 to 2009 (Yilmaz, 2011).

The United Nations Development Program (2020) defines ICTs as basic information-handling tools, thus, a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information. It encompasses different tools which work together and combine to form a 'networked world' a massive

infrastructure of interconnected telephone services, standardized computing hardware, the internet, radio and television, which reaches every part of the globe (UNDP, 2020). According to the Australia Institute of Marine Science (AIMS, 2020), there is no universally accepted definition of ICT because the concepts, methods and tools involved in ICTs are steadily evolving on an almost daily basis. However, in their own words, they define ICT as a broader term for Information Technology (IT) which refers to all communication technologies including the internet, wireless networks, cell phones, computers, middleware, software, video conferencing, social networking and other media applications and services that enable users to access, retrieve, store, transmit and manipulate information in a digital form (AIMS, 2020). In another way, they define ICT as the convergence of media technology such as audiovisual and telephone networks with computer networks using a unified system of cabling (including signal distribution and management) or link system.

For Singh (2020), recent technological advancements and societal changes have revolutionized the educational sector. This new turn has brought about a new education system that is equipped with the latest tools and methods which facilitate teaching and learning effectively. ICTs are usually sophisticated with the most complicated and expensive computer-based technologies (Singh, 2020). ICTs also comprise traditional technologies (Radio, Television and Telephone) and these are used in the teaching process to make the learning process highly effective.

Yusuf (2005) establishes that the field of education has been undoubtedly affected by ICT through teaching, learning and research. ICTs have the potential to accelerate, enrich and deepen skills that motivate and engage students to enable them to learn and further work effectively. For many years, courses have been written around

textbooks where conventional learning has emphasized content (Yusuf, 2005). Teachers and many educators around the world have also taught through lectures and presentations interspersed with tutorials and learning activities designed to consolidate content. Today, however, contemporary settings are now favouring curricula that promote competency and performance. Current curricula now emphasize capabilities that come with strong support rather than mere information (Southern & Tilley, 2000). The integration of ICTs, however, can help revitalize teachers and students and helped to improve and develop the quality of education by providing curricular support, especially in difficult subjects. To yield good results, teachers need to be involved in collaborative projects and the development of intervention change strategies which should mostly include teaching partnerships with ICTs as a strong tool (Southern & Tilley, 2000). According to Zhao and Cziko (2001), three conditions are necessary for teachers to introduce ICTs into their classrooms effectively: teachers should believe in the effectiveness of technology, teachers should believe that the use of technology will not cause any disturbance and teachers should believe that they have control over technology.

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2.3   Online Learning during the COVID-19 Era

Higher education providers are constantly being aware of the growing demands and diversity of their current and potential learners. This is mostly observed when they are provided with a wide range of options for their engagement (Gillett-Swan, 2017). According to Anohina-Naumeca (2005), online learning is also known as; e-learning, computer-based learning, distance learning, internet-based learning, resource-based learning, technology-based learning and web-based learning. Constantly, there are flexible delivery modes that are available for university students providing them with multiple pathways and opportunities. Students in some universities are spoilt with choices from choosing either 'traditional' face-to-face learning (internal), online (external) or mixed (blended) modes of enrolment (Tschida & Hodge, 2016). Online learning encompasses a wide range of technologies like the world wide web, email, newsgroups, chat and text as well as video conferencing which are delivered over a

wide variety of computer networks to impart education (Dhull & Sakshi, 2019). According to Nguyen (2015), the physical 'brick and mortar classroom is gradually losing its monopoly strictly as the place of learning. The internet has gradually made online learning possible and many educators and researchers are interested in online learning to enhance and improve student learning outcomes whilst reducing the resources needed particularly in higher education (Pape, 2010).

Dhull and Sakshi (2019) assert that online learning enables learners to learn according to their own convenience and at their own pace and to also learn to handle a lot of resources and to plan carefully. ICTs in online learning are considered great resources in enhancing the learning experiences of students. Teachers also act as facilitators in online learning processes and not merely as transmitters of content knowledge. Online learning has brought back the joy of the majority of students through its innovative and interactive content delivery and it has also proved to be greatly appealing among students (Dhull and Sakshi, 2019). There are two models of online learning as purported by Dhull and Sakshi (2019); wrap around and integrated model. The wrap-around model of online learning relies mostly on study materials which comprise online study guides, activities and discussions 'wrapped' around existing previously published resources such as textbooks and Compact Disk, Read-Only Memory (CD-ROM). This model is however centred on a resource-based approach to learning which seeks to use existing materials that are relatively unchangeable and readily available both online and offline. After the development of such courses, they can be taught by other persons and not necessarily the course developers. This model also makes good use of collaborative learning activities in the form of group work, discussions among peers and online assessments (Dhull & Sakshi, 2019). The second model which is the integrated model is closest to a full online learning course. Such

courses are mostly offered via comprehensive learning management systems. They offer small group-based collaborative online learning activities and online assessments with strong learning outcomes. A greater part of the teaching and learning activities with the integrative model is fluid and dynamic and largely determined by individual and group activities in the course (Dhull and Sakshi, 2019).

Mehra and Mital (2007) as well as Dhull and Sakshi (2019) outline some advantages of online learning which include: accessibility, personalized learning, development of cognitive abilities, promotion of research, cost-effectiveness, equal opportunities for all and self-pacing. They however outline some disadvantages to be: poor communication, a feeling of isolation, lack of motivation, lack of funds, poor quality and poor accessibility in remote areas. Dhull and Sakshi (2019) further outline frustration, fear, anxiety, apprehension, stress and depression as some of the psychological effects that online learning has on educators and most especially students.

Heng and Sol (2020) assert that the COVID-19 pandemic has caused a global wreck in many aspects of human life and the educational sector especially was not spared. The pandemic's disruptions led to the temporary closure of educational institutions worldwide. To ensure that there was a continuity in education amidst the pandemic, all face-to-face classes had to be moved online ushering into the world a new version of online learning where lectures, lessons and all learning activities were conducted remotely (Heng & Sol, 2020). Key among the assertions of Heng and Sol (2020) is the mention of the fact that in the developed countries, online learning is not a new thing but has rather been always a part of the curricula of schools and that students in these societies were generally familiar with different aspects of online learning. Some

of the online learning platforms that are being used in Australia and Japan according to (Heng & Sol, 2020) are: moodle, blackboard and other learning management systems that are independent of schools.

According to Li (2020), there has been a significant surge in the usage of virtual tutoring, language apps, video conferencing tools as well as online learning software since the outbreak of the COVID-19 pandemic. Due to the pandemic, many educational institutions worldwide have adopted alternative measures to continue with teaching and learning activities. Li (2020) gives an example of the use of Tencent Classroom, an online learning platform in China that has been in extensive use since mid-February, 2020 and has been termed the largest 'online movement' in the history of education in China with approximately 730,000 or 81 per cent of K-12 students attending classes in Wuhan, China. In Singapore, a lot of companies with bolstering capabilities provide alternative online platforms for schools in the country. 'Lark' for instance was developed by ByteDance as an internal tool to meet its own exponential growth and then began offering teachers and students unlimited video conferencing time, auto-translation capabilities.

Real-time co-editing of project works as well as smart calendar scheduling. 'Lark' enabled all learning activities to be done quickly and in real-time. They also revamped their global server infrastructure and engineering capabilities to ensure reliable connectivity by all their users (Li, 2020). In the USA, there were collaborations between institutions to help boost online learning activities for schools. The Los Angeles Unified School District (LAUSD) collaborated with other schools to offer local education broadcasts with separate channels that were focused on different ages and a wide range of digital options. In the UK, the British Broadcasting

Corporation (BBC) also powered online learning by organizing weeks of curriculum-based learning for learners across the UK with celebrities like Manchester United footballer Sergio Aguero teaching some content (Li, 2020). This was aimed at making online learning fun for school children.

2.4   Digital Divide

According to Nandi (2002), the term digital divide came into regular usage in the mid-1990s. It refers to the gap between those people with effective access to digital and information technology and those with very limited or no access at all. Despite the boom in the availability of access to communication resources since the beginning of the 1990s, the divide is deepening and the differences in the usage of communication resources between countries and regions intensifying. Nandi (2002) further notes that the rapid development and proliferation of ICTs has accelerated economic and social change, across all areas of human activity worldwide. ICTs can be both a unifying and a divisive force. Its divisive aspect is known as the "digital divide", which relates to the difference between those who have digital access to knowledge and those who either lack it or do not use it effectively.

Dubey (2019) defines the digital divide as the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regards both to their opportunities to access ICTs and to their use of the internet for a wide variety of activities. He indicates that as the internet has rapidly grown to underlie almost every aspect of the global economy, the term "digital divide" has often been used in connection with internet access. It is a divide that affects and reinforces economic and social divides between and within countries and is threatening to further exacerbate these inequalities (Dubey, 2019). Those who are 'connected' are at a greater

advantage in terms of competing on a global basis. They have increased share in the market, increased knowledge, increased productivity and higher growth. Those who are not connected are condemned to diminished knowledge, increased unemployment. Developing countries and non-privileged groups have difficulty in 'connecting' and difficulty in using Information Technology (IT) effectively due to: illiteracy, poverty, low level of skills, high cost of access, and even, poor mastering of the English language (Dubey, 2019).

Different digital divide scholars assert that various types of divide differ from country to country (DiMaggio et al. 2004; Taylor, 2021; van Dijk, 2013; Warschauer & Matuchniak, 2010). DiMaggio et al. (2004), van Dijk (2013) and Warschauer and Matuchniak (2010) avow that there are access divides, usage divide and inequalities to outcomes. According to them, this is a result of the fact that the digital divide phenomenon is rendered complex because divides keep evolving. Taylor (2021) is also of the view that access divide, use divide and quality-of-use divide make up the types of digital divide. According to the National Telecommunications and Information Administration (NTIA) an agency of the United States Department of Commerce, the digital divide is widespread. Wilson (2004) defines the digital divide as inequality in access, distribution and use of ICTs between two or more populations. According to him, there are eight aspects of digital divide. They include physical access (access to ICTs and infrastructure which is fundamental), financial access (income gap and social status), cognitive access (ICT skills and knowledge required for the use of technologies and further enjoyment for its benefits), design access (usability of the technology), content access (ownership of ideas), production access (level of output derived from the use of technologies), institutional access (

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laws and policies that govern the use of technologies) and political access (level of openness and freedom with which citizens can work with ICTs in a country).

All these aspects are reflected by the following demographics: gender, education, geography, income, ethnicity and occupation (Wilson, 2004). According to Ye and Yang (2020), the digital divide is a very serious issue in the rural areas of all countries but highly critical in developing countries. Although globally there is a wide internet and broadband penetration, some areas in China still suffer to get access to ICT and its services as a result of the digital divide (Ye and Yang, 2020). The digital divide is a social and economic issue that has gained massive interest in recent times (Andrade and Doolin, 2016). It refers to the disparity in access to and usage of ICTs between individuals, businesses, families, geographic areas and households (Venkatesh and Sykes, 2013).

Mostly in rural areas of developing countries, digital divide pertains to the villagers who lack access to internet devices and the opportunity to use information services. This is usually because the internet and broadband infrastructures are relatively backward and hard to penetrate in rural areas. Another reason is that rural villagers may not be able to afford a mobile device due to low incomes on their part. Also, most of the villagers in the rural areas are poorly educated thereby making it very difficult for them to learn ICT skills (Park, 2017). Therefore, for the rural inhabitants, it is a serious obstacle for them to keep good contacts, get easy access to external information and at the same time maintaining access to public services (Venkatesh and Sykes, 2013). This in the long run results in their children lagging in all areas, empty-nest family issues, the urban-rural disparity in education, health care and income levels as well as rural hollowing (Salemink, Strijker and Bosworth, 2013).

According to Tiene (2010), one of the world's most serious problems is the widening gap between the rich and poor, where a small percentage of the global population enjoys unprecedented affluence amidst widespread global poverty that may be getting worse. One aspect of this disparity in wealth is the digital divide which is defined as the enormous differences in access to modern ICTs. Millions of people across Africa, Asia, and Latin America struggle daily to survive in dire poverty, while others in the industrialized world enjoy the conveniences provided by modern communications technologies. Work in offices are also made more efficient and effective through the use of new technologies, and taking advantage of new educational opportunities afforded by ICT (Tiene, 2010).

However, one of the most unfortunate by-products of the digital divide is its negative impact on educational efforts throughout the developing world (Tiene, 2010). Digital technologies provide exciting new opportunities for students in the industrialized world to obtain large amounts of current information on almost any topic, to communicate their thoughts. These thoughts are communicated in dynamic new ways, and work more efficiently and efficiently with the use of these technologies than ever before. However, without access to the benefits of ICT, students in less developed countries may fall even further behind their peers in other nations, especially in terms of education (Teine, 2010). This is because, in the researcher's view, modern technologies are needed for effective use by all students, especially University students. However in a situation where there is a digital divide, then it becomes problematic (Teine, 2010).

The digital divide is no longer viewed as a dichotomous categorization between the haves and have-nots, but instead, it is defined as a continuum of access and use where

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multiple interrelating reasons such as attitudes, skills, quality of access and social support are at work in explaining if, and how, people use new technologies (Dijk, 2005). Some developed countries have made some strides in bridging the divide. In Britain for instance, there have been several initiatives to try to reduce or overcome the divides primarily by providing access to computers and the internet in schools, some homes and community centres. This comes massively with a certain level of support. These include the introduction of United Kingdom online centres in 1999, the Computers for Pupils initiative (DfES 2006) and the recent Home Access Program (Becta, 2008). Even though not all of the initiatives to try to reduce the digital divide are necessarily focused on education and learning, there are other perceived potential social benefits of using new technologies, education is an important aspect of this debate and is seen as a priority area (Eynon, 2009).

According to Norton (2012), from the year 2004 up through to the year 2009, the internet alone contributed an average of 21 per cent to Gross Domestic Product (GDP) growth in mature economies. However, this potential will not be realized in the least developed countries unless there is effective and easy access to the Internet. This can also become widespread, which means mitigating as far as possible the drag effects of the global digital divide. In addressing this issue, it is important to recognize more systematically the different types of the digital divide and how these are related (Norton, 2012). Andreasson (2006) recognized four levels of ICT usage and exploitation. He however added a fifth level in 2012. This level was related to the active participation by users in developing ICT products, services, and content. Each level cumulatively increases ICT's importance for development purposes and, thereby, is also subject to potentially greater digital divide constraints (Andreasson, 2006). The levels include:

(i)   Access to ICT, such as the Internet, broadband, computers, mobile devices, relevant online services including social media and ICT content. This is a supply-side issue, so reflects the level of development of the country, government policy, and private investment in ICT infrastructure and services, and also includes the cost and quality of ICT.

(ii) Socioeconomic characteristics of the user. Thus, education, occupation, labour market status and income, plus demographics like gender and age.

(iii) Skills, motivation, opportunities, and needs of the user if he/she is to use available ICT products and services.

(iv) Beneficial use of ICT, thus, whether and how the supplied ICT products, services, and content are appropriately used to provide benefits for the user.

(v)   Participation and co-creation of ICT, thus, whether and how the user is actively engaged in contributing to or developing ICT products, services, and content, for example, using Web 2.0 tools that typically have an 'architecture' of participation that encourages users to add value to the application as they use it, for example, using social media applications (Sophos, 2013).

Parker (2006) establishes that level (i) is subject to intervention initiatives while level (ii) to (v) represents demand-side issues. In terms of level (i), access to ICT, Andreasson (2006) showed that the two most important determinants of ICT use tend to be related to technology availability and user skills, and these are independently somewhat more important than the socioeconomic characteristics of the user. This observation can provide a strong basis for policy design. Such non-socioeconomic factors are, in principle, easier to tackle through policy intervention, at least over a relatively short time horizon (Andreasson, 2006). Thus, policies related to

ICT supply in a country and individual skills can typically be designed and implemented over the short to medium term, whilst socioeconomic characteristics, such as educational level, occupation, income, and labour market status typically require much longer time scales and cooperation with a larger number of stakeholders, although both types of factors are important (Parker, 2006).

Level (ii) socioeconomic characteristics, although largely only amenable to long term policy interventions, are nevertheless important. In 2012, Andreasson by using the 2006 data, showed that ICT users compared to individuals not using ICT are significantly more likely to be in employment, educated, have medium to high income, be aged 25 to 34 and be male. These characteristics in themselves demonstrate the digital divide that tends to permeate all ICT-related usages. This is also for example documented by the United Nations (UN) and Pew, an American research institution (UN, 2012).

Further, looking at some of these individual characteristics in Europe, income emerges as the most important factor for using ICT, assuming it is available, whilst educational level is the most important for beneficial use and the intensity of use. This is a general conclusion also reached by the United Nations on a global scale. According to a study quoted by the UN (2012), the probability of an individual using the internet every day increases by 2.4 times in Europe and by 3.6 times in South Korea if he/she has a university degree or above. At Level (iii), user skills, as mentioned above, are, alongside technology availability, the most important determinant of ICT use. For example, user skills can be learnt and developed relatively quickly given motivation, opportunity, and technology availability, and as such, are only weakly correlated to socioeconomic characteristics (Millard, 2006).

The rapid take-up and beneficial use of mobile phones in most countries around the world, regardless of such characteristics, tends to exemplify this. An additional dimension of ICT skills is that there is strong evidence that, if an individual him/herself does not have the requisite skills nor indeed access, they might still benefit through an intermediary who uses ICT on their behalf (Millard, 2006). For example, intermediaries can be family members, friends, neighbours, the community, as well as more formal organizations, like Non-Governmental Organisations (NGOs) or telecenters. It was accepted in Europe in the mid to late 2000s that, given that still, 20 to 30 per cent of people would not be online at least for the next 10 years, they could still benefit from ICT through such strategies, which also might include better use of ICT in back offices of governments and companies to better target services (UN, 2010). In other words, not everybody needs to use ICT themselves straightaway to get the benefits of it, though, of course, there is a need to move toward that in the medium-to-longer term (UN, 2010).

Indeed, European data from 2006 showed that only 53 per cent of users use ICT for various purpose, 51 per cent as part of their job, and 42 per cent on behalf of family or friends, the latter thus being termed "social intermediaries" (Parker, 2006). Moreover, each social intermediary on average assists 2.6 other individuals who are not themselves direct ICT users, thereby dramatically extending the actual impact of ICT (Parker, 2006). Interestingly, the profile of social intermediaries also differs from that of ICT users generally who tend to be younger and/or in employment, in that they tend to be older and perhaps retired, often unemployed and living in a country with poor or expensive ICT availability. This seems to be because this group as a whole is generally less ICT literate, but that the small subset of them that are ICT literate are better able to relate to their peers and assist in ICT use (Parker, 2006).

The profile of individuals receiving assistance from social intermediaries also strongly mirrors that of non-ICT users generally, thus, having low e-skills and e-attitudes, unemployed or in unskilled occupations, lower-income and educational levels, in higher age groups including retired and also living in countries with undeveloped ICT (Parker, 2006). Overall, social intermediaries considerably extend the benefits of ICT to individuals who otherwise are not being reached (Hamelink, 2006). Level (iv) is where ICT use starts to have developmental impacts. ICT is not a magic bullet. It is not the technology itself that provides benefits nor the user characteristics or skills, but if these are brought together and used in the right contexts it becomes a powerful tool for achieving developmental goals, as outlined in the earlier section. At Level (iv), impacts are made through the beneficial use of ICT; simply having access to ICT and the skills and resources to use it, does not in itself guarantee benefits. The beneficial impacts of ICT typically require new mindsets, the ability to act innovatively, to create new business and financial models within a conducive framework of regulation, incentives, and open markets that allow local innovators to earn money, perhaps through developing micropayment reward systems as in Kenya (Hamelink, 2006). There is a need to think about how these contextual conditions will impact beneficial outcomes. It is often important as well to include a broad range of stakeholders, not only from the Government but also from the ecosystem of commercial companies and especially Small- and Medium-sized Enterprises (Hamelink, 2006).

Turianskyi (2020) postulates that several factors account for this digital divide. He mentions socio-economic factors to be the key factor amongst them. He says that not being able to afford the right technology (especially laptops and smartphones) and high-speed internet access can be very frustrating for school-going children,

especially university students. According to Global System Mobile Association (2020), approximately three-quarters of the population in Sub-Saharan Africa (747 million) people have a mobile connection. However out of this number, only a third (250 million) use a smartphone. In 2019, the Alliance for Affordable Internet tracked 45 African countries on internet connectivity. Out of the 45, only 10 African countries were able to afford internet connectivity (1GB of mobile prepaid data costing 2% or less of the average monthly income). Turianskyi (2020) blames the low number on the governments of these countries. This he says can however be solved when macro-economic policies are adopted which will result in improving the livelihoods of citizens so that they will be able to afford the necessary technology.

Turianskyi (2020) establishes that weak ICT infrastructure could only act as a powerful economic and social driver if boosted. Massive improvement in this area can increase information flows, promote entrepreneurial activity and boost effective trade between African countries. According to Internet World Statistics (2020), at the end of 2019, Africa had an internet penetration rate of 39.3%. This was however the lowest among the continents. Asia had 53.6%, Europe had 87.2% and North America (the highest) had 94.6%. Again, to improve this, Turianskyi (2020) suggests that governments of African countries need to invest significantly in the area as well as come up with favourable policies in the sector. The third factor for Turianskyi (2020) is access to information and communication. This according to him can be achieved if governments provide free Wi-Fi hotspots to low-income communities to facilitate, access to information and learning opportunities.

For Seymour et al., (2020), COVID-19 has brought about a clear picture of inequalities engulfed in today's world. In his view, access to the internet has become

a segregating line between students with access to those who have little to no access at all. In India for example, during the quarantine period, it painted a big picture of disparity. However, students who were privileged to be in developed areas with good living conditions and good internet connections enjoyed online learning effectively. However, students who found themselves in underdeveloped areas struggled with poor internet connectivity (BBC, 2020).

According to Rey (2020), in the Western part of New York, there are nearly 40,000 children who do not have a computer or high-speed Internet. According to an article United Nations Educational Scientific and Cultural Organisation (UNESCO), there are 826 million students who do not have computers and 706 million who do not have internet access (UNESCO, 2020). In the same article, it was established that teachers also need training in the use of technology for their teaching. It appeared that not just the students suffer from the digital divide, but the educators as well.

China, on the other hand, provided a blueprint on how to bridge the digital Divide. Since the initial outbreak, China put forth policy measures to mitigate the divide and identified three ways to address it. The first measure is policy response from the national and local education authorities where China provided an educational plan for teachers and students. With the second measure, China offered an alternative to online education by frequently using television and radio to broadcast lectures. The third and last measure was the use of cloud-based support for teachers and learners: China created electronic versions of their textbooks and collaborated with the public sector to deliver the e-books through their platform (Liu, 2020).

2.4.1 Digital Divide in Ghana

According to Ohemeng and Ofosu-Adarkwa (2014), the government of Ghana in 2003 developed Ghana's first comprehensive ICT Policy titled 'The Ghana ICT for Accelerated Development' (ICT4AD). The document aimed to serve as a blueprint for the deployment of ICT as an enabler and driver of Ghana's development efforts. The policy was also to transform the Ghanaian economy from agrarian and raw material dependency to an information-rich society. Ohemeng and Ofosu- Adarkwa (2014) assert that this policy did not live to achieve its goals because of the change of Government. The school connectivity Program was again established by the Ghana government to deal with the issue of digital divide in the country and also enhance digital literacy. (Ofosu-Adarkwa & Ohemeng, 2012).

According to Baah (2011), the development of ICTs is currently moving at a fast pace with its effects on the economy, education, government and civic activity being enormous. Unfortunately, in Africa, ICT has not taken a foothold since there are still key areas that lack good technology. Africa must not be excluded from the technological revolution that is ongoing since new technology increases wealth. Today, computer illiteracy and complete lack of access to ICTs are rapidly recognised as an increasingly powerful to political, economic and civic development of Africa (Baah, 2011). From the findings of the UN ICT Task Force (2000) in a study conducted by Baah (2011), there is nowhere that the digital divide is more pronounced than in countries of Africa. Africa is the most unconnected continent in an increasingly connected world. Ghana finds itself in this unconnected world.

For Baah (2011) in his study "The Effects of Digital Divide on teaching and Learning Processes in Second Cycle Schools in the Wenchi Municipality of Ghana", the

operations of digital networking is solely through the internet where people can be well connected globally with the special aid of computer programmes. The internet is a dependable means for communication because it can integrate into desktop applications corporate workflows as well enable document sharing easily. Overall, it delivers promises for working anywhere, anytime and with anybody. Baah (2011) is however of the view that in Ghana, however, even though online services have created the potential for change in most of the sectors in the economy, its adoption in the area of education unlike in business is extremely slow. This is because in most Senior High Schools In Ghana, for instance, teaching and learning remain fundamentally the same as it was centuries ago. According to Ghana Television (2001) the future success of one student depends to a large extent on the country's ability to broaden the perspective on education. If Ghana's education sector is broadened, students will be assisted to acquire the full range of experience, knowledge, skill and attitude they need to grow academically. The researcher is however of the view that some students spend much time on issues that may not be beneficial to them rather than on their academics.

Cuban (2001) shares in the assertion of Baah (2011) with his view that computers have been oversold and underused leaving most educational institutions as they were decades ago despite the availability of technology. The education sector is not reaping enough benefits of technology to justify its investments. Another scholar who sides with Cuban (2001) and Baah (2011) is Ajayi (2008). For him, teaching and learning have gone beyond the teacher standing in front of students in the classroom and disseminating information to them without the students' adequate participation. With the aid of ICT, teachers can take students beyond traditional limits by ensuring their adequate participation in all teaching and learning processes and also creating vital

environments to experiment and explore on their own. In the view of Ajayi (2008), any teacher who is well trained in the use of ICTs for teaching and learning activities will have their students perform better in all academic activities and all other endeavours. Poole (1996) refers to computer illiteracy as the new illiteracy because he believes that for a person to be technologically ignorant, he/she can be considered illiterate. Thierer (2000) asserts that, when ICTs are used properly, they improve greatly upon teaching and learning in addition to shaping workforce opportunities.

2.5   Theoretical Framework

Researches are generally underpinned by some theoretical constructs. This helps draw research findings and analysis within certain theoretical frameworks and goes a long way to help researchers appreciate these theories some more. It also helps the researcher to confirm the actual existence of a theory about the phenomenon being studied, challenge the existence of the said theory and also exhibit some extensions or variations that may exist in the theory. The theory that underpinned this study is the Resources and Appropriation Theory of the diffusion, acceptance and adoption of new technologies by van Dijk (2012).

2.5.1   Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of New Technologies

To better appreciate this theory within the right context, it is important to first discuss the key concepts of the theory as postulated by van Dijk (2012). This is so because the Resources and Appropriation Theory was posited to fill the gaps that exist within the efficient use of ICTs creating a digital divide.

For van Dijk (2012), the core part of the theory is several kinds of access in succession. The kinds of access are; Motivation, physical and material access, digital skills and usage. In appropriating a technology, one should first of all be motivated to use it. It is only then that the individual can fully utilize the technology to his/her advantage and also satisfy needs where necessary. When sufficient motivation has been developed, then the individual will be able to acquire physical access to ICTs. In addition to that, the individual needs material resources (software, ink, paper, subscription) to keep using the technology. This physical and material access does not

lead to the appropriation of technology unless the individual develops several digital skills to be able to efficiently use the technology in question. These skills could include; Strategic content creation, communication, information and operational skills. For van Dijk (2012), it is only when these skills are well developed that the technology will be more appropriate in several applications. Usage becomes the main focus of appropriation not just in the ordinary use of the technology but the frequent use of it in diverse ways to satisfy the individual's needs.

Van Dijk (2012) asserts that different factors account for the kinds of access and that the kinds of access are interrelated. Lenhart et al (2003) are of the view that factors such as lack of skills, money, unlimited time, preference and usefulness of the technology could demotivate an individual and prevent him/her from using the technology. Liset et al. (2000) outline: age, sex, intelligence, personality, ability and positions in society as factors that could deepen physical access for an individual and income as a factor that could worsen material access. According to Alexander et. al. (2010), age is the main factor that widens digital skills because younger people can easily acquire digital skills as compared to older individuals. The researcher does not agree with this assertion entirely because some people may be young but may be financially constrained in getting Education and training for digital skills as compared to adults. On the part of usage, the factors that prevented efficient use of technologies are; Low Education, income, gender and lack of interest (Alexander et al., 2010).

According to van Dijk (2012), other concepts of the Resources and Appropriation Theory are; Several personal positional categorical inequalities in society, the distribution of resources relevant to this kind of inequality, several kinds of access to ICT and several fields of participation in society. These four arguments have been

summarized into the following; Categorical inequalities in society produce an unequal distribution of resources, An unequal distribution of resources causes unequal access to digital technologies, Unequal access to digital technologies also depends on the characteristics of these technologies, Unequal access to digital technologies brings about unequal participation in society, Unequal participation in society reinforces categorical inequalities and unequal distributions of resources. Here van Dijk (2012) refers to Personal Categorical Inequalities as: age (young/old), gender (male/female), race/ethnicity (majority/minority), intelligence (high/low), personality (extravert/ introvert; self-confident/not self-confident), health (abled/disabled). He refers to Positional Categorical Inequalities as: labor position (entrepreneurs/workers; management/employees; employed /unemployed), education (high/low), household (family/single person) and nation (developed/developing). The researcher of this study observes that all these inequalities as stated by van Dijk (2012) are intertwined with the kinds of access discussed earlier.

2.6   Relevance of the Theory to the Study

As discussed, Resources and Appropriation Theory shows the kinds of access that prevent individuals from duly appropriating technology to satisfy their needs and to their full benefit. The theory outlined the factors that deepen the different access. This study focuses on the digital divide among undergraduate students during the COVID-19 era. The theory is therefore relevant to the study because it helps explain the various forms of the divide that prevent Undergraduate university students from utilizing ICTs in learning during the COVID-19 era when teaching and learning activities were mostly online. The theory also provides a good ground to explicate the digital divide further as well as outlines factors and solutions to bridging the divide.

2.6   Chapter Summary

The chapter focused on teasing out research gaps that exist in previous studies with the sole aim of grounding this research so as not to replicate a study that already exists. It is also to allow for this study to contribute to a large extent, fresh ideas and perspectives to the body of literature on digital divide and education in general, and specifically to digital divide in Ghana. From the body of literature reviewed, it is evident that there is very little attention drawn to digital divide among undergraduate students of various universities in Ghana. Based on this and other methodological gaps, my study attempts to fill these voids in the subsequent chapters.

CHAPTER THREE

METHODOLOGY

3.0   Introduction

This chapter centres on the methodological steps and procedures that were employed to gather and analyze data. The chapter encapsulates the research approach, the research design, sampling techniques, and data analysis techniques employed in this study. This is in line with the thinking of Rajasekar et al., (2013) and Schwadt (2007) who argue that methodology involves the analysis of the assumptions, principles and procedures of a study to enhance deeper understanding.

3.1   Research Approach

Based on the study's focus and objectives, the qualitative research approach was employed. This is in line with the ideas of Brennen (2017) and Creswell (2014) that qualitative research, as opposed to quantitative research, is theoretical and interpretive in nature. Creswell (2014) opines that qualitative research is an approach for exploring and undertaking the meaning individuals or groups ascribe to a social or human problem and that data is typically collected in the participant's natural setting with the researcher making interpretations of the meaning of the data. Similarly, this study was conducted in a natural setting, specifically the participant's setting which is the GIJ campuses. The researcher also made interpretations out of the data collected.

According to Brennen (2017), qualitative research emphasizes understanding complex concepts and making good sense of language which is generally based on human experiences and relationships. This study focused on the forms of digital divide among undergraduate university students during the COVID-19 era. It also

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made sense of the strategies deployed by the students to bridge the divide during the COVID-19 era and looked at the implications of the digital divide on teaching and learning in GIJ during the COVID-19 era. Overall, the study was hinged on the lived experiences and constructive interpretations of the students who participated in this study.

3.2   Research Design

According to Creswell (2014), research design is defined as the strategy, plan and structure a researcher adopts to help achieve the objectives of the study. Further, he argues that the selection of a research design is mostly dependent on the nature of the research problem being addressed, the researchers' personal experiences and the audience for the study. To Burns and Grove (2013), research design is a procedure in which a study is based which ensures control of factors that may interfere with the validity of the study. The study is also an exploratory one. An exploratory study is conducted to have a better understanding of the existing problem (Stebbins, 2001). There are several designs in every research approach; some examples of designs in the qualitative approach are phenomenology, ethnography, case study, narrative research among others (Creswell, 2013). In this study, I employed the Case Study Design.

3.2.1   Case Study

According to Yin (2009), a case study is defined as a research design that facilitates thorough investigation in a real-life contemporary phenomenon in its natural context. Harling (2012) also defines a case study as a process that involves a collection of in-depth understanding of a program, an event, an activity or an individual. Kuthiala

(2010) asserts that case studies employ numerous data sources to systematically investigate a phenomenon with the intent of having an in-depth understanding. Furthermore, the case study synthesizes the multiple data sources into one meaningful finding (Hancock & Algozinne, 2006). In line with Yin (2009), I chose the case study because the topic 'digital divide' is a contemporary phenomenon that gathered data in a natural context of participants (Armelin, 2012).

A case study is defined by Stake (2000) as a "qualitative strategy in which the researcher studies an institution (as a whole or department), a program, a responsibility, a collection or a population" (p.23). This implies that a case study seeks to elicit answers to open-ended questions, preferably from those experiencing the phenomenon. Therefore, case study best suits my topic because my motive is not only to investigate the digital divide among undergraduate students in general but to also examine the forms of the divide as well as the strategies the students deploy in bridging the divide and to also explore the implications of the divide. Answers to these questions will be generated through open-ended questions posed during interviews with the participants.

Yin (2003) posits that there are two types of case studies: single case studies and multiple case studies. He further states that when a study involves more than one instance, a multiple case study is required. Secondly, he notes that when a study looks at an aspect of a phenomenon it is referred to as a single case study. Cases may involve an institution, individuals, or a program. The study is a single case study specifically an intrinsic case study. Stake (1995) defines an intrinsic case study as a study that has its focus on the case itself because the case presents an unusual or unique situation. My case is unique because even with the ease in the COVID-19

restrictions where universities in Ghana resumed face-to-face teaching and learning activities, the Ghana Institute of Journalism had strictly online lectures.

A case study also allows for the application of multiple data collection methods to achieve its purpose of an in-depth description of a particular phenomenon. Case studies allow for data to be gathered from multiple sources by using different methods such as; interviews, direct observations, documents and reports (Creswell, 2013). This study used interviews and focus group discussions to aid the researcher to gain in-depth understanding of the phenomenon of digital divide among the undergraduate students of GIJ. The study also employed the case study design because it gave room for the researcher to clearly explain the phenomenon of digital divide among undergraduate students of GIJ during the COVID-19 era (Farquhar, 2012).

3.3   Sampling Strategy

According to Daymon and Holloway (2011), the essential principle of gaining thick, rich in-depth information guides the sampling strategies of all qualitative researchers. Sampling is also considered an important strategy in enhancing the quality of information underlining any study. Kusi (2016) opines that sampling is the process of picking a subgroup for a study and that sampling is important because it is usually unachievable to investigate the entire population in a study. Lindlof and Taylor (2017) assert that a sampling strategy helps the researcher in determining what to study and provides justification for what to study. This way the researcher reduces the possibility of engaging in wasteful efforts because the exact unit or units to be studied are predetermined and well thought-through.

For the focus of this study, the purposive sampling strategy was adopted. According to Wimmer and Dominick (2006), purposive sampling involves the process of deliberately or purposively choosing a participant or data to study on the basis that they possess certain qualities and features that are relevant to the research. Creswell (2008) describes purposive sampling as a qualitative study where researchers intentionally select individuals and sites to learn or understand a phenomenon. Purposive sampling is defined by Bernard (2002) and Creswell (2013) as a non-probability sampling technique where the researcher decides what need to be known and sets out to find persons who can and are willing to provide information based on their knowledge and experiences. Purposive sampling also enables the researcher to understand the problem and research questions of the study. In this study, it was relevant to interview and conduct focus group discussions of first-year GIJ students who were experiencing online lectures and writing online exams at the tertiary level for the first time. These students were purposively sampled based on their qualities, experiences and knowledge of the subject matter

3.4   Sample Size

According to Daymon and Holloway (2011), small samples allow the researcher to capture participants' specific responses and individual interpretations. This significant aspect is however lost when large samples are used. Miles, Huberman and Saldana (2014) assert that in qualitative research, sampling relies on small numbers to study the phenomenon in-depth and in detail. Generally, qualitative sampling consists of small sampling units studied in-depth (Kuzel, 1999). It is based on these scholarly ideas that this study employed a sample of 25 participants and engaged them in in-depth conversations to make the study thick, rich and all-encompassing. The 25

participants were selected because they were first-year GIJ students and also used some form of ICTs for online learning or did not have ICTs available for online learning. The 25 participants were also selected because they were ready to partake in the study.

3.5   Data Collection Method

According to Creswell (2013), data collection does not only focus on actual types of data and procedures but also involves obtaining permissions, a good sample size, recording materials and anticipation for ethical issues that may arise. O'Leary (2004, p.150) argues that "collecting credible data is a tough task, and it is worth remembering that one method of data collection is not inherently better than another". This means that the data collection methods to be used in any study depends on the research objectives as well as the advantages and disadvantages of each method. Based on these assertions, interviews and focus group discussions were employed as the data collection methods of this study to gain a deeper understanding of the issues discussed. The primary data collection method was the interviews whilst the focus group discussions augmented the data from the interviews.

3.5.1   Interviews

The first data collection method employed in this study was interviews. For Creswell (2013), interviews have special attention in qualitative studies and generally provide studies with varied and rich data. To Lindlof and Taylor (2002), qualitative interviews involve a process where one person who is the interviewer encourages others known as the interviewees to talk and share their interests and experiences about a subject without restrain. Creswell (2014) also explains interviews as a means through which a

researcher conducts discussions with participants either face-to-face, on the telephone or the internet. The act of interviewing therefore generally involves inquiry through asking questions and listening to responses and reactions from interviewees. This process enables the researcher to appreciate the phenomenon under study from the perspectives of the interviewees. Schostak (2006) opines that an interview is an extendable conversation between partners that seeks to achieve a goal of in-depth information about a subject or topic. Interviews also enable interviewees to be able to voice out and also express their thoughts and feelings on a particular topic (Berg, 2007).

For this study, a semi-structured interview was employed. Interviews were conducted with 10 interviewees. This interview approach required the researcher to prepare an interview guide before the conduct of the interview (Braun & Clarke, 2011). The researcher was flexible with the nature of the questions she asked from the interview guide and did not adhere strictly to the questions in an orderly manner as they were arranged. The questions posed were precise and devoid of ambiguity. This enabled the interviewees to freely respond to questions. Each interview lasted for between five to fifteen minutes based on questions from the interview guide which were set directly from the research questions. The researcher ensured that the interview was conversational for the interviewees to freely elaborate and express themselves on the subject matter. There were a few instances where some interviewees had a bit of difficulty in understanding some questions and the researcher ensured clarity by explaining further to them (Lindlof & Taylor, 2002). All the interviews were conducted face-to-face on the GIJ campuses at Osu and North Dzorwulu on different days and times. Before the interview, as the researcher, I pre-informed the interviewees and ensured that they were willing to freely participate in the interviews.

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During the processes of pre-informing the interviewees, I introduced myself, the purpose of the interview and also briefed the interviewees on how the interview was going to be carried out. This was done to create a good rapport between myself and the interviewees. After the interviews, I thanked all the interviewees for their time and information in making my research work a success.

3.5.2 Focus Group Discussions

Focus groups provide inexpensive and timely information, they are used to gather insights on individual behaviours, they provide interviewing flexibility and insights regarding group dynamics and they help people express themselves openly about sensitive issues as well as bridge social and cultural differences (Morgan, 2002 as cited in Braun & Clarke, 2014). This data collection mechanism becomes useful since the focus and objectives of this study are targeted at investigating the forms of the digital divide that are faced by undergraduate students and examining the strategies that are deployed by the students in responding to the forms of digital divide encountered as well as the implications of the digital divide encountered.

Three focus group discussions were conducted with each consisting of five participants. The first focus group discussion consisted of four females and one male, the second focus group discussion had three females and two males whilst the third focus group discussion had two females and three males. This is in line with the ideas of Krueger & Casey (2009), Liamputtong (2011) and Morgan (1997) who opine that to generate a rich discussion that is easy to manage, it is best to use smaller groups of between three to eight participants for an effective focus group discussion. Smaller groups should be used for more sensitive topics where there are more risks of distress or intense responses (Smith, 1995). This was also necessary because some of the

questions were quite sensitive and required sensitive responses without intimidation. The focus group discussions were carried out with the consent of all participants on the Osu and North Dzorwulu campuses of GIJ.

3.6   Data Collection Procedure

The data collection procedure looks at the ways through which a researcher collects data for a study. It also basically involves the various steps applied by a researcher through the use of the various data collection methods to gather data for a study (Asiamah, 2017).

3.6.1   Interviews

All the ten interviews conducted followed the semi-structured interview formats. The interviews were conducted face-to-face on the Osu and North Dzorwulu campuses of GIJ. This was because the study focused strictly on first-year students who experienced online learning and exams for the first time at the tertiary level. These first-year students were available on both campuses of the university because diploma one students had lectures strictly at the Osu campus whilst level 100 students had lectures strictly at the North Dzorwulu campus. Each interview lasted for between five to fifteen minutes. I ensured that the questions posed were clear and easy to understand. This enabled the interviewees to express themselves more. The interviewees were free to seek clarifications on questions they did not clearly understand. I explained further such questions to them and ensured they understood perfectly before moving on to other questions.

I conducted all the interviews at times that were suitable for the interviewees. This is because I wanted the interviews to be conducted at their own convenience and time. Hence some of the interviews were conducted before the lecture periods of some interviewees, others were conducted after their lecture times and some others were conducted during their break periods from group discussions on campus. I took notes during all interview processes and also sought the permission of all interviewees to record alongside. This was done to ensure that all information was intact. This further aided in the smooth transcription and onward analysis of my study. The interviews also captured the demographics of the interviewees including their; age, class and program of study. I also paid keen attention to their mannerisms and other forms of nonverbal communication that were exhibited during all interviews. This played a vital role in my study.

3.6.2 Focus Group Discussions

Three focus group discussions were conducted with each consisting of five participants. The first focus group discussion consisted of four females and one male, the second focus group discussion had three females and two males whilst the third focus group discussion had two females and three males. This is in line with the ideas of Krueger & Casey (2009), Liamputtong (2011) and Morgan (1997) who opine that to generate a rich discussion that is easy to manage, it is best to use smaller groups of between three to eight participants for an effective focus group discussion.

The discussions were carried out with the consent of the participants at the Osu and North Dzorwulu campuses of GIJ on different days and at different times. This is in line with the ideas of Krueger (2002) that the characteristics of participants for focus group discussions should emphasize: participants' environment, moderator, analysis

and reporting. The seating arrangement for all the discussions was in a semi-circle form. This is because I wanted to be able to interact face-t-face with all participants as well as maintain good eye contact with all of them. The participants themselves were also able to freely see and hear each other (Escalada & Heong, 2018). I sat in the middle to moderate the discussions in line with the ideas of Krueger (2002) that every focus group discussion should have a moderator who has adequate knowledge on the subject under study and sets guidelines to aid the discussions. Each focus group session lasted for about 40 minutes. This is because, as much as possible, I wanted to prevent the participants from being bored. Escalada and Heong (2018) also argue that focus group discussions should not exceed two hours. I also ensured that there was orderliness by posing the same questions to all participants. Before each discussion started, I welcomed the participants, introduced myself and informed them about the purpose of the discussion. I urged them to freely express their views because the study is an academic one and their identity will remain anonymous.

To make the discussion flexible and friendly, I introduced a familiarization technique by asking all participants to introduce themselves by mentioning their names, classes, halls of residence and the Senior High Schools they attended. Intermittently, I introduced some jokes to stimulate the participants' interests and to keep them active throughout the discussions. A semi-structured focus group discussion guide aided all the sessions. The questions were set simply and clearly to enable participants to take part actively. This also helped me to keep the conversations on track and in line with the research objectives and questions. There were a few times when discussions drifted towards other topics that were completely out of context. During those instances, I politely intervened to bring the discussions back on track. However, some of the off-track discussions had the potential of boosting my findings so I duly noted

those. I also gave room for clarifications and further explanations where necessary. I sought the permission of the participants to record the discussions by using my Huawei Y7 Prime 2019 phone. Alongside the recording, I also took down notes of the salient issues raised. I also captured all nonverbal expressions in my writing. After the discussions, I asked for feedback on how the sessions were carried out and all the feedback was positive. I then thanked all the participants for their effective participation.

3.7   Data Analysis

According to Braun and Clarke (2014), the thematic analysis method of data analysis is "a method of identifying, analyzing, and reporting patterns (themes) within data. It minimally organizes and describes your data set in rich detail" (p.6). It is used to analyze classifications and present themes (patterns) that relate to the data (Boyatzis, 1998).   Specifically, for this study, I used the inductive type of thematic data analysis suggested by Braun and Clarke (2006) where the researcher does not try to fit the data into any form of pre-existing coding frame or preconceived analysis.   I further interpreted the findings using theories to draw meanings from responses from informants. Direct quotes were also used to support the discussions and interpretations. For Lindlof and Taylor (2002), data analysis is the process of labelling and breaking down raw data and reconstituting them into patterns, themes, concepts and propositions. Miles and Huberman (1994) contend that this can be done by coding and categorizing data into themes. The process includes coding, categorization and noting patterns to provide a relationship between the variables and factors to create a reasonable and logical chain of evidence.

For my study, the data analysis was done to draw patterns and themes from the collected data. The data analysis started with the data collected from the interviews then with the focus group discussions data. In responding to all the research questions which had to do with the forms of digital divide that undergraduate students of GIJ encountered during the COVID-19 era, the strategies deployed as well as the implications of the unearthed digital divide during the COVID-19 era, I assembled and prepared all the data that was collected. This was necessary because it enabled me to have a clear view, understanding and description of what had been observed and gathered as purported by Flick (2013). This also helped me to describe the issues in the field about the phenomenon of digital divide in greater detail. On several occasions, I read through the field notes as well as the interview and focus group discussion transcripts to identify the major issue raised. I then transcribed all the data that was recorded on my Huawei Y7 Prime 2019 phone. I achieved this by playing the tapes repeatedly to get the exact responses. I then described the identified issues in a detailed manner ensuring that in-depth and direct quotations were used to support the detailed descriptions and discussions of the research questions. I further interpreted the findings by drawing meanings using concepts and theories from the responses of participants.

3.8   Ethical Considerations

Ethical principles must be adhered to in any kind of research to reduce or avoid harm altogether (Mashud, 2017). Therefore, anyone involved in the research procedure must unanimously strike a balance between risks and benefits. Halai (2006) concurs that good research is a moral and ethical task and that the researcher should be concerned with ensuring that the interests of a study's participants are not

compromised in any way. In tandem with this, Halai (2006) postulates three critical ethical issues researchers must observe during their study. They are informed and voluntary consent, the confidentiality of information shared and anonymity of research participants and no harm to participants. This study made a great attempt at complying with these ethical principles to ensure high standards. For the informed and voluntary consent, the researcher informed the interviewees and the participants of the focus group discussions before all the processes were started. All the participants were also notified that the study is purely for academic purposes and that participation was voluntary.

Interviewees and participants were taken through all the questions in the interview guide before the main interview and discussions started. Participants were also duly informed that the interview and discussions would be recorded. All engaged participants did so freely and willingly without being coerced in any way. Participants were also free to withdraw at any point they felt uncomfortable with the interview or discussion process. For confidentiality of all information shared and anonymity of participants, the researcher was the only privy to them. The identity of all participants also remained anonymous because no names were used throughout the study. Rather, they were represented with alphanumeric codes. Other private issues that were discussed were kept highly confidential by the researcher except those that were relevant and played a vital role in the study. On the issue of no harm, I ensured that all the interviews and discussions were conducted on the university campuses where the participants were safe and comfortable.

3.9   Trustworthiness

According to Lincoln and Guba (2000), the trustworthiness of a research study is very important to ensure credibility. Anney (2014) recommends that qualitative researchers in their method of inquiry should employ the trustworthiness criteria of credibility, transferability (external validity), dependability (internal validity) and confirmability as stated by Guba and Lincoln (2000). In line with this, the study was conducted objectively. I also gave thick, deep, rich descriptions of the phenomena under study as outlined by Guba and Lincoln (2000). To check the credibility of my study, triangulation was ensured in relation to the data collection methods and theories used. According to Guba (2000), triangulation entails involving more than one theory or perspective and methods to interpret single sets of data or to extend the possibilities for producing knowledge. Creswell (2014) also proposed triangulation as a validity strategy in qualitative studies. Triangulation according to Creswell (2014) is the use of different or multiple sources of information, theories or even methodologies in a research process for purposes of corroboration and augmentation to solidify findings or perspectives. This study, therefore, used the resources and appropriation theory of the diffusion, acceptance and adoption of new technologies theory as well as the technological determinism theory. Interviews were also conducted and the researcher augmented the findings with focus group discussions of the participants. This was aimed at providing further insights into the study.

The study was conducted objectively and was also subjected to peer and academic scrutiny. This was achieved through constructive feedback from my supervisor, peer researchers and other academics. The reviews and scrutiny gave me new perspectives on my study and enabled me to present better arguments. I also used iterative questioning where I probed further to elicit detailed data from the participants (Guba

& Lincoln, 2000). As an adjunct lecturer at GIJ, I bracketed my biases in order not to influence the data collected. I also ensured that the interpretations of the participants' experiences were conducted with the literature as a guiding point (Creswell, 2014). Themes from the analysis were developed based on the codes that were generated.

3.10   Chapter Summary

This chapter provided an overview of the methodological steps and considerations that were employed by the researcher to buttress the epistemological groundings of the study. Data collection procedures were discussed elaborately to enable the readers appreciate the extent to which this study is systematic and scientific. The chapter also provided the rationale and justifications for the methodological considerations within the study. For example, justification for research approach, research design, sampling strategy, sample size, data collection methods, data collection procedures, analytical techniques, ethical considerations as well as trustworthiness in the study were duly provided in this chapter.
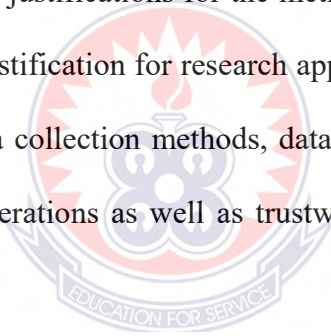
CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.0   Introduction

This study was conducted among 25 first-year students of the Ghana Institute of Journalism (GIJ) on the phenomenon of digital divide during the COVID-19 era. The study incorporated interviews as well as focus group discussions. The interviews were conducted with 10 participants whilst the focus group discussions were conducted with 15 participants. This chapter focuses on the discussions of data collected and the findings in a detailed and in-depth manner. The chapter further presents detailed findings and analysis of the interviews and focus group discussions conducted. From the collected data, findings revealed the forms of digital divide encountered by the students during the COVID-19 era, the strategies deployed by these students in response to the forms of digital divide encountered during the COVID-19 era as well as the implications of the unearthed digital divide on students' learning at GIJ during the COVID-19 era.

The analysis followed the sequence of the research questions and most importantly was emphasised by the literature and relevant theories underpinning the study. The data that was collected was categorized into major themes after they were analyzed. For confidentiality and anonymity in line with the ideas of Creswell (2013) that researchers must ensure that the privacy and anonymity of participants are respected, the researcher represented the interviewees and focus group discussion participants with codes. For instance, 'INT 1' was used to represent interviewee one whilst 'FG1, P3' was for focus group one, participant three.

The research questions that directed the study were as follows:

1. What forms of digital divide do undergraduate students of GIJ encounter during the COVID-19 era?

2. What are the strategies deployed by the students in response to the forms of digital divide encountered during the COVID-19 era?

3. What are the implications of the unearthed digital divide on students' learning at GIJ in the era of COVID-19?

4.1 RQ1. What forms of digital divide do undergraduate students of GIJ encounter during the COVID-19 era?

Research question one sought to explain the forms of digital divide among undergraduate students of GIJ. The forms of digital divide here refer to the ways through which the digital divide can manifest. It also refers to the types of digital divide encountered by the students. Different digital divide scholars assert that various types of the divide differ from country to country (DiMaggio et al., 2004; Taylor, 2021; van Dijk, 2013; Warschauer & Matuchniak, 2010). DiMaggio et al. (2004), van Dijk (2013) and Warschauer and Matuchniak (2010) avow that there are access divides, usage divide and inequalities to outcomes. According to them, this is a result of the fact that the digital divide phenomenon is rendered complex because divides keep evolving. Taylor (2021) is also of the view that access divide, use divide and quality-of-use divide make up the types of digital divide.

As a result, the research was based on Taylor's (2021) types of digital divide. The researcher however allowed the participants to freely mention some other forms of the divide they were faced with which was not stated in the literature. This is because

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even though the study took cognizance of Taylor's (2021) three types of digital divide, not all of these applied to the participants of this study. With the access divide, two of the participants of the study were faced with this form of divide because they could not afford the digital devices necessary to go online (Taylor, 2021). With regard to the usage divide, Taylor (2021) explained it as the difference in the level of skills possessed by individuals to use digital technologies. Some of the participants of the study were faced with the usage divide as well because they did not possess the digital skills to use digital technologies for their online learning activities. The third type of digital divide which is the quality-of-use divide is described by Taylor (2021) as a complicated divide. It refers to the inability of individuals to use digital technologies effectively in different ways for their own benefit. Some of the participants were also faced with this divide as well because they could not use digital technologies for learning to inure to their benefits. Since the participants were given the chance to mention other forms of digital divide they encountered, they mentioned; financial divide, connectivity divide and motivation divide. Five themes that best suit the participants of the study were therefore generated from the divides mentioned and they are; *access divide, financial divide, usage divide, connectivity divide* and *motivation divide.* Out of the five forms of divide faced by the 25 participants, two were faced with the access divide, 21 were faced with the financial divide, 21 were faced with the usage divide, 23 with the connectivity divide and nine with the motivation divide. Each participant was therefore faced with at least one form of the digital divide.

Figure 1: *Forms of digital divide encountered by GIJ students during the COVID-19 era*
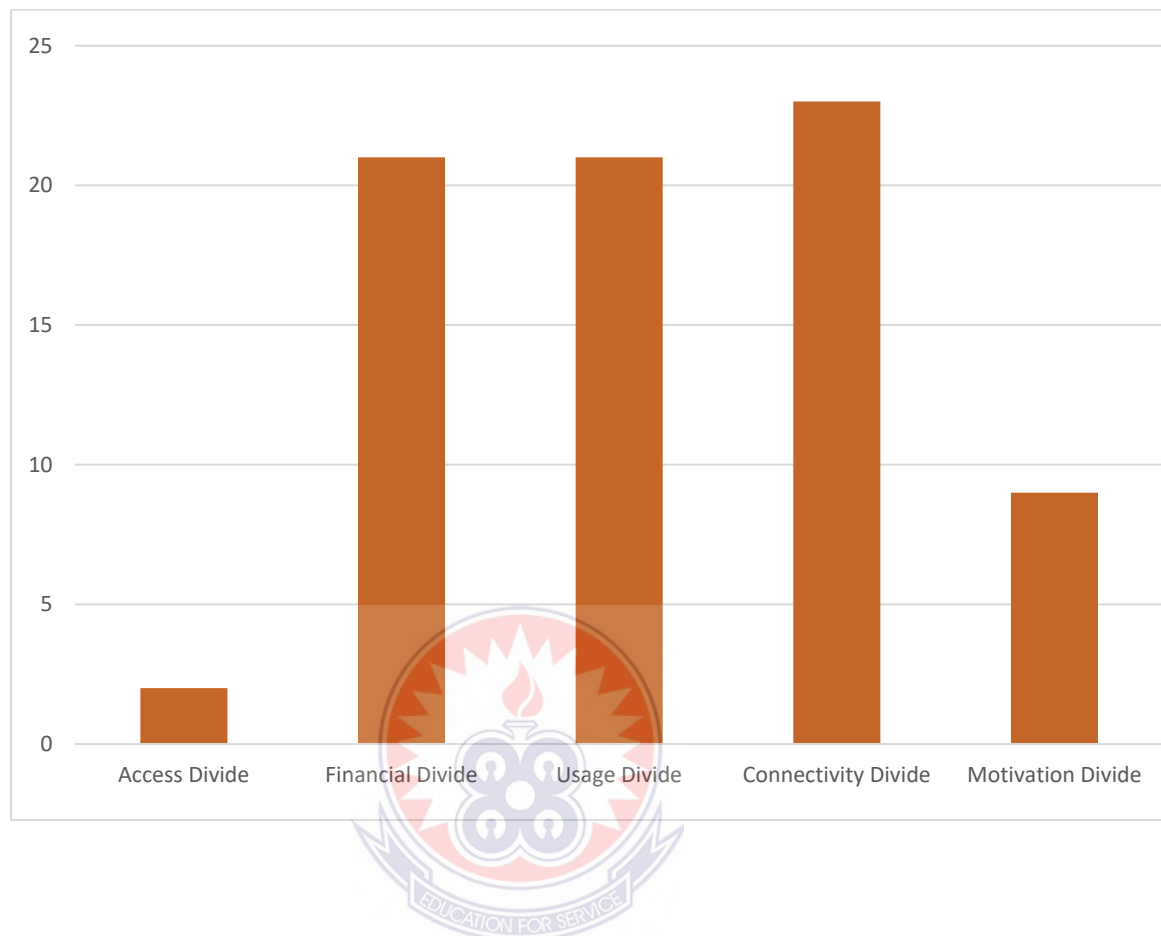
4.1.1 Access Divide

In relation to the study, the access divide refers to the unavailability of ICTs. The access divide here refers to the situation whereby students did not have smartphones, computers and laptops to partake in online learning activities. These students were therefore completely cut off because of their inability to possess such digital technologies. In this study, the participants who faced the access divide mentioned that poverty on the part of their parents was the main cause. Due to the poor financial state of their parents, they could not purchase digital technologies for them to engage in online learning even though it was necessary. According to van Dijk (2000), access to digital media is the full process of appropriation of technology by users. It starts

with motivation and attitude and moves on to the process of finding physical access. In this study, however, in relation to the access divide, the findings were different as stated earlier. This is because the participants were neither motivated nor lacked the attitude to pursue physical access of ICTs. They were rather faced with a complete lack of access to these ICTs. Van Dijk (2000) further asserts that having learned sufficient digital skills will enable users to realize a particular frequency and diversity of usage of digital media. The effects of being faced with the access divide are unequal benefits and unequal participation in society (van Dijk, 2000).

Out of the 25 participants interviewed, two mentioned that they faced the divide of complete lack of access to ICTs. In responding to this question, INT 3 said that she had neither a phone nor a laptop therefore after the university switched to online learning and exams, she could not take part in academic activities at all. She attributed her situation to the fact that she was from a poor home and was being catered for by her guardian who could not get her these gadgets. According to her, she had to also relocate to her village when lectures migrated online.

> *I could not take part in the online lectures and exams because I do not have a smartphone or laptop. I use a 'yam phone' and as at the time of the online lectures and exams, I was in Walewale. I didn't have any of my classmates close to me to help me out. I pray that the university pardons those of us who could not write the online exams especially to be able to do so physically on campus (INT 3).*

Another mentioned that:

> *...as for me, the moment I heard that all lectures and exams will be online, I knew I was doomed. I just completed SHS and came straight into the university. My parents are yet to buy me a smartphone and a laptop. Right now, the phone I am using is just for calls and text messages. I couldn't also get anyone to borrow a phone or laptop from because I am outside Accra. I didn't get*

> *to take part in the online exams, I didn't also write the exams*
> *(INT 1).*

Attewell (2001) asserts that a complete lack of access to Information and Communication Technologies (ICTs) occurs deepening the digital divide because of the poverty that exists within some families. He also relates this to unequal access in the distribution of ICTs within both developed and developing countries. This, therefore, means that the complete lack of access to ICTs is not just related to the individual's inability to possess them, but countries can also be blamed to some extent. For van Dijk (2012), complete lack of access can also be referred to as physical or material access. He opines that complete lack of access can be equated to the level of education of an individual in society, the kind of work one engages in as well as the position of the status of an individual in society. Another loop deepening the access divide is the capacities of ICTs and the ability of individuals to use them (van Dijk, 2013). Access to ICTs by citizens in the long run positively impacts society, economy and politics. This further leads to an equal position in education, workforce and national leadership which go a long way to complete a productivity and feedback loop by influencing the availability of resources in all sectors of the economy (van Dijk, 2013). Skaletsky et al. (2017) assert that the access divide does not just fall on citizens but to a large extent shows the competencies of governments. They are therefore of the view that governments of countries should identify the access divide and then recognise the need to support good digital access to all citizens.

These positions corroborate the findings in the literature which avow that if an individual has a complete lack of access to ICTs, then that individual will be unable

to get access to information and is also likely to be cut from education, business, economic, political and social activities within the society (van Dijk, 1999; Venkatesh & Skyes, 2013; Wilson, 2004). Also, about the Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of New Technologies propounded by van Dijk (2012), an individual in society who does not have physical and material access to ICTs will be unable to pursue digital skills that will enable the person to efficiently utilize these technologies to his/her own benefit. These students are therefore more likely to be unable to utilize digital technologies to their maximum benefits.

4.1.2 Financial Divide

The financial divide from the study refers to the affordability of ICTs. In this study, the financial divide was experienced when some participants were unable to buy more sophisticated digital technologies to make their online learning more effective. Others could not buy data bundles which could enable them to get access to the internet for online learning. Other participants could not buy the hardware of digital technologies that could enable them to effectively participate in online lectures. In responding to this particular question, 21 participants out of the 25 mentioned that they were faced with financial constraint. FG1, P2 indicated that he had inadequate money though he was a working student. According to him, he used to buy 20 cedis worth of data for his personal use for a week but with the inception of the online learning, he had to buy 40 cedis worth of data for the same week. He also said his laptop was faulty but he could not afford to buy a new one for online learning so he had to use the faulty one which in the long run prevented him from participating fully in all lectures. FG3, P4 also said that her laptop was malfunctioning and because she could not afford to repair it or buy a new one, she was left with no choice but to use her phone which

posed a lot of problems for her during online learning. She mentioned that there were times her phone will freeze and the GIJ-LMS system will log her out and she has to struggle to log in again to join the class. She added that most often she gets lost in the course of the online lectures because of the nature of her phone.

> *I had to buy more data with the money I barely had. Initially, 20 cedis worth of Vodafone data was enough for my personal use for a week. But when online learning started, I started buying 40 cedis worth of the same Vodafone data for the same week. I also wanted to buy a MacBook for the online lectures because my HP laptop was giving me problems but I didn't have money and this prevented me. I had to use my faulty HP laptop and this prevented me at some point from joining some lectures and I also submitted some of my exams scripts late (FG1, P2).*

> *My laptop got spoilt and I couldn't repair it. I, therefore, had to rely solely on my infinix phone which was extremely slow and sometimes jammed up because a lot of activities were being done on the phone at the same time (FG3, P4).*

According to van Dijk (1999), an individual who is not financially sound will struggle in getting access to ICTs while a financially sound individual will easily have access to ICTs. Van Dijk (1999) also relates money to financial stability in general where a financially unstable individual suffers from a low level of income while a financially buoyant individual has adequate money. Bourgeois (2019) opines that the financial divide can also be referred to as the economic divide and it is the main digital divide. This is because, according to him, the financial divide most often causes the access divide. The financial divide is the idea that some people can afford to have a computer and internet access whilst others cannot. For Steele (2019), the income gap plays a significant role in magnifying the digital divide. To her, high-income earners are 20 times more likely to access the internet and to possess digital

technologies than low-income earners. Wealthy families are also times more likely to own computers at home with high-speed internet connectivity than low-income families.This is mainly because, for low-income families, money is scarce. They, therefore, channel the little money they have into basic needs like food, water and shelter. These low-income families also view technology as a luxury. High-income families on the other hand can comfortably meet their basic needs and still have excess to purchase their luxuries. Digital technologies and the internet are therefore considered luxuries according to Steele (2019).

This finding is also not far from the assertion of van Dijk (2005) that financial constraints could prevent an individual from utilizing a device even if he has one and it is also in line with the Resources and Appropriation Theory which indicates that lack of money and a low level of income could prevent an individual from further using technology frequently and in diverse and creative ways (van Dijk, 2012).
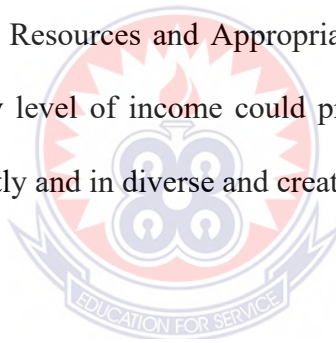
4.1.3   Usage Divide

The usage divide in this study refers to the inability of individuals to efficiently use ICTs because they lack digital skills. From the study, some of the participants said they were faced with the usage divide in various ways. Focus group discussion two, participant five and focus group three, participant four indicated that they could not actively participate in all online lectures and also could not submit all their exams documents on time because they could not efficiently use their laptops.

> *…as for me, I have a laptop but I just started learning how to use it when lectures had to migrate online, so I struggled to join lectures and even submit exams scripts on time…. (FG2, P5).*

> *....the portal was just too difficult for me to use. Anytime I log in, I get confused so by the time I join a lecture after all the struggles, I meet the end of the lecture. As for the exams, I submitted virtually all my scripts after the deadline… (FG3, P4).*

In line with this, Taylor (2021) refers to the usage divide as the difference in the level of skills possessed by individuals. He also notes that there is a generation gap when it comes to skills necessary to use the internet. This generation gap further deepens the divide. The usage divide is also affected by the quality of education that an individual receives. Younger, educated people tend to have more skills than older less educated individuals. (Taylor, 2021). According to van Dijk (1999), an individual who is not well educated in the use of ICTs cannot put a device into full use even if there is access. Again, van Dijk (2013) asserts that individuals need the requisite skills to be able to use ICTs efficiently. However, without these skills, the capacities of these technologies will not be explored fully. Digital illiteracy exposes educational inequalities among individuals (Dubey, 2019).

Wagner (2000) asserts that education and literacy levels play an important role in the likelihood that an individual could be faced with the digital divide. According to him, the higher the educational and literacy level of a person, the more likely that person will be in belonging to the group of 'haves' who most often are not faced with the digital divide and have the skills to use technology fully. With regards the assertion of Wagner (2000), because most of the undergraduate students understudied had low educational levels and also lacked digital literacy skills they were faced with the divide of digital illiteracy. In this case, the individuals faced with this divide are likely not to fully utilize technologies and achieve their aim (Wagner, 2000). Interviewees four and five mentioned that because they were faced with a divide of digital

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illiteracy, they could not join all online lectures because they faced challenges at the beginning with the university's portal.

According to van Dijk (2012) and Gunkel (2003), members of society who are digital literates will be able to solve problems in the economy and society at large. However digital illiterate members of society cannot solve problems of the economy and society at large. This is in line with the ideas of Hauer (2017) who opines that any form of change in society is controlled by technology, technological development, communications technology and the media. This change according to him can only occur if individuals within society make use of technologies efficiently. Again, according to Hauer (2017), for society to be transformed, technologies must be fully utilized by members of society. This, therefore, indicates that for eleven (11) out of twenty (20) university students to be faced with the divide of digital illiteracy and further having some aspects of their education being affected negatively, society is likely not to be fully transformed because all individuals in society must come on board to achieve this total transformation.

4.1.4   Connectivity Divide

Connectivity divide in this study refers to unstable internet network that hinder an individuals from efficiently using ICTs. In this study, 23 participants were faced with the divide of poor internet and network connectivity. FG3, P4 mentioned that she was faced with a big challenge of the poor network in her locality and had to change her network which still did not work for her. According to her, she eventually had to relocate to a different area where her network was more stable for her online learning.

"I had a big challenge with my network. It was always messing up. I live in Teshie and the Vodafone network messes up a lot. I switched over to MTN but it was still unstable. I eventually relocated to Osu to stay with my friends to complete my online lectures and exams. The MTN network was a bit stable in Osu. Even with that, it still wasn't the best. I submitted some of my exams scripts late as a result of poor network" (FG3 ,P4) .

Another participant who was faced with this divide indicated that:

"...as for me, my area has terrible internet connectivity. No matter the network you use, you will still face problems. Campus was opened on some days so on such days, I go to campus to use the Wi-Fi for my online learning and to submit my exams scripts. Even with that, the Wi-Fi was always slow so I still faced a lot of challenges. I either joined a class late or submitted my scripts late…" (FG2, P3)

According to Arai (2010), in geographically isolated regions, there is difficulty in easily accessing ICTs due to poor connectivity. He is of the view that most developed countries do not have a difficulty in this area as compared to underdeveloped countries where there is mostly a geographical digital divide. Tongia (2006) also asserts that even though mobile telephony is improving word wide, it remains expensive, limited in rural areas and highly poor at providing stable data connectivity, especially in underdeveloped countries. The connectivity divide in this study refers to the challenges that were faced by participants in their use of digital technologies in the area of internet and network connectivity. This is because, according to van Dijk (2012), even if a person has access to digital technologies and does not have a good and stable network that will permit he/she to fully utilize the technologies, that person will still be faced with the digital divide. He ascribes the cause of poor and unstable networks to countries and areas people find themselves in, location and low

bandwidth on the part of network and internet service providers. Some of these causes of connectivity divide as stated by van Dijk (2012) were faced by the participants of this study.

The Resources and Appropriation Theory indicates that if an individual does not have physical and material access to ICTs, he/she may not be pushed to get digital access for strategic communication and information and eventually there will be no efficient use of ICTs by this individual. The theory also indicates networks and the internet as a part of physical and material access. Therefore, for an individual to experience poor connectivity between the network and the internet, that individual will not be able to utilize ICTs efficiently. In this case, all 25 participants who were faced with this divide obviously could not utilize their ICTs about learning activities during the semester even though they had access to these ICTs.
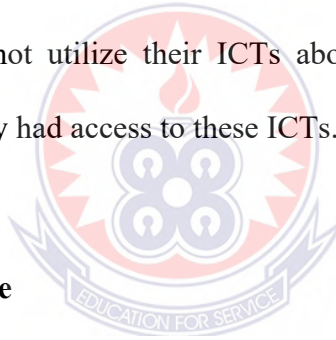
4.1.5   Motivation Divide

The motivation divide from my study refers to the lack of interest people have in the use of ICTs. This lack of interest could stem from their inability to efficiently use ICTs or the internet problems that they are faced with. Some of the participants were faced with a motivation divide. FG2, P4 for instance in responding to this question said during the online learning process, she was demotivated because she did not have money to continue buying data. She said there were times she missed the deadlines for submission of her exams because she did not have data on time. Thus, her financial divide led to a motivation divide for her.

> *At a point, I was seriously demotivated because I could not*
> *afford data and my father did not give me money for that*
> *because he said he did not understand why we paid school*

> *fees but were still holding online lectures. There were times I submitted my exams documents after the deadline because I had access to data late. I hope the lecturers consider.*

FG3, P6 said he was demotivated to use the ICTs for online learning not because he was financially constrained to buy data but because he could not use the laptop and the GIJ-LMS portal efficiently. He said even when he had online lectures, he was not motivated in any way to join because of the challenges he faced.

> *As for me, I had money to buy data but I just had a difficulty in using my laptop. I am a phone person, not a laptop person. I even hate to type and also I did not know how to use the LMS well so I was not motivated at all to join the online lectures. I relied on feedback from my friends. Even the few times I joined in, I was late.*

Here the findings relate to the ideas of Hauer (2017) who opines that if individuals in society are demotivated to use technologies, they end up not using them at all most often and this can prevent the development and further transformation of society. The researcher is of the view that, since the participants are students, demotivation in the use of educational ICTs will lead to poor performance on their part.

Also according to van Dijk (2012), many of those who remain at the 'wrong' side of the digital divide have motivational problems. He refers to these people not only as 'have-nots' but 'want-nots' about digital technology. In van Dijk's (2012) postulation of the Resources and Appropriation Theory, he mentions motivation as a key factor that prevents individuals from appropriating ICTs for their benefits and from fully satisfying their needs. He said that factors such as; Lack of income/ money, skills and interest could demotivate an individual from using ICTs creatively and efficiently. Chuang (2010) corroborates van Dijk's (2012) theory in his study 'What digital

factors matter in the motivation to use technology to learn English'. He found out that an individual needs to be highly motivated to use technology fully in achieving results in education, especially in learning the English Language. A study conducted by Maryville University (2021) indicated that the digital divide continues to heighten in some areas. This is because even though some people have access to digital technologies, skills, income as well as the education necessary to efficiently use these technologies, they are not motivated in any way to use them for their own benefits. This, according to the university, is because some people do not just have the interest to use digital technologies. This is also sometimes dependent on the society they grew up in and currently find themselves in. The findings of the study are in line with the ideas of these scholars.

4.2   RQ 2. What are the strategies deployed by the students in response to the forms of digital divide encountered?

Steele (2018) elucidates that the ability to access computers and the internet has become crucial for society. Unfortunately, people still lack access to technology and the internet. Steele (2018) therefore outlines some ways of curbing the digital divide which include: empowering users, increasing affordability and internet infrastructure development. In furtherance, Chakravorti (2021) avows that fixing the digital divide has to be a priority since it sits at the centre of other societal problems, from racial inequities to the unevenness of access to essential needs including health care and education. Charkravorti (2021) however cautions that his recommendations for action in reducing the digital divide will need to be locally appropriate and must go beyond merely filling in physical infrastructure by the government. His recommendations, therefore, include; coordinating locally appropriate solutions that best suit

individuals, identifying gap areas and inviting private sector solutions, updating and expanding existing affordability programs and generally investing in digital literacy.

The Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of New Technologies by van Dijk (2012) also indicate that for individuals to fully appropriate and enjoy the benefits of digital technologies, they must put in efficient measures to achieve that. This question, therefore, sought to explore the strategies that the students used in responding to the forms of digital divide that they encountered. Here their responses were about measures that they put in place. In coding and developing themes from the interviews and focus group responses, four themes emerged: *Information seeking behaviours, savings culture, relocation* and *self–motivation*. Generally, it must be noted that there is scanty information in the literature about the strategies deployed to curb the digital divide encountered. Therefore most of the analysis done for this particular research question in this study was from the primary data collected from the participants of the study.

4.2.1 Information Seeking Behaviours

Information seeking behaviours from the study refer to acquiring knowledge in order to efficiently use ICTs that will inure to one's benefits. The two participants who indicated that they were faced with the access divide mentioned that they just contacted their colleagues to brief them on lectures they missed as well as happenings on campus that they were not privy to;

> *I always relied on my friend for information on lectures. She briefed me on lectures that were held and on announcements that were given because she had a smartphone. I however could not write the online exams (INT 1).*

I barely have a friend in class because we did not get to know ourselves before lectures moved online and because we are freshers, we don't know ourselves. But the course rep was helpful to me and she updated me on some topics taught. As for the exams, I couldn't write. I hope we those who could not write will get the chance to do so. If not, it will surely affect us badly (INT 3).

For some of the participants who were faced with the usage divide and mentioned that they were not proficient in the use of the ICTs and the University's LMS, they said that they had to seek information and skills to efficiently use the ICTs for their online lectures and exams. Some of the participants specifically mentioned that severally they had to contact the University's IT Unit and also seek assistance from senior students who had previously gone through online learning in the University.

… I contacted the IT Unit severally and also disturbed some of my seniors to help me with typing and with the LMS since some of them were more experienced' (INT 4).

…as for me, during the online exams, I spent most of my time at an internet café close to my house. This is because I didn't know how to use the GIJ-LMS. I also don't know how to type well. So, the café attendant helped me a lot (FG 1, P1).

I disturbed the IT guys a lot I wrote all my exams on campus and where I faced challenges, I quickly sort for information from the IT unit (INT 6).

From the researcher's point of view, some of these strategies were in the right direction since they to a very large extent enabled the participants who had access to ICTs to be able to use them. This is because, according to van Dijk (2012), an individual who gains information and skills in using technologies will be able to use them efficiently. Also, according to Steele (2018) and Krick (2021) an individual who

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is faced with a divide in the use of ICTs should seek information and digital literacy programs that will boost the individual's digital skills.

In line with the Resources and Appropriation Theory, after acquiring the motivation to use ICTs and having physical and material access, one has to learn to manage the hardware and software and this can only be done through computer information and skills acquisition as well as multimedia literacy in general (van Dijk, 1999; van Deursen, 2010).

4.2.2   Savings Culture

Savings culture from the study refers to spending less and keeping some money aside to purchase hardware or software that will enable one to effectively and efficiently use ICTs. In response to this question, most of the participants adopted the strategy of savings in response to the financial divide. The researcher, therefore, believes that the strategy of savings adopted by the respondents will go a long way to achieve that. Some of the participants mentioned that they had to save some money to be able to buy extra data for online teaching and learning activities during the COVID-19 era. Others also mentioned that they had to save to buy smartphones and laptops to partake in online learning and exams. Other participants also indicated that they had to avoid spending their monies on luxuries and rather save towards buying data and getting stable internet connectivity.

> *I had to save a lot of money to buy data. There were times I used my money meant for food to buy data just to take part in online lectures and exams. Can you imagine that I even stopped betting? Betting gives me ready cash but I had to stop betting to use the money for data to join the lectures and exams (INT 15).*

> *My phone was a yam phone but because of the online lectures, I had to immediately save money to get a simple smartphone which helped me at some point and also gave me problems at other times (FG1, P4).*

> *As for the online lectures, it helped me to save a lot and I also started spending my money on more important things like data. I had to put a hold on buying new dresses and shoes just to save to ensure that I always had data (FG1, P2).*

According to Gunkel (2003), for the digital gap to be closed, people must use strategies that will allude to their socioeconomic benefits. Also in relation to the Resources and Appropriation Theory shows that if people can save and possess money, they will be highly motivated to get physical and material access to ICTs, seek digital skills in the use of these ICTs and also appropriate these ICTs to their full use to satisfy their needs.

4.2.3   Relocation

Here, relocation means moving out of areas where there is unstable and poor internet connectivity. In line with my findings from the participants from the interviews conducted and focus group discussions held. Some participants who had a divide based on their location mentioned that they had to relocate to areas where the network and internet were more stable for their online lectures and exams. Some participants said they had to move from their homes to the campuses of GIJ just to have a stable internet connection for their online lectures and exams. Others mentioned that they had to relocate from their homes to join some of their colleagues who had better network connectivity in their places of residence. Interviewee twenty (20) for instance said that her area had terrible internet connectivity and that lead to her relocation to Osu to join one of her friends.

> *I live in Kasoa and the network at my side is just terrible. I am always on edge so I had to go to Osu to perch with one of my friends in her hostel just so that I could enjoy a stable network (INT 20).*

This affirms some of the responses of the participants in the focus group discussions. Focus discussion three, participant four for instance said she had to move from Teshie to also reside with a friend in a different area because of poor internet connectivity.

> *I had to go and crash at my friend's hostel in Osu for the exams because of the struggles I faced with the network during the online lectures. Their hostel has fast Wi-Fi and that enabled me to submit my exams scripts on time. If I didn't relocate, I would have missed my exams deadlines just like I missed some of my lectures because of poor network (FG3, P4).*

Another participant also mentioned that:

> *I had to relocate from Teshie to Labadi then to Dzorwulu just to get a stable network for my online exams (FG1, P5).*

According to Caumont (2013), if you live in an area with limited broadband access, you are less likely to use the internet efficiently as compared to those who live in areas with unlimited broadband access.

Van Dijk's resources and appropriation theory of the diffusion, acceptance and adoption of new technologies also stipulates that diverse factors can prevent a person from creatively using ICTs. These factors include lack of motivation, complete lack of physical and material access, digital skills and narrowband width. He explains the narrowband width about poor connectivity. Therefore, if these same individuals can find strategies to resolve the divides they face, then the researcher opines that these individuals will be able to creatively use these ICTs. Per the findings of the study, the

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students who devised strategies of relocation to resolve their divide of poor connectivity were able to partake effectively in their online lectures and exams.

4.2.4 Self-motivation

Self-motivation from the study refers to boosting one's interest in order to efficiently use ICTs. Some of the participants who mentioned lack of motivation as a form of divide said they had to develop the interest naturally and also find their own ways of raising money and acquiring skills to utilize the ICTs available to them.

> *In my case, because I struggled to use my laptop and the LMS, I lost interest. There was no motivation at all to continue to use my laptop and the LMS. But you see, I had no choice so I had to force my interest and also motivate myself to actively partake in all online activities (FG3, P3).*

Another indicated that:

> *… for the fact that there was no other alternative to teaching and learning aside from the online mode, I had to quickly psych myself up and see it as the new norm. Therefore to motivate myself, I had to visit some of my colleagues for lectures just to still have that learning atmosphere around me… (FG3, P5).*

One of the participants also mentioned that:

> *For me too, this was my first time learning online. I just completed SHS and found my way here and you know as for SHS we don't do online stuff. Quickly I had to find my way around learning how to use the LMS. It wasn't easy but I told myself that once I can use social media on my phone, then I can also use the LMS. That's what kept me going. It wasn't easy (FG1, P1).*

In the researcher's opinion, if people can motivate themselves to use ICTs, it will in the long run allure to their own benefits and that of society. This is because the efficient use of technology by individuals in society could lead to the total transformation of society (Hauer, 2017). In this case, the students who were faced with the divide of lack of motivation were able to motivate themselves as their strategy and this enabled them to actively partake in all online activities. There is very little information in the literature on self-motivation as a strategy to curb the digital divide encountered. A thorough literature search that was done only lead to information by van Dijk (2012) on this particular strategy. Therefore, the majority of the analysis was mainly from the primary data collected from the participants of the study.

Also, according to van Dijk's Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of New Technologies, one has to be highly motivated to get physical and material access to ICTs, acquire digital skills to efficiently use ICTs creatively to satisfy one's needs. Interestingly, the findings of this study were not in sync with van Dijk's theory because the participants of this study though were faced with a lack of motivation, had physical/ material access to ICTs. However, their lack of motivation emanated from the fact that they did not have the digital skills to efficiently and creatively use these ICTs.

4.3 RQ 3. What are the implications of the unearthed digital divide on students' learning at GIJ in the era of COVID-19?

The digital divide limits workforce development and advancement potential in rural areas and low-income areas of cities. Those who find themselves on the wrong side of

the digital divide, including low-income people, those with less formal education, rural populations, the elderly, older workers and minorities suffer economic, health, social and political disparities from disconnections (Mracek, 2018). The digital divide limits business development in low-income areas of cities and rural areas. This prevents such communities from getting access to high-speed broadband because a good broadband infrastructure is an essential component of creating an ecosystem that supports entrepreneurship, enabling businesses to expand market reach and customer bases. However, due to the digital divide, rural communities cannot enjoy this (Mracek, 2018). According to Subramaniam (2021), the COVID-19 pandemic has exposed the negative impacts of the digital divide with lockdowns and restrictions affecting students and employees who are unable to have reliable internet access from home limiting their ability to work and study from home. He further asserts that a country like India has millions of children who have no access to adequate technology therefore they fell behind in education during the COVID-19 era. Steele (2018) affirms this by citing; low performance, competitive edge, inconvenience in learning and different learning experiences as the implications of the digital divide on students' learning. It is in this regard that this particular research question sought to explore the implications of the unearthed digital divide on students' learning activities in GIJ during the COVID-19 era. The implications mentioned by the participants are mostly negative in relation to how disadvantageous they were about their online learning activities due to the digital divide they encountered. In coding and developing themes from the interview and focus group discussions responses, four themes emerged: *unfair competitive edge*, poor *performance*, *lack of understanding* and *inconvenience in learning.*

4.3.1 Unfair Competitive Edge

Competitive edge refers to a factor that gives a person an advantage over another. Unfair competitive edge, therefore, defines a discriminatory advantage one possesses over another due to ICTs or some resources available to one person over another. Some participants in this study expressed worry over the fact that some students who are not academically good were likely to pass their examinations in that semester because they were privileged to have digital technologies to aid in their online learning. On the other hand, some of them who did not have access to digital technologies but are brilliant are highly likely to fail the semester's examinations because they were faced with the divide. The participants of this study acknowledged that even though they adopted their own strategies in response to the forms of digital divide encountered, there were however some implications and these implications for them were about the challenges that were encountered. One of such implications was an unfair competitive edge. Some participants opined that once they were faced with the digital divide, their colleagues who have access to digital technologies for online learning had an upper hand over them. However, they considered this competitive edge highly discriminatory and disadvantageous because of the country they find themselves in. They believed that if the governance of the country was being run well. Every university in Ghana should have equal access to ICTs for learning especially during the COVID-19 era. Joshi (2019) affirms this in his assertion that governments of countries should deliberately bridge the existing digital divide as a crucial prerequisite to ensure the success of smart city projects initiatives.

INT 9 for instance mentioned that:

> *I honestly think that if the national cake in this country is shared fairly, some of us who find ourselves in this situation wouldn't have encountered serious challenges.*

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> *Now some of our colleagues who have laptops and computers with solid internet comfortably enjoyed online lectures and exams whilst some of us were seriously suffering.*

INT 1 also said:

> *…as for the online lectures, it wasn't fair to all of us. In my case, I didn't write the exams at all. Meanwhile, my classmates that I am even more intelligent than will have good grades for the semester and I will fail. It is not fair at all…*

FG3, P2 also indicated that:

> *The online lectures surely did not favour all of us. As for this semester, the grades will not be our original grades. I couldn't submit one of my exams scripts at all and I also submitted two of them late. If the lecturers do not consider me, I will fail. Meanwhile, I am a good student. My mates who could submit all their scripts on time may do better than me, but maybe I am even better than them academically.*

Steele (2018) avers that when students have less access to digital technologies, they will be disadvantaged as compared to students who have ready access to digital technologies. She further indicates that students who have access to the internet and technologies will perform better when they enter the university because universities in the United State of America (USA) are embracing technology at an increasing rate. This assertion by Steele (2018) was substantiated in this study when some of the participants revealed that for those who did not have access to digital technologies and could not also efficiently use the ICTs they had were at a huge disadvantage as compared to their colleagues who had access to ICTs and could at the same time use them efficiently.

In van Dijk's (2012) Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of New Technologies, it is stated that if an individual is faced with challenges in their use of ICTS then they cannot appropriate those ICTs in the best way for their own benefits. Therefore, from the study, once the challenge of unfair competitive edge on the part of students was present, it indicates that it hindered the learning abilities of the students. This further deepens the already existing digital divide. This finding is also consistent with that of Baah (2011) who observed that students who have computers and others who had the chance to use their parent's phones at home for research, performed better than their colleagues who did not have access to ICTs. This according to him, therefore, brought about a disparity in the performance of students in second cycle schools in the Wenchi Municipality.

4.3.2   Poor Performance

Poor performance here basically refers to when a student performs below standard. Standards however differ from university to university. The participants asserted that the implications of the unearthed digital divide on teaching and learning activities during the COVID-19 era were not just experienced by lecturers but students as well. Aside from poor delivery and incomplete lectures which were on the part of lecturers, the students themselves mention that poor performance was one of the implications they experienced. Some of the participants said that they performed poorly in the semester when lectures and exams were strictly online because they were not Information Technology (IT) proficient and could not effectively and efficiently use their devices. They also mentioned that because of the poor delivery on the part of most lecturers, they did not easily comprehend and could not write their exams well.

Some also mentioned that their poor performance emanated from the fact that most of their lectures were usually incomplete. They said that for the few lecturers who shared their lecture slides and reading materials with them when they could not complete their lectures, those slides and reading materials were very difficult to read and understand. However, for the two students who were faced with a divide of complete lack of access, they indicated that their poor performance emanated from the fact that they could not participate in the end of semester examinations.

> *For me, I knew I will fail because I couldn't take part in any of the online lectures or exams because I did not have a smartphone and I was based in my village. I relied on a colleague for explanations from online lectures conducted. Even with that. It was not effective. As for the exams, because I couldn't write at all, I had a grade of E in all my subjects. I am bothered. I am a brilliant student yet because I didn't have a smartphone, I failed in all my courses for the first semester (INT 3).*

FG 3, P3 also said:

> *The online exams especially was not fair to all of us. I could not submit all my scripts on time and I had bad grades in three of my courses as a result. With two courses, the lecturers said they did not find my scripts even though I had submitted and with one course, the lecturer said I submitted late and so marks were deducted.*

According to Baker (2005), technologies are supposed to enhance the learning abilities of students to improve their grades. However, when the technologies are not available, students are bound to fail. Technology is a panacea to improving students' performances. It is supposed to be the 'magical tool' to correct the problems in educational settings (Baker, 2005). Now in a situation where some students are cut off from this same technology, they cannot achieve success, hence poor performance because of their fate. According to Steele (2018), when students do not fully exploit

their potential, it leads to poor performance in their academics. She further affirms that individuals who hail from low-income families are much limited to the access to income that is crucial in advancing their education and initiating innovative ideas since some do not have access to ICTs and others cannot afford connectivity to the web. Due to this, most students from underdeveloped countries will only offer programs that are theoretical and do not involve intensive research that involves the use of ICTs and internet connectivity. However, limitation by the range of information available to such students is discouraging and most often students will either avoid pursuing involving courses or even if they register for such courses, their performance is usually poor (Steele, 2018). Again for Baker (2005), in as much as technology is a panacea to improve students' performance, it can also be the cause of students' performance if it is not readily available for use. He affirms that even when technology is accessible by students, they should have good connectivity to be able to use the technology effectively and they should also be skillful in using the technology.

The Resources and Appropriation Theory by van Dijk (2012) projects that individuals who face the digital divide suffer negative consequences as a result. These negative consequences were evident in this study in the form of students' poor performance in school. These findings also affirm those of Nantwi and Boateng (2020) who found that generally in Ghana, most students recorded poor performance in their studies during the COVID-19 era because they were new to online learning. This is also in line with the findings of Adediran (2020) who disclosed that one of the negative impacts of online learning on poor and vulnerable students in the United Kingdom (UK) is poor performance because of their inability to effectively access ICTs for online teaching and learning activities.

4.3.3 Lack of Understanding

Lack of understanding here refers to the fact that because lectures were online and the participants were faced with the digital divide, they did not have a good appreciation of issues discussed in class. This theme from this study is new as compared to other findings of the digital divide studies in literature.

According to the participants, lack of understanding on their part was one of the implications of the digital divide they faced. This lack of understanding was attributed to poor delivery of lectures on the part of lecturers, incomplete lectures on the part of lecturers, poor learning environments, inability to efficiently use ICTs and learning platforms and unpreparedness for online lectures. Some of the participants said that the mere fact that they did not understand when taught during this period cost them a lot. Some said they did not understand anything during the online lectures because they could not physically see the lectures as compared to face-to-face lectures where they could also combine non-verbal communication techniques like gestures to enable them to holistically understand topics treated. Other participants attributed their poor performance to their lack of understanding of topics covered during the online sessions. Others also mentioned that they did not have conducive learning environments available to them because lectures were online and so they were always distracted. Others anticipated facing serious challenges as they progress to other classes, especially in relation to courses that will be a build-up to previous courses taught during the online sessions.

FG3, P6 for instance argued that:

> *I didn't understand anything during the online lectures. If*
> *you ask me today about what I learned in the first semester,*
> *I won't remember because I didn't understand. As for the*

> *exams, because it was online, I just did my research and wrote.*

FG2, P1 also said:

> *As for understanding, it was zero for me during the online lectures. This is because the system was always logging me off and so the time I struggle to join a class again, they are usually far gone and I don't get the head and tail of what is being taught. When this happens, I just log off entirely because there is no need to be part of a lecture I don't even understand.*

For FG2, P6, she blamed some lecturers for her lack of understanding:

> *… hmmm as for some of the lecturers, the least said about them, the better. I blame some of the lecturers for my inability to understand anything they taught. Some ended lectures in the middle of discussions and never taught those topics again whilst others go on and off the system because of poor network and when they successfully log in again, they just move on with the lecture without even going over what they were teaching. I didn't understand anything that was taught during the online lectures. I don't even remember some topics taught. It's serious ooo…*

In the Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of New Technologies, van Dijk (2012), he avowed that the consequences of the digital divide on individuals and society as a whole will be the inability of individuals to achieve their tasks and aims in this digital world because of their complete lack of access to ICTs or even their inability to use these ICTs efficiently. In this study therefore this translates into the lack of understanding of topics taught in the various courses of the semester on the part of the students. Mahto (2020) also affirms this in her study 'What is the digital divide and how is it impacting society?' when she mentioned that the effects of the digital divide on students in clearly seen in their inability to harness their full potentials. Adarkwah (2020) also butresses the

findings of this study in his research on the negative effects of online learning on some selected deprived communities in Ghana during the COVID -19 era.

4.3.4   Inconvenience in Learning

Inconvenience in learning from the study is experienced by students from low socio-economic areas because they do not have access to better digital devices and also face problems with internet connectivity.

The participants of my study argued that they were faced with a great inconvenience about online learning because of the digital divide they faced pertaining to access, financial, usage, connectivity and motivation. For the two students who were faced with the access divide, one said that she attempted visiting a community library to do some readings on her own but she had to stop because the materials she was reading from the library did not make sense to her. Some of the participants mentioned that they could barely stay connected on an online lecture for up to forty-five (45) minutes due to the unstable nature of the internet that they had. Others said that because they could not afford the expensive data needed for their online learning activities, they could barely stay active on all lectures and sometimes missed some lectures. Other participants also indicated that they were not motivated to even log on to the GIJ-LMS platform to partake in lectures because of the slow network they constantly faced.

FG1, P1 for instance said:

> *…online learning would have been very good for us if the systems in the country worked well. For me, it was highly inconvenient. Most often I start to log in about 15 minutes before the start of a lecture but because of the poor network sometimes I log out before the lecture ends…*

FG1, P3 corroborated this:

> *I did not always have money to buy data to join online lectures. I am one person who hates to miss lectures but when lectures were online I was always missing out because of data. This was very much inconvenient for me because if lectures were face-to-face, I will never miss out. Sometimes after getting data and joining the class, I struggle to hear the lecturers when they are speaking. Everything about the online lectures was a struggle for me.*

INT 10 also said:

> *…even lecture slides and reading materials were uploaded on the GIJ-LMS. This made learning inconvenient and difficult because I used my phone for online lectures Sometimes when I am reading some lecture slides, I get messages on the phone and I get distracted. I always end up reading the messages and viewing notifications when they come in. It wasn't easy…*

Muthuprasad et al. (2021) also opine that most of the developing countries like India were not adequately prepared for online learning during the COVID-19 era because good structures were not put in place. Most of the students in India were excited when learning activities migrated online. However, the problem of inconvenience in learning about students in rural areas with poor broadband connectivity was inexorable (Muthuprasad et al., 2019). Khalil et al. (2020) also assert that the sudden transition to synchronised online learning during the COVID-19 pandemic was highly inconvenient for most students in Saudi Arabia, especially medical students. This is because most of their courses are practical and measures were not effectively put in place for these practical lessons to be taught online.

According to van Dijk's (2012), with the Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of New Technologies, the digital divide will deepen if individuals are faced with implications and do not find strategies around the divide they face. Also, for Steele (2018), the effects of the digital divide will be glaring in the educational sector if institutional heads and governments do not put in efforts to curb it. She recommends the provision of ICTs to universities by the government to make learning activities more convenient for all students. She further indicates that the effects of the digital divide on education can in the long run affect the economy of a country, social activities of individuals, culture and society at large since they are all interconnected. Generally, it must be noted that literature on the digital divide was mostly quiet on the implications of the divide on students and individuals. Therefore, most of the themes generated from this study were mostly from the primary data I collected from the participants.
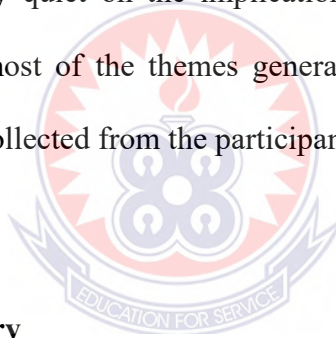
4.4   Chapter Summary

This chapter discussed the research findings that were analyzed from the set of data collected from the interviews and focus group discussions conducted with twenty (20) participants. The data collected was critically described, explained and analyzed using van Dijk's resources and appropriation theory of the diffusion, acceptance and adoption of new technologies. The research findings were further discussed under the three research questions set out in chapter one to help achieve the objectives of this study. A total of thirteen (13) themes were generated across the three-research question. For research question one, a total of five themes were discussed. They were*;* *access divide, financial divide, usage divide, connectivity divide* and *motivation divide*. Research question two had four themes: information-seeking *behaviours,*

savings culture, relocation and *self-motivation*. For research question three, four themes were discussed. They included: *unfair competitive edge, poor performance, lack of understanding* and *inconvenience in learning.*

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0   Introduction

This chapter summarizes the entire study, concludes the key findings unravelled and also makes recommendations to policymakers and academia on ways of bridging the digital divide encountered by students in Ghana. The chapter also captures the limitations of the study as well as areas for further research.

5.1   Summary

This study sought to examine the forms of digital divide encountered by undergraduate students of the Ghana Institute of Journalism (GIJ) during the COVID-19 era. The study also looked at the strategies deployed by the students in response to the forms of digital divide they encountered and further explored the implications of the unearthed digital divide on students' learning at GIJ during the COVID-19 era. The significance and delimitation of the study were also duly outlined.

There was also an extensive review of literature which served as the solid foundation upon which the findings of this study were critically analyzed. Key concepts about the Corona Virus Disease of 2019 (COVID-19) pandemic, Information and Communication Technologies (ICTs), online learning as well ad digital divide were discussed. The Resources and Appropriation Theory of the Diffusion Acceptance and Adoption of New Technologies propounded by van Dijk (2012) was mainly used for this study. The theory was highly important to the study and enabled me to make meaning out of the study.

The qualitative research approach (Creswell, 2014) and a case study design were used for this study (Yin, 2009). The qualitative research approach used enabled me to explore and have a deeper understanding of the meaning participants of the study ascribed to the phenomenon of digital divide in their natural setting. I was also able to make my own interpretations of the data collected. The case study research design also allowed me to achieve the objectives of the study and to control factors that could interfere with the validity of the study. The participants of the study were selected using the purposive sampling strategy (Wimmer & Dominick,2006). Two data collection methods were used; interviews and focus group discussions. By using semi-structured interviews and focus group discussions, I engaged twenty-five (25) participants (10 for the semi-structured interviews and 15 for three separate focus group discussions) to find out their perspectives on the phenomenon under study. Finally, data collected were thematically analysed (Braun & Clarke, 2014). This enabled me to organize my data well and to describe my data in rich detail.

5.2   Key Findings

Chapter four of this study sought to answer the three research questions that underpinned this study. In this chapter, the data collected was described and critically analyzed using the key concepts in literature as well as the theories used.

To begin with, the data revealed that the participants of the study were different demographically in terms of their sex, age, education and employment. Most of the participants were females. This reaffirmed Boateng's (2017) assertion that the majority of the students at GIJ were females because journalism was mostly referred to as a feminine profession globally. The majority of the participants were also

between the ages of 17 to 22. All the participants used for the study were first-year students with 13 being degree students and 12, diploma students. About employment, only two participants out of the 25 were employed whilst 23 of them were unemployed.

The first research question sought to explain the forms of digital divide among undergraduate students of GIJ. Five themes emerged from this research question. They were: access divide, financial divide, usage divide, connectivity divide and motivation divide. The data collected for this research question revealed that out of the 25 participants of the study, two were faced with the access divide. The financial divide was faced by 21 participants, the usage divide was also faced by 21 participants, with the connectivity divide faced by 23 participants and nine with the motivation divide. Each participant was therefore faced with at least one form of the digital divide.

About the access divide, the two participants had a complete lack of access to digital technologies. These two participants neither had a smartphone, a laptop, tablet, computer or any other digital device to enable them to partake in online lectures and exams. Their complete lack of access to these digital technologies was attributed to poverty, especially on the part of their parents (since the students were catered for by their parents). These two participants only possessed 'dumbphones' or 'yam phones' that could only be used to make and receive calls as well as send text messages. The financial divide was faced by participants who possessed smartphones and laptops to participate in online lectures, but they could not buy data and other hardware that were needed to efficiently use the smart devices they had. The usage divide was faced by participants who had access to smartphones and laptops but did not have the

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digital skills to use the devices efficiently to their own benefit. These participants could also not use GIJ-LMS to access online lectures and exams effectively. Participants who had problems with their network and internet connectivity were faced with the connectivity divide. The motivation divide was encountered by participants who were not motivated to use their smartphones and laptops because they either could not use them efficiently, did not have money to buy data or were faced with serious network challenges.

Research question two delved into the strategies deployed by the students in response to the forms of the digital divide they encountered. The themes generated were: information-seeking behaviours, savings culture, relocation and self-motivation. These findings reaffirmed van Dijk's (2012) position that to curb the digital divide, aside from relying on governments and policymakers, individuals themselves can develop their own strategies to curb the digital divide and prevent it from deepening. The data showed that instead of the students relying on the university to put in place measures to make online learning effective for them, they as students saw the need to adopt their own strategies in order not to lag behind in class. Some of the participants, therefore, sought information from their colleagues because they did not have digital technologies to participate in online learning activities at all. Others also sought help from their colleagues on how to effectively use the digital technologies they had access to. Other participants had to save money to buy data to get access to the internet for online learning. Other participants also had to relocate from their areas where they encountered poor internet connectivity to areas where the internet was more stable. Some participants who were demotivated to use digital technologies had to psych themselves up and motivate themselves to use digital technologies for their online learning. It is important to note that all of these strategies adopted by the

participants of this study to some extent enabled them to eventually achieve their aim of having effective online learning.

For the third research question which sought to understand the implications of the unearthed digital divide on students' learning at GIJ, it emerged from the data collected that these implications were; unfair competitive edge, poor performance, lack of understanding and inconvenience in learning. These implications to a very large extent hindered students' learning abilities and prevented them from being the best of themselves. From the data, it was clear that the digital divide faced by some students prevented them from competing fairly academically with their colleagues who were not faced with the divide at all. This to some extent could psychologically affect some students. Some of the participants also performed poorly because they were faced with the digital divide. These students could probably have excelled if they were not faced with the divide or even if lectures were face-to-face. The understanding was poor for some students because of the unconducive environments that some of them found themselves in. Again, these students could have had a better understanding of lectures if they were not faced with the divide or if lectures were conducted face-to-face. Some participants were also inconvenienced when learning and it was because of the general challenges they faced with online learning as a result of the digital divide they encountered.

Drawing from the Resources and Appropriation Theory of the Diffusion, Acceptance and Adoption of new technologies by van Dijk (2012), it was concluded that once people are faced with digital divide, no matter the form of the divide, they will be unable to effectively and efficiently use digital technologies to allure to their benefits. However, provided strategies are put in place by them, they can use digital

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technologies to their benefit. Lastly, once the digital divide exists, there are bound to be implications and these implications also resort to the fact that the strategies adopted may not be effective enough to completely curb the divide.

5.3   Conclusion

The findings of this study indicated that digital divide has always existed. However, it continues to deepen when measures are not effectively put in place to halt it. The study also revealed that aside the complete lack of access to digital technologies, there are also other forms of the divide that individuals can be faced with. As much as the digital divide exists, there are also strategies that individuals can uniquely adopt to curb the divide. The study also explored the implications of the digital divide on students' learning.

The study concludes that in as much as individuals can adopt their own strategies to curb the digital divide they face, most often, the individual strategies are temporary. Therefore, to permanently curb the digital divide which the researcher believes is nearly impossible, governments of countries, policymakers, Non-Governmental Organisations (NGOs), telecommunications networks all have a critical role to play. Other means of also controlling the digital divide at the university level will be for universities to collaborate and partner with all these institutions mentioned earlier to find lasting solutions to the divide.

5.4   Limitations

Just like other researches, this study had some limitations. Due to time constraints, the study only focused on undergraduate students of the Ghana Institute of

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Journalism. The scope of the study could have been broadened to other students within other universities as well. This would have helped for a multiple case analysis of the issues discussed.

Constraints were also faced in the process of data collection. Some of the participants for both the interviews and focus group discussions were very late. This delayed both interviews and focus group discussions. Some of the participants too could not make it on the day of the focus group discussions so there was difficulty in readily getting other suitable participants for the study. This, therefore, made the study time-consuming. However, with great effort, I was able to eventually get suitable replacements for the participants who missed out.

There was also the difficulty of getting a lot of literature on digital divide among undergraduate students during the COVID-19 era in Ghana and even within the African context. This is because there have been minimal studies within the area. Most of the literature however used for this study were within the Western context.

Nevertheless, these limitations did not in any way invalidate the study. The study is well placed to explain issues of digital divide among undergraduate students during the COVID-19 era.
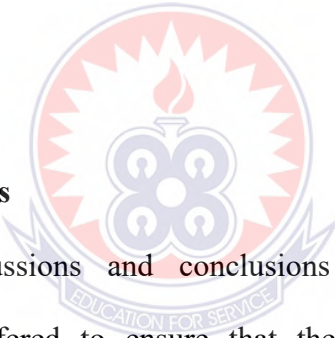
5.5   Suggestions for Further Studies

For further studies, a follow-up study can be conducted in the same area but further take into consideration students at different levels in multiple universities. This will lead to a comparative analysis on the problem of digital divide among many students

in these universities. Therefore, instead of a single case study, a multiple case study can be considered.

Since this study focuses purely on the perspectives of students in the area of the digital divide, further students can be conducted on the perspectives of lecturers and educators in general about the digital divide at different educational levels and not just the tertiary level.

Future researchers can also conduct phenomenological studies in the area of a digital divide to better understand the phenomenon of digital divide experienced by students. This will enable the researchers to have a better understanding and appreciation of the area.

5.6   Recommendations

In line with the discussions and conclusions of the study, the following recommendations are offered to ensure that the digital divide encountered by undergraduate students of the Ghana Institute of Journalism during the COVID-19 era is minimized to a very large extent. These recommendations will also go a long way to help other universities in Ghana.

To begin with, the study recommends strongly that university students should make a conscious effort to boost their digital literacy and be abreast with the use of modern technologies for their learning activities. They can do this by having good knowledge, skills and attitude toward ICTs and possessing both practical hardware and software skills by signing up for ICT classes and also engaging in self-taught programmes on

the use of ICTs for learning. This will help them greatly, especially in this era of digitization and COVID-19 where everything is online.

Also, universities should put measures in place to effectively run online teaching and learning activities. Universities can do this by providing training for lecturers, students and Information Technology (IT) staff, providing laptops for students, collaborating with telecommunication networks to provide discounted data services for students and also making available robust online learning management systems. Universities can also partner with Non-Governmental Organisations (NGOs) and philanthropists to provide ICTs and other e-resources to university students and the university community at large to effectively encourage the use of modern technologies.

Again, governments should play a leading role in enabling the creation and deployment of accessible online services and also facilitating the development of a proper non-discriminating network and internet environment throughout the country. The government can do this by liaising with the telecommunication network companies to make technology more accessible through the equal distribution of digital technologies and networks nationwide.

Finally, the study recommends that parents should provide all the necessary technologies, learning materials and gadgets for their children in universities to enable them to engage fully in online learning activities. This is because most university students in Ghana do not work or cater for themselves and are most often provided for by either their parents or guardians. When this happens, it will go a long way to bridge the existent digital divide these students face.

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APPENDIX

QUESTION GUIDE FOR INTERVIEWS AND FOCUS GROUP

DISCUSSIONS

RESEARCH QUESTION 1

1. What ICTs do you use for online learning?

2. How proficient are you in using ICTs for your studies?

3. How effective are the ICTs in your online studies?

4. What do you think you will need in addition to what you already have (Refer to question 1) to make your ICTs more efficient?

5. What are some of the benefits you derive from your use of ICTs for online learning?

6. What are some of the challenges/difficulties you encounter in your use of ICTs?

7. How do you solve these challenges/difficulties?

8. What are the forms of digital divide you face (Income, Gender, Age, Ethnicity, Education)?

9. Are there other forms of digital divide you face? What are they?

RESEARCH QUESTION 2

1. What are some of the strategies you use to solve the problems or challenges you face in relation to the forms of digital divide? (Refer to question 8)

2. In what do you achieve your aim based on your aforementioned strategies?

3. What are some of the things you do to ensure you still excel in your studies during this era?

4. What do you recommend your university should do to help bridge the gap?

RESEARCH QUESTION 3

1. Based on the challenges you faced in your use of ICTs, what were the negative effects on your online learning and online exams?

2. How was your online learning and online exams hindered due to your lack of ICTs?

3. What would have been achieved if you had all resources (ICTs) in place?

4. What are the advantages of online learning and online exams to you?

5. In our opinion, what are the disadvantages of online learning and online exams?

6. What do you recommend the University should do to help bridge the gap/ help make teaching and learning better?