UNIVERSITY OF CAPE COAST

PERCEIVED EFFECTS OF GOOGLE CLASSROOM AS A DETERMINANT OF ATTITUDE, ENGAGEMENT AND SATISFACTION AMONG DISTANCE EDUCATION STUDENTS OF THE UNIVERSITY OF CAPE COAST

ENOCH ADU AMOFAH

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By

ENOCH ADU AMOFAH

Dissertation submitted to the Department of Mathematics, Science and ICT Education of the College of Distance Education, University of Cape Coast, in partial fulfilment of the requirements for award of Master of Education Degree in Information Technology

FEBRUARY 2024

DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: ..... Date: ……

Name: Enoch Adu Amofah

Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University ofCape Coast.

Supervisor's Signature: .....Date: .....

Name: Dr. Valentina Arkorful

ABSTRACT

The prime purpose of the study was to assess the perceived effects of Google classroom as a determinant of attitude, engagement and satisfaction among distance education students of the University of Cape Coast. The descriptive survey design was used for this study. The study utilised simple random sampling to select 360 respondents for the study. The instrument used to collect data was questionnaire, and the data collected were analysed using mean, standard deviation, mean of means and linear regression. The results of the study revealed that students viewed Google Classroom as an effective platform for teaching and learning. Additionally, the study revealed that students have positive attitude towards Google Classroom instruction. Also, students of the College of Distance Education, University of Cape Coast were satisfied and engaged with the use of Google Classroom for instructional purposes. The result from the hypotheses also showed that there was a statistically significant relationship between the effectiveness of Google Classroom and students' attitude, satisfaction and engagement. The study, therefore, recommended that Management of the University of Cape Coast should adopt Google Classroom for Distance Education. It was recommended that effectiveness of Google Classroom instruction should be considered when focusing on learner engagement, positive attitudes and satisfaction.

KEYWORDS

Google Classroom

Students' Attitude

Students' Engagement

Students' Satisfaction

Distance Education

University of Cape Coast

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DEDICATION

To my lovely wife, parents and children

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CHAPTER ONE

INTRODUCTION

Background to the Study

The evolution and fast acceleration of educational technology has made distance education considerably simpler and more accessible (McBrien, Cheng & Jones, 2009). Before the advent of technology integration in distance education worldwide, distance education(DE) relied heavily on correspondence. Correspondence DE is a first-generation distance education model that relies on the use of printed materials (Eydenrych & Prinsloo, 2010). The development of the printing press by Johannes Gutenberg (about 1450 CE) revolutionised the way information was shared and marked the start of the first generation of distance education (Aoki, 2012).

In Africa, correspondence (Also known as first generation) could be traced to West Africa. The Timbuktutype of DE started as far back as the 12th Century AD in West Africa. The courses that were available to be studied at distance included jurisprudence, Islamic studies, Astronomy, government, philosophy, ethics, and grammar (Saad, 1983 as cited in Obilade, 2013). According to Taylor (1995), the manuscripts for the study were mainly handwritten, and they were kept at the University of Sankore. Currently, DE has evolved from the use of from the solely use of printed materials to radio and television lesson, Computer Assisted instruction to the use of world wide web.

The birth of the internet and the World Wide Web (WWW) has revolutionised the use of web-based application such as Learning Management System (LMS) such as Google Classroom, Moodle, and Blackboard, among

others in distance education (Heydenrych & Prinsloo, 2010). Almost all LMS on the market have collaborative features such as assignments, real-time feedback and instant grading, forum, chats and instant messages thereby making distance education accessible (Iftakhar, 2016). These collaborative features also promote learner engagement and satisfaction (Gyawali, 2021; Alim & Alimin, 2021). Learning Management Systems (LMS) are currently integrated into traditional pedagogy making rise to ePedagogy such as mobile learning, e-learning, web-based learning, and among others. According to Cojocariu, Lazar, Nedeff and Lazar (2014), the world wide web provides the opportunity to learn from any given location at any relevant time scheduled between students and facilitator or instructor.

It is important to note that DE can be purely online, face-to-face or blended learning. Online learning and blended distance education can be considered more student-centred, accessible, engaging, collaborative and flexibility (Ozdamli & Cavus, 2011). Online education, thus, is defined as formal learning process using electronic devices such as mobile phones, laptops and desktop computers through internet access in which learning environments are synchronized or asynchronized (Ozdamli & Cavus, 2011), while according to Ustun (2019), blended learning is defined as the combination of the best features, practices, pedagogy and characteristics of face-to-face and online teaching and learning.

Prior to COVID-19 outbreak in 2019, distance education, especially in Ghana was mostly correspondence-based although some technology was integrated into teaching and learning (Ozdamli & Cavus, 2011). Student met their tutors at a brick-and-mortar institution for face-to-face interactions. The

lockdown that resulted from the COVID-19 challenged the education systems worldwide to migrate to online and blended learning.

In Ghana, management and policy makers of distance education adopted pragmatic measures by shifting to blended and online learning with the aid of ZOOM, Learning Management Systems like Google Classroom, WhatsApp Messenger, Microsoft Teams, among others (Bonsu, 2021). However, some concerns were raised about the usefulness of virtual learning. Effectiveness of virtual or online learning has been a bone of contention among stakeholders of education (Wagner, Hassanein & Head, 2006). Despite the concerns of the effectiveness of online learning, empirical research (Demir and Akpinar, 2018; Feng, Liao & Ren, 2018; Bonsu, 2021) from Africa, USA, Europe and Asia confirms the effectiveness just like that of the traditional teaching.

Furthermore, students' attitude towards Google Classroom, an online learning platform, have been extensively researched in different jurisdictions. Pisirai (2021) found that, in developing country like Zimbabwe, students generally have positive attitude towards Google Classroom. According to Kassim (2020), this situation of Zimbabwe was not different from Malaysian higher institution where student also have positive attitude towards Google Classroom.

That notwithstanding, in Sub-Saharans Africa especially Ghana, the eLearning aspect of distance education is associated with a great array of problems ranging from slower network, lack of ICT devices, lack of ICT skills, lack of information communication devices, infrastructural barriers and

weak ICT policies (Gunga & Ricketts, 2007; Saidu, Al Mamun, 2022). Thus, the researcher believes that effectiveness of google classroom is a major determinant of students' satisfaction, attitude and engagement.

Statement of the Problem

Several studies on the effectiveness of eLearning for instruction in distance education has been carried out in Africa (Hussaini, Ibrahim, Wali, Libata & Musa, 2022). However, a number of challenges have been identified as factors inhibiting eLearning and its smooth implementation in Africa (Bonsu, 2021). Some of such studies from Ghana examined students' perception and attitude towards eLearning in general and Google Classroom in specific (Agormedah, Henaku, Ayite, & Ansah, 2020; Manu, Ying, Oduro & Boateng, 2021), while others (Ansong, Boateng & Boateng, 2017; Bervell, 2018) examined acceptance of LMS in higher education using various models without examining effectiveness of Google Classroom as determinant of attitude, engagement and satisfactory among students. It is thus not clear from the current literature whether students' attitudes, satisfaction and engagement are determined by the effectiveness of Google Classroom instruction. It is, therefore, against this backdrop that this current study seeks to investigate the effectiveness of Google Classroom as determinant of attitude, engagement and satisfactory among distance education students of the University of Cape Coast.

Purpose of the Study

The main objective of the study was to investigate the perceived effectiveness of Google classroom as a determinant of attitude, engagement

and satisfaction among distance education students of the University of Cape Coast. Specifically, the study seeks to:

1. Examine the effectiveness of Google Classroom for teaching and learning at the College of Distance Education, University of Cape Coast.
2. Explore the attitudes of distance students of the University of Cape Coast towards the use of Google Classroom for teaching and learning.
3. Examine whether distance students of the University of Cape Coast are satisfied with the use of Google Classroom for teaching and learning.
4. Assess the extent to which Google Classroom engages students of College of Distance Education, University of Cape Coast.
5. Examine whether effectiveness of Google Classroom instruction determines distance education students' attitude, satisfaction and engagement.

Research Questions

1. To what extent is Google Classroom effective for teaching and learning at College of Distance Education, University of Cape Coast?
2. What are the attitudes of distance students of the University of Cape Coast towards the use of Google Classroom for teaching and learning?
3. What is the satisfaction of distance students of the University of Cape Coast with the use of Google Classroom for teaching and learning?
4. What is the level of engagement of students of College of Distance Education, University of Cape Coast when taught via Google Classroom?

Research Hypotheses

The following hypotheses were formulated to achieve research objective 5;

1. $H_{0:}$ There is no statistically significant relationship between effectiveness of Google Classroom and University of Cape Coast's distance students' attitude towards the use of Google Classroom.
2. $H_{0:}$ There is no statistically significant relationship between effectiveness of Google Classroom and satisfaction of distance students of the University of Cape with Google Classroom.
3. $H_{0:}$ There is no statistically significant relationship between effectiveness of Google Classroom and distance students' engagement when using Google Classroom for instruction at the University of Cape Coast.

Significance of the Study

Firstly, the study would add to the existing literature on effectiveness of Google Class as determinant of distance students' attitude, satisfaction and engagement. Additionally, distance educational institutions in Ghana can utilise the information from the outcome of this study as guide to select appropriate and sound pedagogy to help students: 1) develop positive attitude towards google classroom; 2) collaborate with peers and 3) increase the satisfaction level of students towards google classroom.

Delimitation of the Study

The study was delimited in scope to the effectiveness of Google classroom as determinant of attitude, engagement and satisfaction among distance education students of the University of Cape Coast. Geographically, the researcher's choice of Kumasiwas influenced by the easily accessible nature of the schools because the researcher will not be able to contact the many distance education centres of the University of Cape Coast in Ghana.

Limitations of the Study

The quantitative research approach has drawbacks of its own. The study's drawbacks mostly relate to the usefulness of the data collection tools utilised. Therefore, using a questionnaire might lead to unjustified or fraudulent responses, which could negatively impact the validity of the results. But the researcher guaranteed the responders' privacy. Furthermore, the use of the questionnaire in collecting the data restricted the respondents from choosing from the available options given. This may lead to the inability of the researcher to obtain in-depth information about the problem of the study. This can compromise the validity of the results.

Organisation of the Study

The study is divided into five chapters. Chapter One consisted of the background of the study, statement of the problem, purpose of the study, research questions, research hypotheses, significance of the study, delimitation of the study, limitation of the study and organisation of the rest of the study. Cation. Chapter two covered the review of related literature on conceptual review, conceptual framework and empirical review. The conceptual review

focused on areas such eLearning, learning management system and Google Classroom. The empirical review was done to ascertain the findings of similar research while the conceptual framework provided a pictorial relationship among the variables under study.

Furthermore, Chapter Three constituted the methodology which included: research design, population, sampling technique and procedures. Also, data collection instrument and analytical procedures were outlined and thoroughly discussed. The Chapter Four provided the results and discussion of the data acquired. Finally, Chapter Five presented summary, conclusions, and recommendations for the study and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter encompasses earlier works and concepts that have been unearthed through research. This section was divided into conceptual review, conceptual framework and empirical review. The conceptual review centred on eLearning (online learning), problems associated with e-learning, distance education, blended learning, mobile learning, learning management system and Google Classroom. The conceptual framework depicted the relationship among the independent variable (effectiveness of Google Classroom) and the dependent variables (attitude, engagement and satisfaction), while the empirical literature is reviewed in accordance with the research objectives.

Conceptual Review

Concept eLearning

Electronic learning, which is also known as online learning, eLearning or e-learning is defined by Goyal (2012) as "the science of learning without using paper printed instructional material" (p.240). To Goyal, such instruction takes place on a digital tool such as a computer. Chitra and Raj (2018) also described e-learning as "the intentional use of networked information and communication technology in teaching and learning" (p.11). E-learning has also been espoused as the use of digital learning resources to deliver distance education, online learning or blended learning (Kassymova, Issaliyeva & Kosherbayeva, 2019). Thus, e-learning relies on information communication technology or digital tools to provide instruction. However, the term e-

learning is sometimes used interchangeably virtual learning, distributed learning, networked learning, and web-based learning although minor differences exist in them. E-learning also encompasses more than online or web-based learning because it is more structured, however, it can be synchronous or asynchronous (Goyal, 2012; Bonsu, 2021). This, however, does not mean web-based learning cannot be structured, synchronous or asynchronous.

According to Fernández-Rodriquez, Rainer and Miralles (2014), e-learning, virtual learning, or web-based learning is enabled by the internet and ICT devices such as personal computers, notebooks, netbooks, interactive whiteboards, network systems, multimedia, educational software like learning management systems like Moodle, Google Classroom, etc; and synchronous software like Google Meet and Zoom.

Benefits of eLearning (E-Learning)

First, educational resources for eLearning are reusable. Unlike face-to-face teaching where instruction cannot be re-use, e-learning resources could be accessed by students unlimited number of times. Scholars (Bonsu, 2021; Zervas & Sampson, 2014) suggest that currently, many online-based open-access digital repositories and libraries have been developed for learners and tutors to use for their teaching and learning activities.

Again, eLearning is cheaper than face-to-face teaching once the initial cost for setup has been taken care of. According to Weller (2004), the initial cost associated with thew development and deployment of eLearning is higher in terms of infrastructure and training material costs than conventional

teaching. But afterwards, the training materials and infrastructure become reusable thereby saving a lot of money. Also, Guragain (2016) suggests that, regarding e-learning, the cost associated with travel and accommodation are slashed since tutors and students can interact anywhere, any place without the need to meet at one place.

Furthermore, the interactivity of eLearning makes it advantageous than conventional teaching. eLearning offers a higher degree of among instructors and learners. With eLearning, Radović-Marković (2010) suggests that tutors can exchange ideas effortlessly with each other. Learners on the other hand, can also receive instant feedback on their academic progress. Bonsu (2021) asserts that, interactive systems used in eLearning includes LMS, Hypermedia, SMS and Email.

Again, Abed (2019) remarked that eLearning offers easy access to the tutor/instructor outside the official working hours. Unlike the conventional teaching where when instruction ends the student is unable to access the tutor easily, with eLearning, the learner could send queries, questions or comments to the tutor via LMS such as Moodle or Google Classroom, email, instant messaging, or chat system (Abed, 2019).

Also, Guragain (2016) explains that eLearning is scalable. This means that, same infrastructure, equipment and instructional materials can be used for either a larger body of students or smaller number of students without incurring additional cost for the instructional materials.

Lastly, eLearning is more effective than the conventional teaching. The effectiveness of eLearning is evident by several research findings. eLearning

or blended-enabled eLearning successfully increase students' academic performance, critical thinking and communicative skills (Bonsu, 2021). Additionally, the multimedia format used in e-learning makes teaching and learning exciting and engaging. According to Guragain (2016), learners tend to remember knowledge acquired from multimedia materials.

Concept Mobile Learning (m-Learning)

Because it is a relatively new approach to teaching and learning, the concept of m-learning or mobile learning lends itself to numerous meanings. Traxler (2005) described m-learning as an educational activity when portable or palmtop devices are dominant or exclusive technology. Behera also proposed that m-learning is a sort of teaching and learning that is accomplished via the use of lightweight, portable computing devices (2013). In addition, Behera (2013) defined mobile learning as learning via mobile computational devices. According to Colazzo, Ronchetti, Trifonova, and Molinari (2003), m-learning is any teaching and learning process made available by mobile technology.

Thus, the above definitions presuppose that mobile learning is delivered mainly through mobile phones, palmtops, smartphones, and handheld computers such as tablet computers, laptops, personal digital assistants (PDAs), and personal media players. According to Behera (2013), the admittance of laptop and tablet computers in m-learning is subject to debate; however, most educational technologists make reference to tablet and laptop computers as mobile learning technologies.

In a nutshell, the aforementioned descriptions assume that mobile learning is primarily offered via mobile phones, palmtops, smartphones, and

handheld computers such as tablet computers, laptops, personal digital assistants (PDAs), and personal media players. Even though the inclusion of laptop and tablet computers in m-learning is open to debate, most educational technologists refer to tablet and laptop computers as mobile learning technologies (Behera, 2013). Mobile learning utilizes a number of technologies. Handheld computers, MP3 players, media player players, laptops, cell phones, smartphones, tablet computers, notebooks, GSM, game consoles, and Personal Digital Assistants are examples of these technologies (PDAs). These technologies are depicted in figure 1 below:

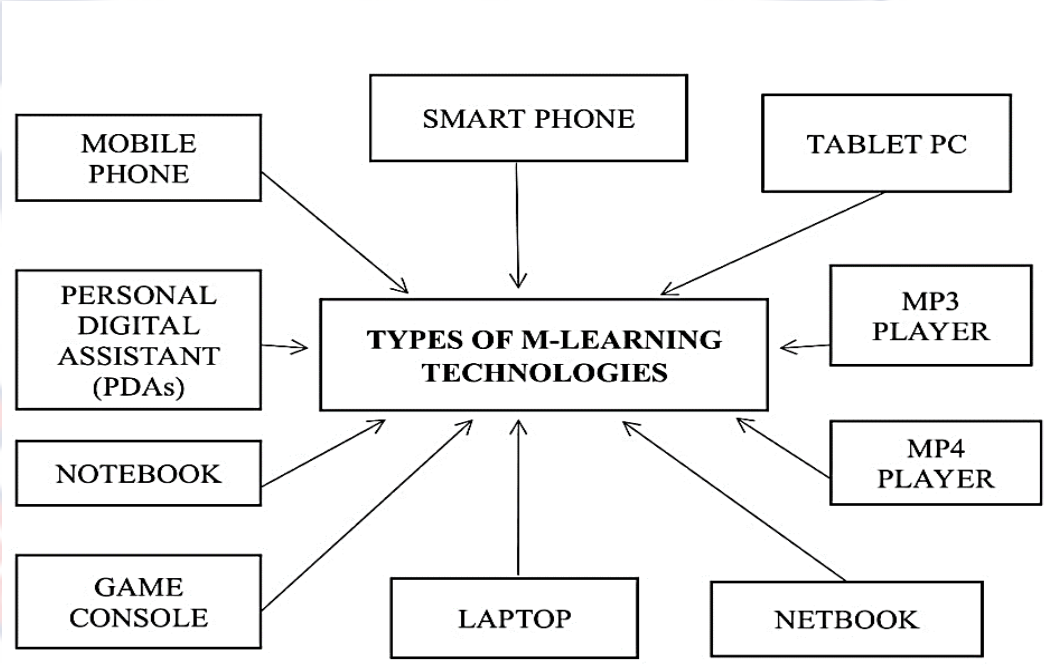

Figure 1: M-Learning Technologies

Source: Adopted form Bonsu (2021)

Characteristics of eLearning and mobile learning

Both eLearning and mobile learning share similar characteristics. In fact, some scholars argued that mobile learning is subset of eLearning and

they are both used in distance education, thereby making both share the same characteristics or features (Marghescu, Chicioreanu & Marhghescu, 2007; Zouhair, El Habib & Abderrahim, 2016). Among some of the features or characteristics of e-learning and mobile learning are synthesised from Bhatia (2011), Rasumalla (2018) and Bonsu (2021) and outlined below:

1. **Anywhere, anyplace**: E-learning and mobile learning enable students to access educational resources remotely through computer and smartphone, regardless of their location.
2. **Flexibility:** e-learning and mobile learning accommodate the needs of learners. In fact, handicap students who are unable to attend regular classes can benefit significantly from online courses.
3. **Interactivity and collaboration**: learners can collaborate with each other and their tutors or instructors anytime, anywhere. This is done through chats, comments etc. features of LMS and video conferencing tools like Zoom.
4. **Blended:** Teachers can utilise e-learning and mobile learning in a blended learning instruction, for classwork, homework, and projects, among others.
5. **Engaging:** e-learning and mobile learning are based on current technology that students utilise daily; hence, it increases student engagement.
6. **Permanency:** Unless erased or cleared, the educational materials or instruction remain permanently on the computer, smartphone, or server.
7. **Immediacy**: Mobile learning and eLearning Instructional resources may be obtained instantly and from any location.
8. **Accessibility**: The teaching resources are always available wherever and whenever students need to use them.

Problems Associated with eLearning and Mobile learning

The slow rate of online learning deployment is due to the numerous problems that e-learning and mobile learning face. According to Bonsu (2021), among these obstacles include a lack of infrastructure, sluggish internet, unfavourable government legislation, the expensive cost of computers and smartphones, and a shortage of online or e-learning specialists.

Firstly, infrastructure issues impede e-learning deployment in Africa (Kasse&Balunywa, 2013). Computers, servers, internet connectivity, cameras, LMS software, multimedia and video editing tools, and other hardware and software infrastructure which are widely used in e-learning implementation are virtually non-existent in some African countries such as Ghana (Bhuiyan, 2010), making implementation of e-learning in Africa difficult.

Secondly, the internet speed in Africa is slower than the rest of the world (Les Cottrell, 2013). Most areas in Ghana have no 4G coverage while 5G is available in even rural areas in the developed countries. According to Baylon and Antwi-Boasiako (2016), the weak and sluggish data bandwidth in Africa also impedes uploading and downloading of learning resources, and download errors, among others.

Thirdly, government policies are supposed to facilitate the use of educational technology in teaching. Unfortunately, some countries in Africa such as Ghana have unfavourable government policies that inhibit e-learning utilisation. In Ghana, for example, the Education Service (GES) has prohibited the use of mobile phones and personal computers in senior high schools

(Bonsu, 2021). The reason for the restriction is due to authorities' belief that these devices might be a distraction (McLean, 2016). Additionally, although some countries like Ghana have ICT policies in place, lack of political will to implement these policies also affect eLearning and mobile learning acceptance.

Furthermore, negative attitudes about mobile learning and e-learning are a significant hurdle to their adoption in Africa. Some students and educators are sceptical and hesitant to adopt them. For instance, Mutisya and Makokha (2016) discovered that Kenyan teachers exhibited negative attitudes regarding the usage of e-learning. They also labelled these students and professors as technology averse, phobic, and conservative.

Lastly, to combine technology with sound pedagogies, appropriate online learning and instructional design expertise are required (Bonsu, 2021). According to Bhuiyan (2010), "higher education institutions have faced a variety of pedagogical problems that they must overcome if their efforts to integrate e-learning are to bear fruit." The fact is that teachers in Ghana's senior high schools lack the ability to incorporate e-learning and mobile learning into their classroom instruction (Bonsu, 2021).

Concept of Distance Education

Distance education is defined as organised instruction in which the student and the tutor are separated by both time and location. Distance learning, as described by the United States Distance Learning Association, is "the acquisition of knowledge and skills through mediated information and

instruction, embracing all technologies and other kinds of learning at a distance" (Roblyer & Edwards, 2000, p. 192). Therefore, it may be said that distance learning follows the same formal framework as its traditional counterpart, with the exception that the student and the teacher are separated by time and location world.

DE is one of the fastest-growing kind of domestic and international education in the globe (Gunawardena & McIsaac, 2003). At least the last 100 years have seen the development of distance education as a form of instruction (Moore & Kearsley, 1996). The International Council for Correspondence Education (ICCE), an organisation connected to UNESCO, changed its name to the International Council for Distance Education (ICDE) in 1982, which led to the term "distance education" becoming widely used (Moore & Kearsley, 1996).

Models of Distance Education

First Generation: This Model got its start with Gutenberg's creation of the printing press, which transformed the way knowledge was distributed (about 1450 CE).In Africa, correspondence (Also known as first generation) could be traced to West Africa. The Timbuktian scholarship started as far back as the 12th Century AD. The courses that were available to be studied at distance included jurisprudence, Islamic studies, astronomy, government, philosophy, ethics, and grammar (Saad, 1983 as cited in Obilade, 2013). The manuscripts for the study were mainly handwritten, and they were kept at the University of Sankore. However, modern distance learning was first made possible by the growth of postal services in the 19th century and has been used

at least since Isaac Pitman began teaching shorthand through correspondence in the Great Britain in the 1840s (Moore & Kearsley, 2005, p. 235).

With the establishment of the External Program in 1858, the University of London also asserts that it was the first university to provide degrees through distance learning. In the United States, William Rainey Harper, the first president of the University of Chicago, created the idea of distance education. The research university had satellite colleges of education in the surrounding area, and in 1892 he also encouraged the idea of correspondence school courses to further promote education. Columbia University later put this idea into practise (Levinson, 2005, p. 69).

In Ghana, the University of Education was the first to offer dual-mode distance education in 1996, with 80 percent face-to-face and 20 percent correspondence. Study materials are distributed at the various satellite campuses in Ghana for collection by students. Students then attend weekly face-to-face instruction once every two weeks while studying the modules on their own. Soon, the University of Cape Coast (in 2001), the University of Ghana (in 2007), Kwame Nkrumah University of Science and Technology (in 2004), and University of Development studies all followed the footsteps of UEW with a similar dual-mode correspondence distance education model (Kumi-Yeboah & Boadu, 2015).

Second Generation: The second generation is characterised by the addition of radio and television to print resources as educational media. This generation of distance education is frequently referred to as the "industrial mode," with the ability to educate thousands of students simultaneously and a

highly specialised division of labour for creating and distributing educational materials. The University of Wisconsin, Iowa State University, British Open University, Anadolu University's Open Educational Faculty in Turkey, Korea National Open University, and the Open University of Japan were among the numerous open universities and higher educational institutions around the world that began as second generation DE institution (Heydenrych & Prinsloo, Aoki, 2012).

Third Generation: According to Taylor (1999), the third generation is known as the multimedia and computer-assisted learning. The 1950s and 60s revolutionised Computer-assisted instruction, teaching machines, and punch boards, particularly that of Pressey, Skinner, and Crowder (Bonsu, Bervell, Kpodo, Arkorful & Edumadze, 2020). CAI is used interchangeably with Computer-Based Instruction, Computer-Assisted learning, Web-based teaching, and Courseware. CAI traditionally includes drill-and-practice, tutorial, gamification, simulation, and problem-solving. The Department of Information Science at the University of South Africa (UNISA) started using CAI in 1992 in order to teach the creation of search strategies as part of a course in information organization and retrieval. UNISA has been investigating CAI as a teaching strategy for the past ten years. A new CAI course on creating search methods was created at UNISA in 1998 (Fourie, 2002).

Fourth Generation: The rise of online group communication and resource sharing was categorized by Taylor (1995) as the fourth generation of distance education. Fourth-generation distance learning relies on two-way communications technology that enable real-time communication between

remote students and between remote students as well as between remote students and the teacher. Early in the 1960s, communication across computer networks was established. A networking and communication efforts persisted; the US government created ARPANET (Advanced Research Projects Agency Network) in 1969 as an experiment in multisite packet switching (Heydenrych & Prinsloo, 2010). In an effort to exchange hardware and software resources, the experiment sought to link academics with remote computer centres. These links between researchers and the interconnection process served as the foundation for the Internet in the 1970s (Heydenrych& Prinsloo, 2010). In the early 1990s, at CERN, a particle accelerator facility in Switzerland, Sir Tim Berners-Lee created the World Wide Web.

African distance education is increasingly moving to digital, while more recent forms of e-learning like massive open online courses (MOOCs) are also proliferating. In South Africa, the internet, videoconferencing, and other forms of media are being utilised in DE in the late 1990s (Roberts & Associates, 1998). In particular, the University of South Africa was the first DE institution to utilise Tele and videoconferencing in teaching distance students (The Commonwealth of learning, 2002). Currently, all distance education in Africa utilises internet technology such as learning management software, teleconferencing and videoconferencing in teaching.

Learning Management System (LMS)

A learning management system (LMS) is a piece of software or platform that develops, controls, and maintains educational (Watson & Watson, 2007; Bervell, 2018). LMS, according to World Bank (2010), is an

application that automatically manages training is another definition of the term. Throughout the world, LMS have been utilised for entirely online, offline, and blended learning. LMS is the foundation of e-learning and mobile learning since it is now used to support e-learning and mobile learning activities (Bervell, 2018).

Learner enrolment, activity reporting, messaging, discussion boards, carrying out evaluations, and certification are just a few of the features found in LMS. And they are synchronous, open-network frameworks designed to promote collaborative, active, authentic, creative, and constructive learning (Kundi & Nawaz, 2011; Aljaloud, 2012). Additionally, it is crucial for organising, devising, and carrying out educational activities and producing successful educational outcomes for students (AlphaLearn, nd.).

A learning management system (LMS) "offers access to student-centred teaching methodologies, better accessibility, assessment and evaluation capabilities, and improved management of course content and administrative activities" (Bervell, 2018, p. 46). Additional features of LMS include the ability to customise learning environment of the learner, communication tools such as chats and forum, and best practices for education that enable instructors to deliver instruction (Tu et al, 2012). There are numerous LMSs on the market right now, including Google Classroom, Moodle, Blackboard, WebCT, Sakai, and Docebo. They could be proprietary (closed source), like Blackboard, or open-source, like Moodle.

Due to its benefits, such as organising learning in a single location, monitoring students' learning progress, cutting training costs, enabling micro-

learning at scale, enabling gamified learning, being simple to customize, consistent and scalable, and supporting multimedia learning, LMS is now widely used by organisations and educational institutions.

Google Classroom

One of the top learning management systems (LMS) for teaching and learning is Google Classroom. Google Classroom assists teachers in time management, class organisation, and student communication. It is available to anyone with Google Apps for Education, a free suite of productivity tools including Gmail, Drive and Docs (Iftakhar, 2016). Google Classroom is available as a desktop and mobile app that may be downloaded or used through a web browser. Google Drive, Calendar, Board Clock, Forms, Hangouts Meet, Docs, Sheets, Slides, and Gmail are all linked with Google Classroom (Rohman, Baskoro & Ningrum, 2020).

Additionally, Google Classroom offers features such as registration forms, class schedules, and study objectives that make it easier teaching and learning. Students can join courses using codes (Rohman, Baskoro & Ningrum, 2020). Additionally, students can access study materials like syllabuses, registration forms, and articles, videos and audios. They can even check future assignments using Google calendar. Additionally, Google Classroom makes it simpler for teachers to know who has and has not finished an assignment, as well as to provide real-time feedback and grades (Iftakhar, 2016).

Google classroom (G.C)enables communication and interaction between students and teachers to be more effective, and the most important

thing is that the platform is economical and secured. Additionally, GCvalues data privacy hence user content or student data are not used for advertising purposes (Hussaini, Ibrahim, Wali, Libata & Musa, 2020; Rohman, Baskoro & Ningrum, 2020).

Conceptual Framework

According to Adom, Hussein, and Joe (2018), the entire research's process and methodology must concur with the variables and their relationships being studied as well as the context in which they are used. A conceptual framework uses a diagram to explain the relationships among the variables of the research problem. For this study, the independent variable (Effectiveness of Google Classroom) determines the dependent variables (Attitude, engagement and satisfaction with Google Classroom). The relationship among the independent and the dependents variables are depicted in figure 2 below:

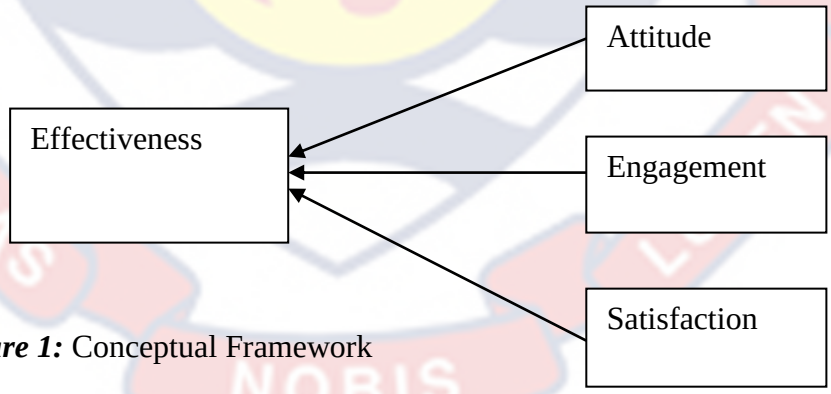

Figure 1: Conceptual Framework

Source: Author's Own Construct (2023)

Empirical Review

Effectiveness of Google Classroom

Hussaini et al. (2022) assessed students' perception about the usefulnessof Google Classroom as a teaching and learning tool. The study's findings showed that Google Classroom is excellent at increasing students' access to and attention to their lessons, and that the knowledge and skills they acquire therein encourage them to become active learners.

Similarly, Hussain, Saeed, and Syed (2020) conducted research on the efficiency of the online learning system during theCOVID-19 wave. The overall results showed that, during the COVID-19 epidemic, online learning was a useful and effective method of meeting the educational demands of students who lived far away.

Again, Means, Toyama, Murphy, and Baki (2013) used meta-analysis to examine the effectiveness of online and blended learning. According to the study's findings, pupils who learned online did marginally better on average than those who received face-to-face training.

In 2020, Rohman, Baskoro, and EndahCahyaNingrumalso looked at Google Classroom's effectiveness and efficiency in Malaysia. The study's findings demonstrated the effectiveness of Google Classroom as a tool for time management.

Students' Attitude towards Google Classroom

The opinions of undergraduate student teachers toward the usage of Google Classroom for remote online teaching and learning were examined by

Pisirai in 2021. According to the results of the qualitative study, although most students loved the Google Classroom programme, some developed negative opinions about it due to its lack of flexibility, affordability, and accessibility.

Kassim (2020) also looked at how Malaysian university students felt about using Google Classroom as a learning management system. Quantitative research was the technique used. The findings showed that the participants had very favourable attitude on Google Classroom.

Similar research was conducted on the attitude of high school learners in the Philippines towards Google Classroom as a learning management system by Esber (2019). The findings showed that students have a positive attituderegarding using Google Classroom as a learning management system.

Students Satisfaction of Google Classroom

Flejoles and Perlas (n.d.) determined students' engagement, satisfaction and difficulties encountered in Google Classroom. The study found that students' engagement was higher.

At the State Islamic Institute of Kendari in Indonesia, a similar study by Alim and Alimin (2021) attempted to investigate students' perspectives on the usefulness and enjoyment with Google Classroom (GC). The findings indicate that Google Classroom led to high satisfaction.

Additionally, Thongsonkleeb (2020) looked at how satisfied students were with the Google Classroom activities they completed in their English for Proficiency Test Preparation lesson. According to the study, students were quite satisfied with their GC activities.

Lastly, Quino (2022) evaluated how well college students perceived and liked Google Classroom as a teaching and learning tool. Students were quite satisfied with Google Classroom as a teaching tool, according to the quantitative research that used a descriptive approach.

Students Engagement with Google Classroom

The usage of Google Classroom as an alternate learning management system was examined in Gyawali (2021), as well as the instructor's experiences with its application during the Coronavirus pandemic. The use of Google Classroom, according to the research, has proven convenient, practical, and useful for managing learning resources and assignments because it allows students to save materials for later use, turn in assignments on time, and foster collaborative learning environments.

In a similar vein, the Google Classroom Platform's impact on learning at the teacher education level were also evaluated by Gupta and Pathania (2020). The findings revealed that students could electronically converse with other students in their subject. It was also demonstrated that in such a classroom setting, teachers could provide better individualised attention and pupils created a sense of community.

Chapter Summary

This chapter reviewed literature on the perceived effects of Google classroom as a determinant of attitude, engagement and satisfaction among students. The review of related literature looked at eLearning (online learning), problems associated with e-learning, distance education, blended learning, mobile learning, learning management system and Google

Classroom. Also, the literature review considered the relationship among the independent variable (effectiveness of Google Classroom) and the dependent variables (attitude, engagement and satisfaction). Again, the chapter reviewed empirical literature and also provided a conceptual framework for the study.

CHAPTER THREE

RESEARCH METHODS

Introduction

This Chapter outlined the methodology that the researched followed in carrying out the study. It provides the detailed description of the research design, target population, sample and sampling procedure, research instruments, data collection procedures and technique and ethical considerations.

Research Design

A descriptive research survey methodology was utilised for this investigation. This design, known as fact-finding, entails gathering information directly from a population at a specific period (Kothari, 2004). The descriptive research method is suitable for this study because it enables the researcher to examine particular social phenomena, such as the respondents' opinions and attitudes (Ponterotto, 2005). Thus, a descriptive research study establishes and documents the nature of the problems at hand, according to Gay (1992).

The descriptive research methodology was the best choice for this study since it allowed the researcher together responses from a wide range of respondents. Descriptive research design sometimes produces unreliable results since it could delve into private matters of respondents. The researcher, however, removed items or statement that elicit for private matters thereby ensuring reliable responses.

Population

A population in research refers to a group of people with common observable features that a researcher hopes to apply in research (Fraenkel & Wallen, 2003). Therefore, 19,957 students from the University of Cape Coast's college of distance education centres made up the study's target population. However, 2170 students from 7 University of Cape Coast College of Distance Education study centres in Kumasi made up the population that could be accessed.

Sampling and Sample Procedure

Sampling techniques is essential because it is used to select participants that can accurately represent the total population for the study. Out of the accessible population of 2170 students from the college of distance education centres in Kumasi, 360 students were used for the study based on Krejcie & Morgan's (1970) table for determining sample size. Moreover, a simple random sampling technique was also used to select the participants from each study centre in Kumasi. The simple random sampling technique was utilised since study it is a vital tool to achieve a fair distribution of the selected members of the sample. Within the simple random sampling technique, the researcher chose the lottery method to enable each participant to have an equal chance to be selected for the study.

Data Collection Instrument

For this study, a self-developed questionnaire was used. This questionnaire had four (4) sections. Section 'A' consists of demographic data of respondents and Section 'B' comprised effectiveness of Google Classroom for teaching and learning. Section 'C' captured the data on attitudes of

distance students of the University of Cape Coast towards the use of Google Classroom, Section 'D' explored whether distance students of the University of Cape Coast are satisfied with the use of Google Classroom for teaching and learning and Section "E" examined the extent Google Classroom engages students of College of Distance Education, University of Cape Coast. Also, a five-point Likert scale with the following options was used to designate each item on the questionnaire: "Strongly Agree", "Agree", "Neutral", "Disagree" and "Strongly Disagree". It is significant to note that the investigator chose to adopt a questionnaire since it is inexpensive and can be used to reach a larger group of respondents.

Validity and Reliability of the Instrument

First, two specialists from the Mathematics, Science, and ICT Department of the College of Distance Education at the University of Cape Coast thoroughly examined the items to verify that the questionnaire's contents meet face and content validity. Their Observations, corrections and amendments spotted were incorporated into the final draft that was administered to the respondents. Secondly, the test-retest reliability coefficient was used to ascertain the reliability of the instrument used for data collection. This was done by administering 50 questionnaires to the respondents at Obuasi Senior High Technical School. After two weeks of initial administration, the same instrument was re-administered to the same respondents and the data collected was analysed with Pearson product-moment correlation coefficient in SPSS. The coefficient of stability obtained was 0.85. This indicates that the questionnaire was excellently reliable. Table 1 shows the detailed of the reliability coefficient for each variable:

Table 1: Cronbach's Alpha Reliability

Variable	Cronbach Alpha reliability coefficient
Effectiveness of GC	.921
Attitude	.868
Satisfaction	.789
Engagement	.725

Source: Field Data, Amofah (2022)

Data Collection Procedure

The researcher obtained letter of introduction from the College of Distance Education, University of Cape Coast (UCC). The letter was sent to College of Distance Education, UCC and its 7 centres at Kumasi to seek permission to administer the questionnaire to students of the College. The research used two months to gathered the data from the 7 study centres at Kumasi. In each face-to-face week, the researcher visited two study centres to brief the students on the purpose of the research before the questionnaires were administered. The respondents were given ample time to complete and return the questionnaire. In all, 360 questionnaires were administered while 360 were filled correctly and returned, representing100% return rate.

Data Analysis

The questionnaire was serially numbered and coded for quick identification and analysis while the results were being analysed. With respect to the coding, the items on the scale were given numerical values of 1, 2, 3, 4 and 5 for each Likert scale indicating "strongly disagree (1), disagree (2), agree (3), Neutral (4) and strongly agree (5)". All responses for each item in the questionnaire were then analysed with the Statistical Product for Service

Solution (SPSS 21.0). Descriptive statistic such percentages and frequencies were utilised for the background data of the respondents, while mean and standard deviation were usedto analyse research question 1, 2, 3 and 4. Regarding the hypotheses one, two and three, on the other hand, were analysed with linear regression.

Ethical Considerations

Measures were taken by the researcher to ensure compliance with acceptable ethical standards and practices in research. First, a letter of introduction explaining the study's purpose was secured from the University of Cape Coast's College of Distance Education and submitted to the seven study centres for authorisation to collect data. Also, a clause assuring respondents of anonymity and confidentiality was included in the introductory paragraph of the questionnaire. Furthermore, the findings of this study were objectively reported as these are the most significant and valuable aspects of research. Lastly, the researcher analysed and reported the data objectively without bias or personal prejudice.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The purpose of this study was to investigate the effectiveness of Google Classroom as determinant of attitude, engagement and satisfactory among distance education students of the University of Cape Coast. A self-developed questionnaires were used to gather data from respondents for this study. The data collected were analysed through the computation of descriptive statistics (percentages, mean and standard deviation) and multiple regression. This chapter presented the interpretations, discussion and inferences that were made from the analysis.

Analysis of Data from Respondents

Table 2 shows the respondents' results regarding their gender and age group.

Table 2: Demographic Information of Respondents

Category	Sub-Category	No.	%
Gender	Male	198	55.0%
	Female	162	45.0%
Age	Below25 years	72	20.0%
	26-30 years	90	25.0%
	31-35 years	126	35.0%
	Above 36 years	72	20.0%
Total		**360**	**100.0%**

Source: Field Data, Amofah (2022)

It is evident from Table 2 that, out of the 360 students who participated in this study, 55.0% were males, whiles 45.0% were females. Thus, majority of the respondents for the study were males. Again, concerning the age groups of the respondents, 20.0% were below 25 years, 25.0% were between 26 to 30 years, 35.0% were between 31 to 35 years, and 20.0% were above 36 years. Thus, the majority of the respondents were between the ages of 31 to 35 years.

Analysis of Research Questions

Research Question One (1): To what extent is Google Classroom effective for teaching and learning at College for Distance Education, University of Cape Coast? The results are presented in Table 3.

Table 3: Effectiveness of Google Classroom for Teaching and Learning at College for Distance Education, University of Cape Coast

Statements	M	SD
Google Classroom is effective than face-to-face teaching.	3.2	1.4
Google Classroom helps me to understand course material.	4.0	.97
Google Classroom increases my critical thinking skills.	3.8	1.1
With Google Classroom I have access to a wide range of teaching and learning resources such as videos, images etc.	4.2	.75
I am motivated to learn more when using Google Classroom.	3.9	.98
I can complete group assignment faster when using Google Classroom.	3.9	1.0
Mean of means	**3.6**	

Source: Field Data,Amofah (2022)

From Table 3, the result indicated that the students were unsure whether Google Classroom is effective than face-to-face teaching (M=3.2, SD=1.4). Also, the respondents agreed that Google Classroom helps them to understand course material (M=4.0, SD= .97). Again, the respondents also agreed with the statement that sought to find out whether Google Classroom increases their critical thinking skill (M=3.8, SD=1.1).

Furthermore, e-learning teaching resources are always available wherever and whenever students need to use them. It was therefore not surprising when the respondents agreed that Google Classroom offer them access to a wide range of teaching and learning resources such as videos, text and images (M=4.2, SD=.75). I addition, the respondents also agreed that Google Classroom motivate them to learn more (M3.9, SD=.98) and complete group assignments faster (M=3.9, SD=1.0).

The overall mean of means of 3.8 indicated that in general, the respondents viewed google classroom as an effective platform for teaching and learning. The outcome of the study is line with Hussaini et al. (2020) who revealed that Google Classroom is effective in improving Students access and attentiveness towards learning, knowledge and skills gained through Google Classroom makes Students to be active learners. In agreement, Rohman, Baskoro and EndahCahyaNingrum (2020) also showed that Google Classroom is efficient tool regarding time availability in their study.

Research Question Two (2): What are the attitudes of distance students of the University of Cape Coast towards the use of Google Classroom for teaching and learning? The results are presented in Table 4.

Table 4: Attitudes of Distance Students of the University of Cape Coast towards the Use of Google Classroom for Teaching and Learning

Statements	M	SD
I like to use Google Classroom for teaching and learning purposes.	4.0	.98
I believe Google Classroom engages me just like face-to-face teaching.	3.9	1.1
I find Google Classroom more exciting.	3.6	1.0
I believe Google Classroom with its immediate scoring help me evaluate my own understanding and performance.	4.1	.73
I would recommend Google Classroom to other students.	4.22	.69
I hold a positive view of Google Classroom.	4.2	.85
Mean of means	**4.0**	

Source: Field Data, Amofah (2022)

Table 4 showed that the respondents like to use Google Classroom for teaching and learning purposes (M=4.0, SD=.98). They also believe Google Classroom engages them just like face-to-face teaching (M=3.9, SD=1.1) and it is more exciting to use (M=3.6, SD=1.0).

Again, the key feature of the Google Classroom Platform is its immediate scoring. Therefore, it came as no surprise when the respondents agreed that the Google Classroom with its immediate scoring help them to evaluate their own understanding and performance (M=4.1, SD=.73).

In addition, the respondents agreed with the statement that sought to explore whether they would recommend Google Classroom to other students

(M=4.22, SD=.69). And they also held a positive view of Google Classroom (M=4.2, SD=.85).

The mean of means value of 4.0 revealed that the respondents have positive attitude towards Google Classroom for instructional purposes. This finding corroborates with the finding of Pisirai (2021) who explored undergraduate student teachers' attitudes towards the use of the Google Classroom remote online teaching and learning in Zimbabwe. His research found that students have positive attitude towards Google Classroom. Kassim (2020) also found that students' attitude towards Google Classroom was positive in Malaysia.

Research Question Three (3): What is the satisfaction of distance students of the University of Cape Coast's with the use of Google Classroom for teaching and learning? The results are presented in Table 5.

Table 5: Distance students of the University of Cape Coast's Satisfaction with the Use of Google Classroom for Teaching and Learning

Statements	M	SD
I am satisfied with how I can easily monitor my academic progress in online courses via Google Classroom.	4.0	.97
With Google Classroom, assessment of my academic progress is more accurate.	4.0	.97
eLearning through Google Classroom is more stimulating.	3.81	.99
I am satisfied with my learning with Google Classroom.	4.1	.96

I am satisfied with the level of student interaction in Google Classroom.	3.7	1.2
I am satisfied with my overall experience with Google Classroom	4.0	1.0
Mean of means	**3.94**	

Source: Field Data, Amofah (2022)

Table 5 sought to examine distance students of the University of Cape Coast's satisfaction with the use of Google Classroom for teaching and learning. The outcome of the analysis revealed that students were satisfied with how they can easily monitor their academic progress in online courses via Google Classroom (m=3.97, SD=.97). Additionally, the respondents agreed that with Google Classroom, assessment of their academic progress is more accurate (M=4.0, SD=.97). They also reported that eLearning through Google Classroom is more stimulating (M=3.81, SD=.99).

The respondents were also satisfied with my learning with Google Classroom (M=4.1, SD=.96), level of student interaction in Google Classroom (M=3.7, SD=1.2) and with their overall experience with Google Classroom (M=4.0, SD=1.0).

In conclusion, the respondents were satisfied with their experience with Google Classroom (Mean of means=3.94).The outcome of the study is in congruent with the finding of Thongsonkleeb (2020) and Alim and Alimin (2021) who found that studentsare satisfied with Google Classroom.

Research Question Four (4): What is the level of engagement of students of College of Distance Education, University of Cape Coast when taught via Google Classroom? The results are presented in Table 6.

Table 6: Level of Engagement of Students of College of Distance Education, University of Cape Coast when taught via Google Classroom

Statements	M	SD
Google Classroom makes it easy to collaborate with other students.	3.9	1.1
I am more likely to ask questions when using Google Classroom.	3.8	1.0
Google Classroom is engaging.	4.0	1.1
Google Classroom helps me to receive timely feedback on my learning and assessment from my course tutors.	4.0	.93
With Google Classroom I am able to get individualised attention from my instructor when needed.	3.9	1.2
Mean of means	**3.92**	

Source: Field Data, Amofah (2022)

Table 6 showed that Google Classroom makes it easy to collaborate with other students (M=3.9, SD= 1.1). The respondents also agreed that they more likely to ask questions when using Google Classroom (M=3.8, SD=1.0) and that Google Classroom is engaging (M=4.0, SD= 1.1).

Furthermore, the respondents agreed that Google Classroom helps them to receive timely feedback on their learning and assessment from their

course tutors (M=4.0, SD=.93). When asked whether with Google Classroom they are able to get individualised attention from my instructor when needed, the respondents agreed (M=3.9, SD=1.2).

The 3.9 mean of means indicate that a higher level of engagement of students with Google Classroom instructions. The result of the study is in line withstudies by Flejoles and Perlas (n.d.) and Quino (2020) who found that students were very satisfied with Google classroom as an instructional medium.

Analysis of Research Hypotheses

The researcher employed linear regression analysis to explore and answer research hypotheses 1 to 4. The researcher started by performing a preliminary analysis to verify the linearity, homoscedasticity, independence, and normality, which are the four assumptions of regression. According to the preliminary investigation, linear regression's assumptions were all satisfied.

Research Hypothesis One (1): There is no statistically significant relationship between effectiveness of Google Classroom and University of Cape Coast's distance students' attitude towards the use of Google Classroom. The results of the analysis are presented in Table 7.

Table 7: Relationship between Effectiveness of Google Classroom and University of Cape Coast's Distance Students' Attitude towards the Use of Google Classroom

Coefficients Table

Variable	B	β	t	p	R^2	VIF	95% Confidence Interval	
							Lower Bound	Upper Bound
(Constant)	9.143		6.858	.000			6.497	11.789
	.650	.753	11.388	.000	.567	1.0	.536	.764

Source: Field Data, Amofah (2022) Significant at .01 Alpha Level

From the coefficients' table, effectiveness of Google Classroom predicted distance students' attitude towards Google Classroom with β=.650and t=11.388 at p=0.000, p≤0.01 threshold. The prediction is further validated by the confidence interval of 95% at lower and upper boundaries of .536 and .764, respectively. The unidimensionality of the confidence interval values indicates that the prediction was valid in significance.

Furthermore, the predictor variable, effectiveness of Google Classroom, in the model determined a total variance of 56.70% explanation in the dependent variable (students' attitude towards Google Classroom instruction). This means that about 43% of variance was unexplained by the predictive model for teachers' attitude towards Google Classroom.

Lastly, the variance inflation factor (VIF) value of 1.0 also showed an absence of collinearity effects based on the 3.3 recommendation by Kock (2015) and Hair et al., (2017). From the foregoing, the study rejected the null hypothesis which stated that there is no statistically significant relationship

between effectiveness of Google Classroom and University of Cape Coast's distance students' attitude towards the use of Google Classroom for the alternative hypothesis.

Research Hypothesis Two (2): There is no statistically significant relationship between effectiveness of Google Classroom and satisfaction of distance students of the University of Cape with Google Classroom. The results of the analysis are presented in Table 8.

Table 8: Relationship between Effectiveness of Google Classroom and Satisfaction of Distance Students of the University of Cape Coast with Google Classroom

Coefficients Table

Variable	B	β	t	p	R^2	VIF	95% Confidence Interval	
							Lower Bound	Upper Bound
(Constant)	7.514		4.566	.000			4.249	10.780
	.705	.709	9.964	.000	.503	1.0	.565	.845

Source: Field Data, Amofah (2022) Significant at .01 Alpha Level

The regression's coefficients' table showed that effectiveness of Google Classroom predicted distance students' satisfaction with Google Classroom with β=.709 and t=9.964 at p=0.000, p≤0.01 threshold. The prediction is further validated by the confidence interval of 95% at lower and upper boundaries of .565 and .845, respectively. The unidimensionality of the confidence interval values indicates that the prediction was valid in significance.

Furthermore, the predictor variable, effectiveness of Google Classroom, in the model determined a total variance of 50.3% explanation in the dependent variable thus students' satisfaction with Google Classroom. This means that about 49.7% of variance was unexplained by the predictive model for students' satisfaction with Google Classroom

Lastly, the variance inflation factor (VIF) value of 1.0 also showed an absence of collinearity effects based on the 3.3 recommendation by Kock (2015) and Hair et al., (2017). From the foregoing, the study rejected the null hypothesis formulated for this study for the alternative hypothesis.

Research Hypothesis Three (3): There is no statistically significant relationship between effectiveness of Google Classroom and distance students' engagement when using Google Classroom for instruction at the University of Cape Coast. The results of the analysis are presented in Table 9.

Table 9: Relationship between Effectiveness of Google Classroom and Distance Students' Engagement when Using Google Classroom for Instruction

Coefficients Table								
Variable	**B**	**β**	**t**	**p**	**R^2**	**VIF**	**95% Confidence Interval**	
							Lower Bound	**Upper Bound**
(Constant)	3.179		2.166	.033			.266	6.093
	.715	.753	11.333	.000	.567	1.0	.590	.841

Source: Field Data, Amofah (2022) Significant at .01 Alpha Level

The prediction revealed that effectiveness of Google Classroom predicted distance students' engagement with Google Classroom with β=.753 and t=11.333 at p=0.000, p≤0.01 threshold. The prediction is further validated by the non-dimensional confidence interval of 95% at lower of .590 and upper boundary of .841, indicating that the prediction is valid in significance.

Furthermore, effectiveness of Google Classroom, which was the independent variable in the model, determined a total variance of 56.7% explanation in students' satisfaction with Google Classroom which was also dependent variable. This means that about 43.3% of variance was unexplained by the predictive model for students' engagement with Google Classroom.

Lastly, there were absence of multicollinearity of independents variables as indicated by the variance inflation factor (VIF) value of 1.0 (Kock, 2015; Hair et al., 2017). From the foregoing, the study rejected the null hypothesis for the alternative hypothesis.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter provided the summary of this study that investigated the effectiveness of Google classroom as determinant of attitude, engagement and satisfaction among distance education students of the University of Cape Coast. This chapter also concludes and makes recommendations for practice and future research.

Summary

The prime purpose of the study was to assess the perceived effectiveness of Google classroom as a determinant of attitude, engagement and satisfaction among distance education students of the University of Cape Coast. The specific objectives of the study were to: examine the effectiveness of Google Classroom for teaching and learning at College for Distance Education, University of Cape Coast; Explore the attitudes of distance students of the University of Cape Coast towards the use of Google Classroom for teaching and learning; examine whether distance students of the University of Cape Coast are satisfied with the use of Google Classroom for teaching and learning; assess the extent Google Classroom engages students of College of Distance Education, University of Cape Coast; and examine whether effectiveness of Google Classroom instruction determines distance education students' attitude, satisfaction and engagement.

Consequently, to achieve the study's objectives, the following research questions and hypotheses were formulated:

1. To what extent is Google Classroom effective for teaching and learning at College for Distance Education, University of Cape Coast?
2. What are the attitudes of distance students of the University of Cape Coast towards the use of Google Classroom for teaching and learning?
3. To what extent are distance students of the University of Cape Coast are satisfied with the use of Google Classroom for teaching and learning?
4. What is the level of engagement of students of College of Distance Education, University of Cape Coast when taught via Google Classroom?
5. $H_{01:}$ There is no statistically significant relationship between effectiveness of Google Classroom and University of Cape Coast's distance students' attitude towards the use of Google Classroom.
6. $H_{01:}$ There is no statistically significant relationship between effectiveness of Google Classroom and satisfaction of distance students of the University of Cape with Google Classroom.
7. $H_{01:}$ There is no statistically significant relationship between effectiveness of Google Classroom and distance students' engagement when using Google Classroom for instruction at the University of Cape Coast.

The study adopted a descriptive survey design with a 360-sample size out of 2170. A questionnaire was the main instrument for data collection and the data gathered were analysed with descriptive and inferential statistics. The following were the key findings of the study.

Key Findings

Research question one, which sought to examine the extent to which Google Classroom effective for teaching and learning at College for Distance Education, University of Cape Coast, found the respondents viewed Google Classroom as an effective platform for teaching and learning.

Regarding research question two, which examined attitudes of distance students of the University of Cape Coast towards the use of Google Classroom for teaching and learning, revealed that students have positive attitude towards Google Classroom instruction.

With regards to research question three, which assessed whether distance students of the University of Cape Coast are satisfied with the use of Google Classroom for teaching and learning, found that students are generally satisfied with the use of Google Classroom.

Concerning to research question four, which explored the level of engagement of students of College of Distance Education, University of Cape Coast when taught via Google Classroom, found that students are engaged with Google Classroom.

Lastly, concerning hypotheses 1, 2 and 3 which examined whether effectiveness of Google Classroom instruction determines distance education

students' attitude, satisfaction and engagement showed that effectiveness of Google Classroom predicted students' attitude, satisfaction and engagement.

Conclusions

Firstly, on the findings that distance students of the University of Cape Coast viewed Google Classroom as an effective platform for teaching and learning, the study concludes that Google Classroom should be employed by UCC's College of Distance Education to blend face-to-face teaching since the platform improves students learning.

Additionally, concerning the findings that revealed that students have positive attitude towards Google Classroom instruction, the researcher concluded that students have already been exposed to Google Classroom for a longer period hence their favourable attitude. Therefore, it can be argued that their positive attitude clearly indicates their acceptance to use Google Classroom.

Furthermore, on the findings that students are generally satisfied with the use of Google Classroom, the study concluded that Google Classroom provide students with similar, if not the same, satisfaction as face-to-face teaching and learning. Thus, Google Classroom just like an LMS on the market can be used as a blended learning tool to achieve a positive desire in distance learning.

Moreover, regarding the findings that indicated students are engaged with Google Classroom, the study concluded that collaborative features such as chat, forum etc of Google Classroom enable students to collaborative with themselves and also to receive timely feedback on their performance. This

implies that Google Classroom can achieve the same level of engagement as face-to-face teaching and learning.

Lastly, concerning the findings that effectiveness of Google Classroom instruction determines distance education students' attitude, satisfaction and engagement showed that effectiveness of Google Classroom predicted students' attitude, satisfaction and engagement, the study concluded that effective Google Classroom instruction is a major determinant of learners' satisfaction, attitude, and engagement. This implies that ineffective GC lesson will lead to negative attitude, unsatisfaction and disengagement.

Recommendations

The study makes recommendations based on the conclusions drawn from the respective findings:

1. The study recommended that Management of the University of Cape Coast should mass adopt Google Classroom for Distance Education.
2. The study also recommended that management of the University of Cape Coast should train students on the use of Google Classroom platform to promote effective instruction.
3. It is recommended that effectiveness of Google Classroom instruction should be considered when focusing on learner engagement and positive attitude.
4. It is recommended that instructors design an effectiveness of Google Classroom instruction in order to increase learner satisfaction.

Suggestions for Future Studies

This study only focused on the effectiveness of Google classroom as determinant of attitude, engagement and satisfaction among distance education students of the University of Cape Coast. A replication of the current research nationwide with a much larger sample size would be commendable so that the findings could be generalised across Ghana. Additionally, the current study could also be replicated to include instructors as the population of the study.

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APPENDIX A: SELF-ADMINISTERED QUESTIONNAIRE FOR PARTICIPANTS

UNIVERSITY OF CAPE COAST

QUESTIONNAIRE

Dear respondent, the purpose of the study is to investigate "Effectiveness of Google Classroom as Determinant of Attitude, Engagement and Satisfaction Among Distance Education Students of The University of Cape Coast." I will therefore solicit your cooperation and consent to participate in this study. The confidentiality of your response is assured. Thank you.

SECTION A: Demographic Information

1. **Sex**: Male ☐ Female ☐

2. **Age:** Below 25years [ ]

   26-30 years [ ]

   31 – 35years [ ]

   Above 36 years [ ]

SECTION B: Effectiveness of Google Classroom for teaching and learning

Please indicate the extent to which you agree or disagree to the following statements

Key:

Strongly Disagree (SD).

Disagree (D)

Undecided (U)

Agree (A),

Strongly Agree (SA)

Statement	SD	D	U	A	SA
3. Google Classroom is effective than face-to-face teaching					
4. Google Classroom helps me to understand course material					
5. Google Classroom increases my critical thinking skills					
6. With Google Classroom I have access to a wide range of teaching and learning resources such as videos, images etc.					
7. I am motivated to learn more when using Google Classroom					
8. I can complete group assignment faster when using Google Classroom					

SECTION C: Distance Students' Attitudes Towards the Use of Google Classroom for Teaching and Learning

Please indicate the extent to which you agree or disagree to the following statements.

Key:

Strongly Disagree (SD).

Disagree (D)

Undecided (U)

Agree (A),

Strongly Agree (SA)

Statement	SD	D	U	A	SA
9. I like to use Google Classroom for teaching and learning purposes					
10. I believe Google Classroom engages me just like face-to-face teaching					
11. I find Google Classroom more exciting.					
12. I believe Google Classroom with its immediate scoring help me evaluate my own understanding and performance.					
13. I would recommend Google Classroom to other students					
14. I hold a positive view of Google Classroom					

SECTION D: Distance Students' Satisfaction with the Use of Google Classroom for Teaching and Learning.

Please indicate the extent to which you agree or disagree to the following statements.

Key:

Strongly Disagree (SD).

Disagree (D)

Undecided (U)

Agree (A),

Strongly Agree (SA)

Statement	SD	D	U	A	SA
15. I can easily monitor my academic progress in online courses via Google Classroom.					
16. With Google Classroom, assessment of my academic progress is more accurate.					
17. eLearning through Google Classroom is more stimulating.					
18. I am satisfied with my learning with Google Classroom.					
19. I am satisfied with the level of student interaction in Google Classroom.					
20. I am satisfied with my overall experience with Google Classroom					

SECTION E: Distance Students' Engagement with Google Classroom for Teaching and Learning.

Please indicate the extent to which you agree or disagree to the following statements.

Key:

Strongly Disagree (SD).

Disagree (D)

Undecided (U)

Agree (A),

Strongly Agree (SA)

Statement	SD	D	U	A	SA
21. Google Classroom makes it easy to collaborate with other students					
22. I am more likely to ask questions when using Google Classroom					
23. Google Classroom is more engaging					
24. Google Classroom helps me to receive timely feedback on my learning and assessment from my course tutors					
25. With Google Classroom I am able to get individualised attention from my instructor when needed					

Thank You