UNIVERSITY OF CAPE COAST

MEASURING STUDENTS' SATISFACTION OF SOCIAL MEDIA USAGE IN DISTANCE LEARNING. THE ROLE OF 'CONNECTIVISM THEORY'

THEOPHILUS ARTHUR GBORSONG

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BY

THEOPHILUS ARTHUR GBORSONG

Dissertation submitted to the Department of Mathematics and Science 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

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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: Theophilus Arthur Gborsong

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 of Cape Coast.

Supervisor's Signature: ……. Date: …….

Name: Dr. Justice Kofi Armah

ABSTRACT

Connectivism is a learning theory that emphasizes the importance of technology and social networks in the learning process. According to this theory, learning occurs through the connections that individuals make with others and with information sources. Social media is seen as a key tool for promoting connectivism in the classroom, as it allows for collaboration, discussion, and the sharing of information and perspectives. The study was aimed at assessing social media learning satisfaction among distance learning students, considering factors such as learner autonomy, learner diversity, connectedness, and openness. The sample consisted of 301 participants selected through purposive sampling. Descriptive statistics were employed to analyse the data using IBM SPSS Statistics. Additionally, Partial Least Squares Structural Equation Modelling (PLS-SEM) with Smart-PLS was utilised to investigate the relationships between the variables of interest. The results indicate that a high level of Learners' Diversity (M = 3.59, SD = .88) was observed in connectivism, followed by Learners' Autonomy (M = 3.42, SD = .99, Learners' Openness (M = 3.40, SD = .90) and Learners' Connectedness (M = 3.21, SD = .97). The overall level of connectivism was also high. The results also revealed a high level of social media usage among learners (M = 3.68, SD = .78) as well as learners' satisfaction (M=3.38, SD= .98). The findings showed that social media use influences connectivism (β = .699, $p < .001$), but not on learners' satisfaction (Influence (β) = .140, p = .104) in distance learning. Connectivism influences learners' satisfaction (Influence (β) = .666, $p < .001$). Connectivism fully mediated the influence of social media use on learners' satisfaction (Influence (β) =.466, $p < .001$). In conclusion, social media strongly influences connectivism, impacting learners' satisfaction indirectly. Connectivism fully mediates the relationship between social media use and satisfaction among distance learners.

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DEDICATION

To my parents, siblings, other half, nephews, nieces, uncle and aunties

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CHAPTER ONE

INTRODUCTION

Background to Study

Theories are concepts that explain processes and are tested for validity. Harasim (2017) states that a theory explains why something occurs or how it occurs. Knowles et al. (2005, p. 10) state that "a theory is a comprehensive coherent and internally consistent system of ideas about a set of phenomena".

Learning theories play a key role in imparting knowledge to humans. They help us understand how knowledge is imparted and describe how we can learn. Harasim (2017), states that a learning theory aims to help us comprehend how knowledge is created and how people learn. Grassian and Kaplowitz (2009) observe that learning theories provide the right foundation for instructors and facilitators to create a suitable learning environment for learners (both adult and young) to enable them to improve upon their instructional experiences. Driscoll (2000:55) mentions that "earning theories bring out or explain performance outcomes." Lefrançois (2019) writes that a "learning theory aims to systematize and organize what is known about human learning."

Several learning theories have emerged over the years, including:

- Behaviorism,
- Cognitivism / Information Processing Theory,
- Constructivism and social constructivism,
- Social Cognitive Theory and social learning,
- theories of motivation and

- Self-regulated learning,
- Online Collaborative Learning (OCL),
- Multimedia learning theories,
- Cognitive Load Theory (CLT)
- Connectivism.

In this digital age, connectivism is the emerging learning theory. It aligns with the way knowledge is created, shared, and accessed in our increasingly interconnected world. Unlike traditional learning theories, which emphasize individual cognition or behavior, connectivism focuses on the importance of networks; both human and technological in facilitating learning. The internet, social media, and digital tools allow learners to connect

Downes (2007) mentions that in connectivism, learning is thought to be the ability to construct and traverse connections. Siemens (2004) states that connectivism has to do with one's connections with the world. It is based on the principle that all learning starts with a connection." Stephen Downes identifies the key elements of connectivism as autonomy, diversity, openness, and connectedness.

In recent years, improvements in information and communication technologies have made internet usage an integral part of our everyday life. Especially with the advent of the Web 2.0 revolution, internet users tend to have an active interaction with the environment. People have moved from a passive spectator position to a very active participant and have acquired a virtual environment where they can create, share and interfere with the content. (Kaya, Özgür & Koçak, 2012).

In a broader sense, social media are websites that are built on Web 2.0

technologies. This has brought about social interaction, collaboration and formation of communities (Akar, 2010:17). Websites or applications with active participation and interaction for users can be said to be social media. Hence, a website or application can be described as social media if it allows user-based content and provides interaction among users (Kaya et al., 2012).

In comparison with traditional media, social media enhances two-way communication among its users. Again, social media tends to be cost-effective compared to traditional media such as television and newspapers regarding information publishing and access. In addition, access to social media is open to everyone. Social media's interactive quality has also great advantages for distance education. Technology-based distance education applications that aim to reach a larger audience become more challenging and effective when the communication and interaction opportunities increase. With proper integration of social media in the online classroom, it has more to offer in terms of innovative learning experiences.

Lately, several social media tools have become available. Faculties are able to build more creative online learning activities. Moreover, online collaboration becomes much easier when it is having social media technologies as its backbone. In the classroom, integrating social media makes it possible for students to participate better and then be more engaged in the learning process. Finally, the most important advantage of social media usage in distance education is helping online learners feel less isolated.

With social media technologies advancing, distance education will continuously evolve with the trend. (Kaya et al., 2012). Social media learning has widely travelled in the context of digital learning theories, it has created a

platform for understanding how new knowledge is created and fostering connections, collaboration, and a sense of community.

Chung & Paredes (2015) assert that social media exposes users to knowledge that supplements students' existing knowledge. Social media mostly relies on the spread of relatable content mostly when shared interests, real-world connections, or relatability bind user groups together. Users are saturated with information about the things they interact with—events, ideas, news, updates, goods, campaigns, etc.,—based on their willingness to learn about those things, thus building their own "personal learning environments, or PLEs." Hafeez (2020). Thus, each of these users alone serve as a connectivism' starting point. While adding to or changing the existing knowledge as it flows across the networks, the collection of knowledge that makes up an individual relates back to the network to which it belongs. It's interesting to see how social media campaigns function as an unstructured, unrestricted (or informal) mode of learning where users can choose to participate actively or passively. Therefore, participation of individuals is as a result of their engagement in their ability to share, like, tweet and reply to a post.

Hence, the lack of participation or learning could refer to any situation in which there is no apparent active interaction yet the user nevertheless observed, scrolled through, clicked on, or engaged indirectly (shared by a friend via personal message). Thus, the impact of the information would depend on: the user's chance of selecting that information and the distribution of influence across networks (e.g. a trending hashtag). Hafeez (2020).

A benefit of connectivism is that it allows a community of people (working with learning technologies) to legitimize what they are doing. Cormier (2008). Stephen Downes points out the key elements in connectivism as autonomy, diversity, openness and connectedness.

Autonomy describes choices, control and independence in educational literature. (Online Etymology Dictionary, n.d.). In connectivism, learners can select levels of choices, and control independently without an external control. Teachers act as facilitators in a network but are not sole sources of knowledge. Learners are at liberty to choose technology tools to use (threaded discussions, synchronous online meetings, blog posts and virtual games). Spinello and Corbett (2020).

Connectedness in psychology tends to describe relatedness in a network while in connectivism, the concept describes knowledge that exists between people and digital resources. Connectivism throws more light on knowledge that is received in a typical network. "The idea that learning takes place across networked learning communities and information technologies is central to connectivism" (Dunaway, 2011). Learning occurs in a connectivism environment when peers or individuals, share their knowledge, ideas, and views within the network.

Diversity in connectivism is a very key element. In this environment, diversity describes the ability and uniqueness of every participant in the network. It is believed that, individuals within the network, have different backgrounds in the field of race, gender, culture, socio-economic status. connectivism enables learners to access a variety of resources and perspectives through networks, accommodating different learning styles and cultural contexts. Social media

platforms like WhatsApp and Facebook support peer-to-peer interactions and cross-cultural exchanges, promoting inclusivity (Greenhow & Lewin, 2016). Additionally, these platforms integrate tools such as captioning and assistive technologies, making them accessible to learners with disabilities (Al-Azawei et al., 2016). By connecting learners globally, these environments celebrate diversity and create equitable learning opportunities. Therefore, participants in connectivism environment are admonished to seek opinions from one another in order to have fair knowledge collaboratively. In this network, the facilitator is not the only source of knowledge but then, the entire participants.

The fourth principle of connectivity is **openness**. Openness in a connectivism environment creates room for sharing and tolerating ideas, resources within the network. Participants are at liberty to participate or not in the network following their preferences. MOOCs are online and offer a lot of free courses which have attracted tens and thousands of participants from all parts of the world. Thus, they are open and massive in scale (Spinello and Corbett, 2020). Their principles are particularly relevant to Ghana's education system, where technological innovation is leveraged to address educational challenges. For instance, initiatives like Eneza Education provide mobile-based learning solutions, enabling access to educational content for students in underserved Universities in Ghana, such as the University of Ghana, have adopted Open Educational Resources (OERs) to expand access to quality learning materials. Programs like the Ghana Code Club teach digital skills, fostering peer-to-peer and networked learning. Additionally, platforms such as WhatsApp are widely used by teachers to share strategies and solve classroom challenges, exemplifying the collaborative nature of connectivism

learning (Asare, 2021). These applications show how Ghana harnesses the connectivism approach to bridge educational gaps, improve accessibility, and promote lifelong learning.

Statement of the Problem

In the post-COVID era, many institutions have adopted the use of social media in teaching and learning. Several instructors and students in higher education are making use of social media in education. Online technologies are being used to reach students or learners in very remote areas to avoid disruptions in education. Additionally, colleges have arranged to teach students in-person with social distancing, online, or through a hybrid format.

Higher educational institutions are increasingly facing the challenge of meeting the growing demand for diverse programs. To address this, many institutions and educators are turning to social media technologies as innovative solutions. Platforms such as Learning Management Systems (LMS), MOOCs, and social media apps like WhatsApp, Facebook, Pinterest, Edublog, Instagram, LinkedIn, TikTok, ClassHook, and Edmodo are being leveraged to support teaching and learning. By using these tools, academic institutions and faculty can connect with students, deliver instructional content, and create opportunities for engagement. As a result, social media has gained prominence as a powerful platform for fostering interaction, collaboration, and enriched learning experiences, highlighting its immense potential to transform education. Although many institutions are migrating to online learning programs, one of the greatest problems they are facing is

students' satisfaction with the use of social media and the theoretical basis for its usage (Heyman, 2010).

Recognizing the importance of social media learning with regard to connectivism, various researchers have looked at social media learning satisfaction. Muhammad (2020) conducted research among 25 basic seven students to identify ways through which Schoology (having chat options and self-learning options) promoted learner autonomy in learning English as a foreign language (EFL) in a discourse analysis course. Results from the research indicated that Schoology successfully promoted learner autonomy by taking into consideration some items such as students' active participants through logging in and commenting among others. This study on social media learning satisfaction with regards to connectivism failed to touch on the other elements of connectivism thus; diversity, connectedness and openness in the learning environment.

Allen, Ryan, Gray, McInerney and Waters (2014) assessed the influence of social media use on social connectedness in three diverse ways in adolescent development. This included identity development, a sense of belonging as well as processes. From the findings presented in the article, social media can enhance psychosocial well-being, belonging and identity development however, it exposes adolescents to negative outcomes. This study on social media learning satisfaction with regard to connectivism explored only connectedness and hence failed to touch on the other elements of connectivism namely diversity, autonomy and openness. Furthermore, others explored openness. All these studies involved only an element of connectivism, failing to explore all the elements of connectivism; diversity,

autonomy, openness, connectedness. This current study will include all four elements of connectivism to explore how connectivism mediate social media learning and perceive ease of use affect satisfaction in an online environment

Objectives of the study

The objectives of this study are:

1. To determine the influence of social media use on the principles of connectivism.
2. To determine the influence of social media use on learners' satisfaction
3. To determine the influence of connectivism on learners' satisfaction
4. To ascertain if learner autonomy mediates the influence of social media use on learners' satisfaction.
5. To ascertain if learner connectedness mediates the influence of social media use on learners' satisfaction.
6. To ascertain if learner diversity mediates the influence of social media use on learners' satisfaction.
7. To ascertain if learner openness mediates the influence of social media use on learners' satisfaction.

Hypothesis

The following hypotheses have been formulated:

1. There is a significant influence of social media use on the principles of connectivism
2. There is a significant influence of social media use on learners' satisfaction
3. There is a significant influence of connectivism on learners' satisfaction

4. Learner autonomy mediates the influence of social media use on learners' satisfaction.
5. Learner connectedness mediates the influence of social media use on learners' satisfaction.
6. Learner diversity mediates the influence of social media use on learners' satisfaction.
7. Learner openness mediates the influence of social media use on learners' satisfaction.

Significance of the Study

The concept of connectivism has been primarily theoretical in our part of the world. There is therefore the need to put it into practice in our educational system. Secondly, few studies have explored learners' satisfaction towards using social media in higher education in the context of third-world countries like Ghana. Since there are a limited number of studies regarding student satisfaction and the use of social media, this study will add knowledge to technology in online classes. This will lead to the creation of enriched environments, the development of tools, and the implementation of effective methods to facilitate large-scale instruction. By that, online program delivery will positively affect student satisfaction. Furthermore, "through the regular collection of satisfactory data from online learners, academic institutions realize areas where they best serve these learners and know areas calling for improvement" (Noel-Levitz, 2009, p. 2).

Furthermore, findings from this study will highlight the need to incorporate social network technologies that support connectivism into teaching and learning. This study will expand the body of knowledge on

technology in online education by exploring how digital tools and platforms, particularly social media, can enhance learning experiences, improve engagement, and address challenges such as isolation in distance education. Findings from this research are going to assist educational planners and policy makers to identify the right channels of promoting connectivism in teaching and learning in almost all areas in Ghana. Through the implementation of connectivism in social media learning, students' satisfaction with regards to social media learning will be improved. Finally, the study is going to add to scholarly literature in the area of ICT in education.

Delimitation of the study

This study focuses on examining learner satisfaction with the use of social media in distance learning. While the broader context includes distance learning students in Ghana, the scope of the study is specifically limited to students at the University of Cape Coast Learning Center. This delimitation was necessary due to constraints of time and resources, ensuring a manageable and focused analysis.

Organization of Study

This research is categorized into five sections: Introduction, Background to the study, Explanation of the problem, Goal of the investigation, Research questions, Importance of the study, Study delimitations, and Study restrictions are all included in Chapter One. The review of related literature is the subject of Chapter Two. The research design, population, sample and sampling procedure, research tools, data collecting procedure, and data analysis procedure are all covered in Chapter Three. The data that is obtained based on the study questions and hypotheses are

presented and analyzed in Chapter Four. The final chapter, provides an overview of the research with the following subheadings: summary, conclusions, and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This section deals with the review of related literature concerning the study. In this chapter, the researcher identifies and analyses research work that came into existence earlier in accordance with this study. The theoretical framework focuses on connectivism. The conceptual framework emphasizes students' satisfaction using social media, connectivism and establishes the connection between connectivism and social media learning. Lastly, the empirical review is done to compare the findings of the study with other related studies to confirm or repudiate conclusions drawn by earlier researchers.

Theoretical Framework

Learning theorists and scientists have researched the paradigm to find out how learning can occur in the context of network mediated learning environment. (Chung & Paredes, 2015).

Connectivism

George Siemens' (2004) connectivism served as the theoretical basis for this study. Connectivism makes use of principles obtained from complexity, chaos, self-organization and network theories. Learning is described as a process that takes place within nebulous environments of shifting core elements not totally under the control of the individual. Learning (mentioned as actionable knowledge) can be said to reside outside individuals; that is, within a system or database. It focuses on connecting specialized sets

of information or data and these connections makes it possible for us to learn or obtain knowledge further than the current knowledge we have.

Connectivism is made possible when we understand that decisions capitalize on frequent altering foundations. The ability to differentiate between relevant and non-relevant information is very important. Again, there is a need to identify when new information changes the landscape based on decisions made yesterday.

Connectivism Principles in Social Media Learning

There are eight principles of learning governing connectivism and first and foremost is that, learning involves the connection of specialized nodes or information sources. Learning and knowledge rest in a diversity of opinions. Learning may dwell in artificial appliances. The capacity to learn more is much more important than what is known currently. Maintenance and Nurturing connections are required to promote continual learning. Capacity to realize connections between ideas, fields and concepts is a vital skill. Currency (accurate, up-to-date knowledge) is the rationale behind connectivism's learning activities. Decision-making is a learning process itself. Connectivism brings into light, the problems that are encountered during knowledge management activities. Knowledge within databases, need to be linked with resource people in the right context before it can qualify as learning. The flow of information within an organization is very key in organization effectiveness. In terms of knowledge economy, the flow of knowledge is the equivalent of the oil pipe in industrial economy. Preserving, creating and utilizing information flow should be a part of organizational activity. Knowledge flow can be compared to a river that moves through the ecology of

an organization. In certain areas, the river, pools and in other areas it ebbs. The health of the learning ecology of the organization depends on the effective nurturing of information flow. Analysis of social networks is an additional piece in understanding how learning models work in an ideal digital era. Kleiner (2002) explores Karen Stephenson's (2002) "quantum theory of trust" which "explains how to identify the collective cognitive capability of an institution as well as how to adapt and increase it".

Some, within typical social networks, hubs are well-connected people who can promote and maintain knowledge flow. Their interdependent nature brings about effective knowledge flow, hence, enabling personal understanding of the state of activities organizationally. The pivot of connectivism is the individual. Personal knowledge consists of a network, which feeds into organizations and institutions, and also feed back into the network, and then continually provides learning to individual. This cyclical knowledge development (personal to network to organization) enables learners to remain updated in their various fields through the connections they have created.

Landauer and Dumais (1997) examine the phenomenon that "people have much more knowledge than appears to be present in the information to which they have been exposed". They provide a connectivism focus in stating "the simple notion that some domains of knowledge contain vast numbers of weak interrelations that, if properly exploited, can greatly amplify learning by a process of inference". The value of pattern recognition and connecting our own "small worlds of knowledge" are apparent in the exponential impact provided to our learning. Brown (2002) presents an interesting notion that the

internet makes use of the small efforts of many with the large efforts of few. The central premise is that connections created with unusual nodes supports and intensifies existing large effort activities. Brown (2002) provides the example of a Maricopa County Community College system project that links senior citizens with elementary school students in a mentorship program. The children "listen to these 'grandparents' better than they do their own parents, the mentoring really helps the teachers and the small efforts of the many, the seniors, who complement the larger efforts of the few being the teachers.". This amplification of learning, knowledge and understanding through the extension of a personal network is the epitome of connectivism. It has been realized that the structure of knowledge flow is more significant than the content it conveys. In other words, our ability to learn what we need for tomorrow is vital than what we know today. A real challenge for any learning theory is to make active known knowledge at the point of application. When knowledge, is needed, but not known, the ability to plug into sources to meet the requirements becomes a key skill. As knowledge continues to increase and evolve, access to what is needed is vital than what the learner possesses currently. Connectivism presents a model of learning that acknowledges the structural shifts in society where learning is no more an internal, individualistic activity. How people work and function tends to change when new tools are being made use of. The field of education has been slow to identify both the impact of new learning tools and the environmental changes in what it means to learn. Connectivism delves into learning skills and tasks needed for learners to excel in a digital era. Learning theorists and scientists have researched this paradigm to find out how learning can occur in the

context of network network-mediated learning environment. (Chung & Paredes, 2015). The various elements of connectivism are listed below.

Openness

One principle of connectivity is openness. Openness in a connective environment allows sharing and tolerating ideas, resources within the network. Participants are at liberty to participate or not in the network following their preferences. For instance, MOOCs are online and as a matter of fact offer a lot of free courses which has attracted tens and thousands of participants from all parts of the world. Thus, they are open and massive in scale. Spinello and Corbett (2020).

Autonomy

Autonomy in Greek stands for "self" or "independent". Autonomy describes choices, control and independence in educational literature. (Online Etymology Dictionary, n.d.). In connectivism, learners have the ability to select levels of choices, and control independently without an external control. Learners are required to choose their own connections and sources of information without assistance. Learners are able to cut short the power structure of facilitators. Teachers act as facilitators in a network but are not sole sources of knowledge. Learners are at liberty to choose technology tools to use (threaded discussions, synchronous online meetings, blog posts and virtual games) (Spinello and Corbett, 2020).

According to Dron (2007), autonomy varies from person to person and context to context. Different structures will lead, inevitably, to different consequences and offer different benefits to different learners. It is suggested that a non-restricted or uninterrupted connectivism environment are likely to

work for adults and more of experienced learners. Some learners seem to be frustrated due to the lack of control in such environment.

Implications for learning

In a real connective environment, learners have the ability to select levels of choices, control independently without an external control. Learners are required to choose their own connections and sources of information without assistance. Learners are able to cut short the power structure of facilitators. Teachers act as facilitators in a network but are not sole sources of knowledge. Learners are at liberty to choose technology tools to use (threaded discussions, synchronous online meetings, blog posts and virtual games).

Connectedness

Connectedness in psychology tends to describe relatedness in a network while in connectiveness, the concept describes knowledge that exists in between people and digital resources. Connectedness throws more light on knowledge that is received in a typical network. “The idea that learning takes place across networked learning communities and information technologies is central to connectivism” (Dunaway, 2011). Learning occurs in a connectedness when peers or individuals, share their knowledge, ideas, views within the network. In connectedness, though a facilitator may be involved in the network, they have little power over knowledge being shared. The facilitator is recognized as a peer in the network. Contributions and opinions are encouraged through digital platforms such as blogs and social media. Sharing is made available through aggregated messages placed in a daily newsletter. Spinello and Corbett (2020).

Implications for learning

Learning occurs in connectivism when peers or individuals, share their knowledge, ideas, views within the network. In connectedness, though a facilitator may be involved in the network, they have little power over knowledge being shared. The facilitator is recognized as a peer in the network. Contributions and opinions are encouraged through digital platforms such as blogs and social media. Sharing is made available through aggregated messages placed in a daily newsletter.

Diversity

Diversity in connectivism is a key element. In such environment, diversity describes the ability and uniqueness of every participant in the network. It is believed that, individuals within the network, have different backgrounds in the field of race, gender, culture, socio-economic status. Therefore, participants are admonished to accommodate opinions from one another to have fair knowledge collaboratively. In this network, the facilitator is not the only source of knowledge but then, the entire participants. According to Downes (2012), the educational system and its resources should maximize diversity. Learners are motivated to seek the opinions of peers as teachers are no longer the sole source of knowledge and expertise. Spinello and Corbett (2020).

Implications for learning

Individuals within the network, have different backgrounds in the field of race, gender, culture, and socio-economic status. Therefore, participants in that environment are to accommodate opinions from one another to have fair knowledge collaboratively. The facilitator is not the only source of knowledge

but then, the entire participants. Learners are motivated to seek the opinions of peers as teachers are no longer the sole source of knowledge and expertise.

Technology Acceptance Model (TAM)

Davis (1986) developed the Technology Acceptance Model (TAM) based on the theory of reasoned action. This has to do with the prediction of the acceptability of an information system. This model was developed to predict how acceptable a tool will be and to identify ways of modifying the tool to make it acceptable to users. This model mentions that the acceptability of an information system is dependent on two major factors: perceived usefulness and perceived ease of use.

Social Media Learning Perceived Usefulness: Perceived usefulness is defined as the degree to which an individual believes that using a particular technology would be beneficial. As an individual's perceived usefulness of a given technology increases, their intentions to use the technology also increase. Again, just as the theory of reasoned Action, the Technology Acceptance Model (TAM) mentions that one's behavioral intention determines their use of an information system or tool, meanwhile, the behavioral intention is further determined by the person's attitude or perception towards the use of the information system or tool. Davis (1986), points out that one's attitude does not solely determine their use of a system, but also the impact which it may have on their performance. Hence, even if an employee is not willing to adopt an information system, the probability that he will make use of it becomes high if he believes the system will improve his work output.

Perceived usefulness influences users' attitudes toward a social media tool and further affect individuals' beliefs and behaviors when adopting the tool. Applying this model to Social Media Learning, the presumption is that the more learner perceives usefulness and ease of use in courses delivered through social media, the more positive their attitudes are toward Social Media Learning, consequently improving their learning experiences and satisfaction. Furthermore, increasing their chances of using social media tools in the future (Arbaugh, 2002, Arbaugh and Duray, 2002, Pituch and Lee, 2006).

Learner autonomy can positively influence perceived usefulness: When learners have the autonomy to make choices about their learning, they are more likely to perceive the resources, strategies, or technologies they use as useful. This is because they have a sense of ownership and control over their learning process, which can increase their motivation and engagement.

In addition, perceived usefulness can also enhance learners' autonomy: When learners perceive a learning resource or strategy as useful, they are more likely to incorporate it into their autonomous learning process. They are motivated to continue using or exploring resources that they believe will contribute to their learning goals.

Learner autonomy and perceived usefulness can reinforce each other. As learners become more autonomous, they are better equipped to evaluate the usefulness of various learning tools and resources, making more informed decisions about what works best for them. Conversely, when learners find resources or strategies useful, it can boost their confidence in taking control of their learning. Learner autonomy and perceived usefulness are interrelated concepts in education. Encouraging learner autonomy can lead to increased

perceptions of usefulness, and recognizing the usefulness of resources can empower learners to take greater control of their learning. This relationship is important for creating effective and engaging learning environments.

Again, learner diversity varies with perceived usefulness. Perceived usefulness is subjective and can vary significantly among learners. Different students may perceive the same instructional materials, technologies, or teaching methods differently in terms of their usefulness based on their unique backgrounds and needs. For example: Students with varying levels of prior knowledge may perceive the usefulness of a particular learning resource differently. Some may find it highly useful for building foundational knowledge, while others may see it as too basic or not challenging enough. Secondly, learners with diverse learning styles may have different preferences for how they access and interact with educational content. What one student finds useful, such as interactive simulations, may not be equally beneficial for another who prefers text-based explanations. Learner diversity also includes cultural differences. Educational materials and resources that are culturally sensitive and relevant to the backgrounds of the students are beneficial in the sense that when learners view the content as relatable and useful within their own cultural context, it enhances their engagement and perceived usefulness.

Furthermore, learner connectedness can positively influence perceived usefulness by enhancing learner engagement. When students feel connected to their peers and instructors, they are more likely to actively participate in discussions, collaborate on projects, and seek help when needed. These interactions can lead to a greater understanding of the usefulness of various resources and strategies.

Again, students often learn from their peers' experiences and recommendations. In a connected learning environment, students may share their insights about what they find useful, such as specific study techniques, online tools, or reference materials. These peer recommendations can shape the perceived usefulness of certain resources for others. Moreover, there is a feedback loop between learner connectedness and perceived usefulness. When students feel connected and engaged, they are more likely to explore various learning resources, technologies, and methods. As they engage with these resources, they can better assess their usefulness. Positive experiences with useful resources can, in turn, reinforce the sense of connectedness and motivation to learn. Learner connectedness can enhance motivation, which can, in turn, influence perceived usefulness. Motivated learners are more likely to actively seek out and engage with educational materials and tools, and they are more likely to perceive these resources as useful because they are aligned with their learning goals.

Again, learner openness can influence how learners perceive the usefulness of educational resources and technologies. Open individuals may be more inclined to explore and experiment with new tools and approaches, which can lead to a more accurate assessment of their usefulness. They are open to trying new things and may be more willing to see the potential benefits of innovative learning methods. Open learners are often more likely to explore a wider range of learning resources and strategies. They may be more adaptable and less resistant to change, which can facilitate their ability to assess the usefulness of different learning tools and approaches. Their openness allows them to consider a broader spectrum of options.

Furthermore, TAM mentions that one's behavioral intention determines their use of an information system or tool, meanwhile, the behavioral intention is further determined by the person's attitude or perception towards the use of the information system or tool. Davis (1986), points out that one's attitude does not solely determine their use of a system, but also the impact which it may have on their performance. Hence, even if an employee is not willing to adopt an information system, the probability that he will make use of it becomes high if he believes the system will improve his work output. Moreover, TAM establishes a direct connection between perceived usefulness and perceived ease of use. Therefore, if two information systems are having similar features, a user will prefer the one that they find easier to use (Morris and Dillon, 1996)

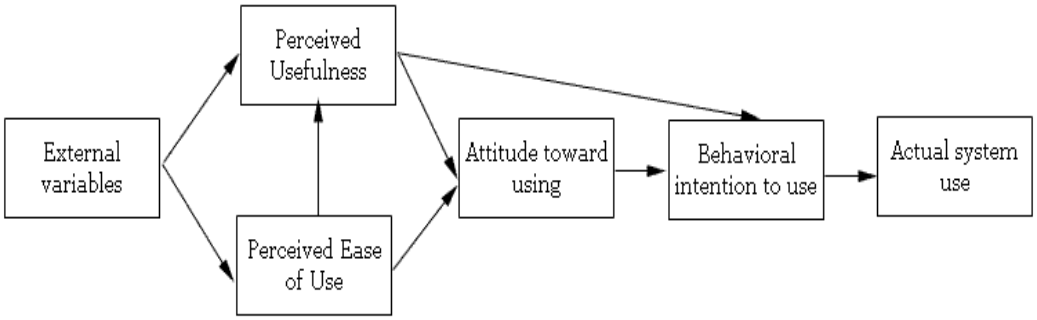

Figure 1: Technology Acceptance Model from Davis, Bagozzi and Warshaw (1989)

Davis (1986) mentions that, ease of use affects the attitude of an individual significantly through two major mechanisms: self-efficacy and instrumentality. Self-efficacy is a concept developed by Bandura (1982) which mentions that the more user friendly a system is, the more the user's sense of efficacy becomes. Moreover, an information tool that is user friendly gives the user the assurance that they have control over whatever they wish to do.

Bandura (1982) and Lepper (1985) point out efficacy as a major contributory factor to intrinsic motivation (and this establishes the direct connection between perceived ease of use and attitude. Again, Perceived ease of use can improve a person's performance in an instrumental way. As a result of making use of tools that are user friendly, users only deploy little efforts and then spare efforts to finish other tasks. (Davis, 1986).

One interesting thing to note about Davis' research is that, the connection existing between intention to use an information tool and perceived usefulness is greater than the perceived ease of use. Per the model, it can be said that the factor which influences a user the most is the perceived usefulness of an information tool.

Although the initial Technology Acceptance Model was empirically validated, it explained only a portion of the variance of the outcome variable, IT usage (from 4% to 45%, according to McFarland and Hamilton, 2006). As a result of that, other authors have redefined the initial model as TAM 2. They tried to identify the other factors behind perceived ease of use and perceived usefulness. TAM2 pointed out social influence processes (subjective norm, voluntarity, image) and cognitive instrumental processes (job relevance, output quality, result demontrability) to affect perceived usefulness and intention to use (Venkatesh & Davis, 2000). McFarland and Hamilton (2006) are behind the notably refined TAM model. They assumed that 6 contextual variables (organizational support, prior experience, computer anxiety, other's use, system quality, task structure) influence the dependent variable system usage through 3 mediating variables (perceived ease of use, computer efficacy

and perceived usefulness). The model also proposes direct connections between the external variables and system usage.

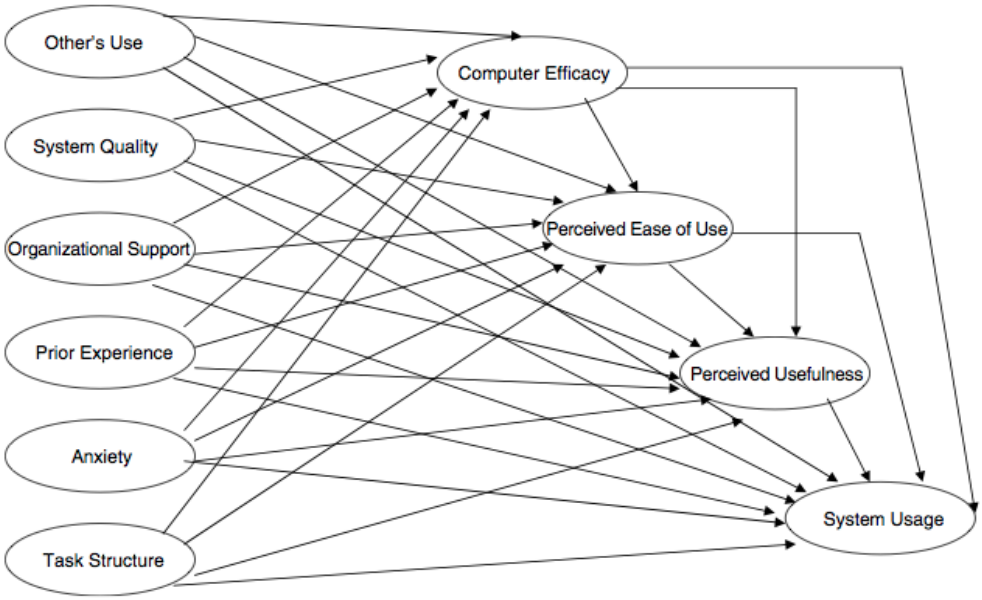

Figure 2: Adding contextual specificity to the Technology Acceptance Model from McFarland & Hamilton (2006)

The results supported the model, showing that "system usage was directly and significantly influenced by prior experience, task structure, other's use, organizational support, system quality and anxiety." Mediation effects were also seen as predicted. However, in some relations, the effect was contrary to the expected, like other's use lowering computer efficacy or high-quality systems linked to low frequency of use.

In sum, the initial model or its extension does not completely accounts for the observed variance in system usage. However, the models all agree that computer efficacy affects perceived ease of use, which in turns is strongly related to perceived usefulness.

Conceptual Framework for Social media learning

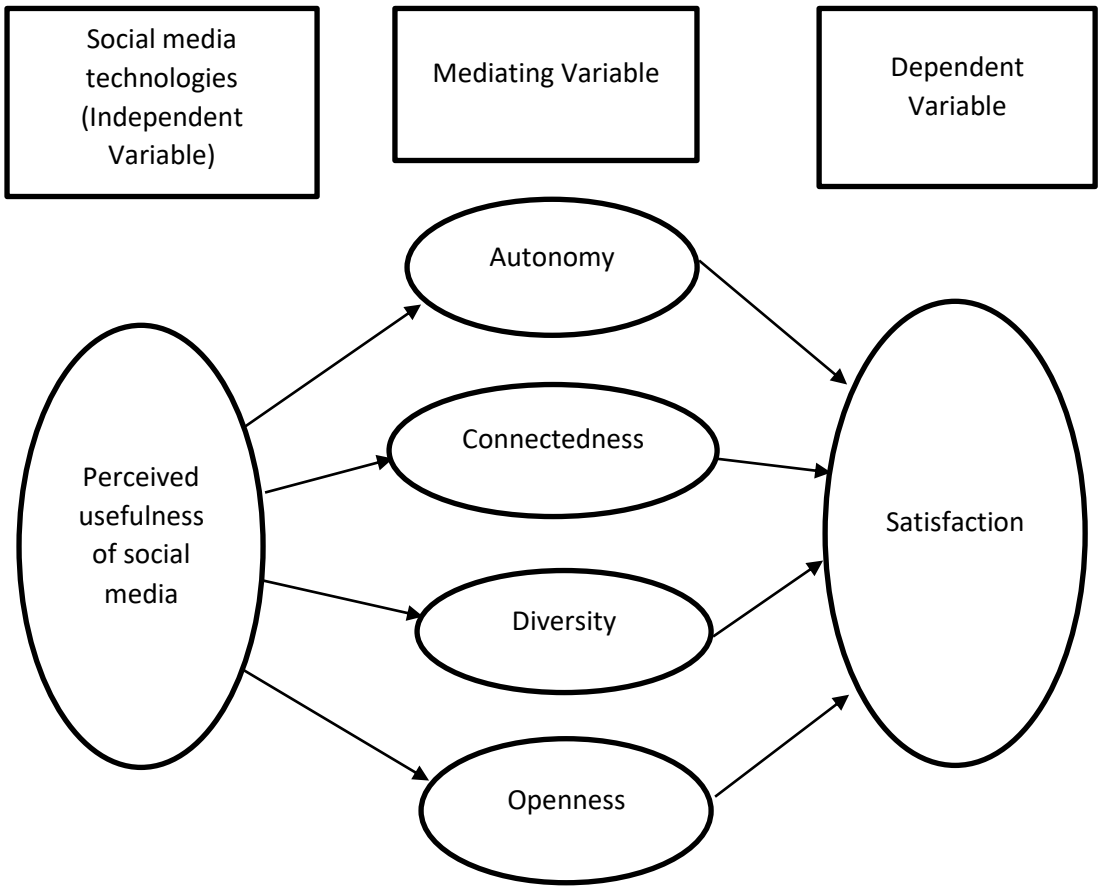

Figure 3: Conceptual Framework for Social Media Learning

Conceptual frameworks are generative frameworks that describe the thinking of an entire research process (Carl & Ravitch, 2016). The conceptual framework makes use of a diagram to describe the various relationships existing among variables of the research problem. The entire methodology of the research understudy must be in line with the variables and their relationships and context as well (Latham as cited in Adom, Hussein & Joe, 2018).

The conceptual framework illustrated in the figure below explains how the independent variable, thus social media use through autonomy, diversity, connectedness and openness affect learner satisfaction (dependent variable).

Moreover, the conceptual framework shows how students' satisfaction increased positively when taught through social media learning.

Social Media Tools for Education

To build on this theoretical framework, there is the need to throw light on the tools necessary for social media learning. The following social media tools are very common when it comes to social media learning:

YouTube

This is a website for sharing videos, which was established in the year 2005. It was built for its users to like, comment on, share and upload videos. Today, it is utilized on a lot of digital devices via applications such as the YouTube app. Though it is mostly used for music and videos on procedure, it also has the capacity to be used for pedagogy. Again, it has got several forms of accounts for specific educational contents like the Crash Course.

Crash Course is a form of application that is geared towards subjects such as: biology, chemistry, anatomy and physics. Again, YouTube supports Social Media Learning in education in diverse ways such as: displaying videos on various subjects during lessons or assisting learners discover work procedure in order to find solutions to questions, or seek more knowledge. It has numerous platforms that link other beneficial learning tools for pedagogy. This application hosts a platform called TED Talks, which gives room for videos of the best ideas from trusted sources discussing different issues, sharing knowledge, opinions and facts, sharing poetry and spoken word. In education, it has got its platform as TED-Ed, which is usually short. Again, videos from this tool could be used as information on many different school subjects. Example is the TeacherTube, which is a type of social learning tool

just like the YouTube, though it was meant to serve education teachers. Students, parents or teachers, make use of this tool as of published educational videos with a library of different content filled with videos, audio and pictures.

Twitter

Noah Glass, Biz Stone, Jack Dorsey, and Evan Williams founded Twitter in 2006. Twitter is a micro-blogging service that was created to serve individuals with Internet access throughout the world. It gives users access to social networks to be able to send and receive messages. Most times, media outlets make use of it in broadcasting news. For such reasons, people normally use it as a channel through which they update themselves with local or international news. Twitter is being used in the classroom as well. Teachers make use of twitter by creating a classroom account which is viewed by their students. Using the classroom account, teachers are able to post reminders for assignment due dates, upcoming field trips, test revisions, conferences as well as review post lessons and answer homework questions. In the future, teachers would have students' tweet what they learnt from the previous lessons and reflect on its content. Moreover, classroom discussions could be held on Twitter.

Pinterest

Pinterest is a web-based software which creates a platform for users to find or share new knowledge using descriptions, pictures and very short videos. It is usually seen as an online pin board with which users are able to post stuffs on their various boards, pick from other boards and as well share privately posted pins. This is very useful in the classroom especially when students post their various works on their own board or a class board and are

able to share (re-pin) information among their peers. It is user-friendly and could be used on any smart device.

Skype

Skype is a networking software which enables its users to video call or voice chat among several electronic devices such as: cellphones and laptops at a time. In spite of its internet necessity, Skype has grown to be one of the most common communication tools in the world today. It is a very good asset to use when partnering with participants living in remote areas since discussions and communication can still take place. Skype can be used in classrooms in various ways. For instance, it can be used to connect with students who may be home due to illness during class collaborative discussions.

Google Hangouts

Google Hangouts is a networking software which was introduced by Google. This tool possesses some special features such as: chat conversations or phone calls, video calls through data or WI-FI as well as sending messages. A google account is required to be able to use this software. Google Hangouts is becoming a common tool when it comes to communication. In other words, it is seen as a better version of Skype since it possesses the ability to record and have a group chat, void of random interruptions as witnessed in some versions of Skype. This makes Google Hangouts more accommodating. Google has other useful tools like Google Drive that give room to its users to edit and share different assignments, content and sources when they are not even together. Internet connection is the only necessity and everything is saved in one's drive.

Instagram

Instagram was built as a social networking app in 2004. Its main purpose is to share videos and photos. It is used often in today's world. Instagram serves the majority of the population that has Internet access. It is one of the commonest apps in the world of social networking which is now being used as a campaign platform for companies or organizations. It is adopted for educational purposes by posting photos or short videos of subject content. Again, it is used during photo essays or when creating a lesson or organization.

Blogger

Blogger is also a networking site or platform with which users are able to build their own blogs. Blogger is very useful when it comes to academic work. Teachers are able to create blogs for students to interact on. This technology becomes useful to students who wish to improve upon their writing skills. Blogger enables students to come out with great ideas in writing their information on the blog in order to put their messages out properly. Moreover, it gives learners the opportunity to share with their parents or caretakers, what they created with their peers. Blogs could as well be in the form of electronic portfolios that is able to show what students create throughout an academic year. Blogger has properties which allows only authorized persons to write or see the blogs themselves.

Facebook

Facebook is a communication tool which creates room for its users to be able to interact with one another within a virtual world. It has been one of the most active and common networking site for Soo many years now. It was

founded by Mark Zuckerberg together with his mates during their stay in Harvard University in the year 2004. Mark is currently the Chief Executive Officer (C.E.O) of Facebook. This networking tool works well for both professional and personal purposes. Technology plays an important role in students' and teachers' daily lives. There is therefore the need for teachers to identify ways through which these technologies can be implemented into their classrooms. Facebook provides Soo many benefits when used in the classroom. For instance, it can be used to build discussion platforms for group projects to divide the work and keep each other updated. It also enables the sharing of articles. Educators are also able to create professional Facebook accounts for their classrooms, which becomes helpful during uploads of course materials and assignments. Furthermore, Facebook can be used to create online polls to get suggestions and feedbacks on courses which the tutor intends to bring on board. The goal is to build on teaching methods as well as improve students' learning experiences. Introducing such technologies, will have students more engaged in their learning.

Impact of Technology Acceptance on Social Media Use in Education

The tools mentioned above have so many benefits some of which include;

1. Communication and Collaboration

One of the advantages of social media is better communication. Students can connect at any point in time through Facebook, Twitter or WhatsApp. They can access these platforms through their tablets, smartphones, or computers. Moreover, learners can swap questions and make phone or video calls. Students, who are caught up with their assignments, always have the opportunity to communicate with their peers, friends or

teachers. There is no need to wait to meet the teacher physically. Furthermore, social media enhances learning by creating room for sharing of documents through Google Docs and Google Drive Box. Some teachers can connect with their class through Facebook Live, just like the American teacher does by reading bedtime stories to her students every evening.

2. Finding Concrete Information Online

Most social media networks and websites make academic resources available that are very helpful to learners. For instance, through social media news feeds, students can find relevant information from the right websites and thus; follow the websites to be kept updated. Based on their interests, students can find answers to their questions. Sites like Pinterest and Tumblr, offer children the enthusiasm to solve practical problems and school projects.

Moreover, social networking sites in the educational setting also benefit students when preparing for vital lessons and as well enable students to learn certain concepts with much more efficacy. Most Social media websites have the latest data on various forms of school subjects and thus, create room for students to survey and delve into updates. Social media has, in some ways, become a source of quick reference, akin to Wikipedia, for students recently. We are witnessing an era of social media learning.

3. Parental Involvement

Social media encourages parents to remain involved in their children's learning process. Through the school's Facebook or Twitter feed, parents are kept updated with school-related activities, events and projects that are taking place now and then. Through social media, school teachers can contact and update the parents on their child's performance through Skype or other secure

online tools the institution makes use of. A social network for parents can also be created through WhatsApp or Facebook Messenger, which will keep them informed about matters arising in the school, learning and education.

Social media communication between the parents and the school makes it possible for parents to learn about, share and monitor their children's academic and personal progress at school. Moreover, social media plays an important role in students' performance as their parents can deliver the best-informed academic support at home.

4. Improved Literacy, Communication, And Reading Skills

Most students usually become bored after hours of reading and writing, but then, the use of the internet and social media creates liveliness by providing volumes of online information which often makes students more eager to read, especially when pieces of information contain glamorous animations. Articles, online messages, news, comments and books provide lots of information to be read and make students interested in reading and learning more.

Online activities of such kind improve the child's learning capability and also improve their reading habits resulting in a great improvement in their writing abilities. Social media sites are naturally interactive and this keeps the student on the move.

5. Distance Learning Opportunities

Furthermore, social media in education offers lots of distance learning opportunities. Less privileged students who have not been able to go through the formal form of education by attending regular classes in educational institutions. With the advent of various online technologies in line with social

media, modern educators have been able to bring on board students through distance learning programs. Social media learning will soon become part of our modern educational system. Today, hosting live lectures through Zoom and Microsoft Teams is the way forward to educating students living in remote areas of the world to access education. Therefore, it can be claimed that social media platforms, enabling free voice and video calls, the sharing of documents, links and any other type of information can be highly effective in improving academic performance and students' learning. At the same time, the parents and teachers must note that high security must be maintained if a minor is making use of any social media websites. There are great tips for keeping kids safe online which are for sure useful to all parents nowadays.

Empirical Review

Below are some works on social media and perceived usefulness of some authors

Learner Autonomy and Social Media Learning Satisfaction

Ke and Kwak (2013) examined social media learning satisfaction about learner autonomy. The results indicated that five key constructs of student learner autonomy predicted students' perceived satisfaction with online courses and web-based distance education at a statistically significant level.

Sari (2019), explored the experiences of second-semester students at Tidar University regarding the benefits social media offered in learning English. From the results, it was realized that independent learning and writing improves vocabulary references, increases confidence, explores the experience and styles also solves other academic difficulties such as grammatical rules leading to learner satisfaction.

Ke and Kwak (2013) examined social media learning satisfaction concerning learner autonomy. The results indicated that five key constructs of student learner autonomy predicted students' perceived satisfaction with online courses and web-based distance education at a statistically significant level.

Ting 2015, explored autonomy by relating school learning to students' digital literacy. The research made use of 36 university students studying the engineering course. Results from the qualitative data indicated that participants developed their autonomy to exercise their digital literacy to resolve the difficulties they faced during Web exploration and data collection for their school learning. It also indicated improvement in learning autonomy.

Luo (2018) examined the relationship between learner autonomy and satisfaction in a flipped classroom environment that incorporates social media tools. It discusses how learners' autonomy affects their satisfaction with this learning approach. Their results indicated that there was a statistically positive significant relationship between learner autonomy and social media learning satisfaction.

Han (2021) investigated how learner autonomy influences language learning through social networking sites. It explores the role of autonomy in learners' satisfaction with this mode of learning. Results indicated learner autonomy promoted language learning hence, learner satisfaction.

Hsu (2016) in their study while not specifically focused on social media, this study explored the relationship between learner autonomy and language learning strategies in the context of the Web 2.0 era, where social media platforms are often used for learning.

Horn and Staker (2015) in his study delved into learner autonomy and satisfaction in the English language through Massive Open Online Courses (MOOCs), which frequently incorporate social media and online interactions. It explores how learner autonomy influences MOOC participants' satisfaction. Results from the study indicated learner autonomy influences participant satisfaction positively.

Liu (2015) investigated the relationship between learner autonomy, motivation, and English as a Foreign Language (EFL) proficiency. He discusses how learner autonomy can impact satisfaction with language learning, which may involve social media tools. Results showed learner autonomy had a positive impact on learner satisfaction.

Carretero, Vuorikari, and Punie (2017) in their study explored learner autonomy in the context of collaborative digital storytelling, which can involve the use of social media. It discussed the role of learner autonomy in shaping satisfaction with collaborative online projects. Results indicated learner autonomy promoted satisfaction in online projects.

These resources provide insights into how learner autonomy relates to learners' satisfaction with social media-enhanced learning experiences. They highlight the importance of learner autonomy in shaping perceptions and outcomes in digital learning environments, particularly those involving social media. These researches failed to touch on the other elements of connectivism thus; diversity, connectedness and openness hence, the need to assess these elements.

Learner Diversity and Social Media Learning Satisfaction

M. Strož (2016) investigated how learner diversity affects the use of social network sites for educational purposes and its impact on learning satisfaction. It explored the diverse needs and preferences of learners. Results showed that learner diversity motivated students to use social networking sites for educational purposes.

Walters and Green (2013) explored how university students from diverse cultural backgrounds perceive the use of social media in multicultural education and how it impacts their satisfaction with the learning experience. Results from the study showed that students were satisfied with the overall learning experience.

Cotner, Thompson, and Wright (2017): While not explicitly about learner diversity, this research examined student satisfaction with the use of social media in a large lecture course. It indirectly addresses how social media can cater to diverse student preferences and impact satisfaction. Results showed that social media had a positive impact on learner satisfaction.

While not specific to social media, Flor (2017) discusses learner diversity and its relationship with educational technology highlighting the importance of considering diverse learner needs in technology-enhanced learning environments, which can include social media.

Barrot's (2016) paper explored the implications of learner diversity for language teaching and learning through social media. It discusses how instructors can address diversity to enhance learning satisfaction.

Dawson (2016) examined how individual learner characteristics, including diversity-related factors, influence perceptions of social presence and the

overall learning experience in online courses, which may involve social media. From the results, it can be said that diversity improved learners' online experience.

Appel, Cartwright, Smith and Wolf (1996) looked at over 125 sources and found similar positive results from diversity. Their literature review suggests that most diversity initiatives have a direct and positive impact on student satisfaction. Additionally, the American Council on Education conducted a large faculty survey of 570 faculty members using the Faculty Diversity Questionnaire to gauge what they thought about "diversity." This survey found that faculty members think diversity gives students new perspectives and helps students examine personal experiences (AAUP & American Council on Education, Academe reprinted the results, 2000).

Jonathon Alger's (1997) article supports the notion that there is an educational value of diversity in that it helps students get the broadest education possible. Other national studies show that highly diverse classrooms yielded increased learning in problem-solving and group skill areas (Terenzini et al., 2001).

Kim et al. (2014) aimed to examine if learners' satisfaction increased when a larger number of interactive learning tools were available and various interactions were activated. As a result, it was found that the overall satisfaction of students' learning was related to the interactions activated for their online learning experience. Interaction with fellow students was found to be especially helpful in learning. In particular, the methods of using the interactive learning tools, rather than quantity (i.e. high number), were found to increase satisfaction with online learning. Smith et al. (1997) investigated

Diversity about its benefits to students. Results showed that diversity enriches classrooms, and enhances the learning process for all students. Moreover, membership in terms of special ethnic, gender and cultural clubs are shown to help in retention making students satisfied with learning. Terenzini et al. (2001) conducted research on the benefits of ethnic and racial diversity in the classroom. It was realized that high diversity in learning developed problem-solving skills which made learners satisfied.

These resources provide insights into the relationship between learner diversity and satisfaction in the context of social media-enhanced learning. They emphasize the importance of considering diverse learner needs and preferences to create more inclusive and satisfying learning experiences. However, these researches failed to touch on the other elements of connectivism thus; autonomy, connectedness and openness, hence, the need to assess these elements.

Learner Connectedness and Social Media Learning

Moll, Nielsen and Linder, (2015) examined connectedness among secondary and post-secondary physics students' regarding social media learning behaviors. 24 secondary and 10 post-secondary physics students were interviewed. Social media learning behaviors that students pointed out were tallied while ways through which students used them were characterized for their potential to promote connectedness. Results from the interview indicated that students access Web 2.0 resources to equip their studies frequently, indicating a high level of learner satisfaction.

Adoka (2020), evaluated the value of social media involved in collaborative learning and engagement based on the theory of Technology

Acceptance Model (TAM). The findings indicated that the use of social media during collaborative learning and engagement, positively and significantly acquainted learners with peers and authorities and as well improved their academic performance at the higher educational level therefore enhancing learner satisfaction.

Suzanne and Logan (2018) explored the role of WhatsApp in building connectedness among three separate cohorts of students from the Masters in Special Educational Needs (MSEN) at the Institute of Education, Dublin City University (DCU). Findings from the research showed that the use of WhatsApp was widespread, hence, creating opportunities for students to build a sense of connection and the basis for developing a learning community hence promoting learner satisfaction.

Kennedy and Jolie (2018), explored connectedness in personal learning networks among doctoral students. Six students were involved in live experience descriptions, think-aloud observations, and in-depth interviews. The authors made use of post-intentional methodology, a post-reflexive journal and a post-intentional data analysis technique of chasing lines of flight in analyzing and interpreting the data. The findings mentioned connectedness as motivation, learning, and identity.

Shea, Pickett, and Li (2005) investigated the role of a sense of community, or connectedness, in online education. It explored how learners' perception of connectedness influences their satisfaction and persistence in online courses, which can include social media components. Baber (2020) investigated the determinants of students' learning satisfaction in

undergraduate students from South Korea and India. The study discovered that student connectedness influences and enhances students' learning satisfaction. Yu and Tian (2015) explored the impact of social media use on students' perceived social integration and satisfaction with their academic experiences. It discusses how connectedness through social media can influence satisfaction. The results indicated social media had a positive impact on students' satisfaction.

A cross-country study conducted by Baber (2020) during the COVID-19 pandemic revealed that connectedness is the most significant factor in examining students' online learning satisfaction and learning outcomes. Jung et al. (2002) found that consistent interaction with instructors accounts for 60% of students, online learning satisfaction, especially in the early stages of a course. Kurucay and Inan (2017) stated that the interaction between learner-learner is also important for both student satisfaction and student academic achievement in online learning, which allows students to socialize, exchange, and discuss ideas and participate in group activities.

The role that online interaction plays in adult learners' satisfaction and learning was investigated by Chen and Chen (2007). They found a positive, significant relationship between student connectedness and satisfaction. Hence, learner connectedness promotes learner satisfaction. These researchers only considered connectedness and left out the other elements of connectivism The study of Nandez & Borrego (2013) reveals that postgraduate students have used Social Networking Sites (SNSs) to get in touch with other scholars and disseminate research results.

Similarly, another research study reported that social media was found to be helpful in face-to-face collaborative learning and in developing self-confidence among students of higher education (Voorn & Kommers, 2013). Khan (2018) examined the information behavior of LIS postgraduate students from online information resources to measure the influence of online collaborative social media on researchers in Pakistan. The study found social media tools to a helpful and satisfactory tools for seeking and sharing information in a collaborative environment. These references offer insights into the relationship between connectedness and satisfaction in the context of social media-based learning. They highlight the significance of fostering a sense of connectedness among learners to enhance their overall satisfaction with online and social media-driven educational experiences.

Learner Openness and Social media Learning satisfaction

Bray, Aoki and Dlugosh (2020) explored learner satisfaction with regards to content and computer interaction. The results indicated students were generally satisfied with their learning. Khalil and Ebner (2014) investigated the relationship between learner openness to experience and participation in Massive Open Online Courses (MOOCs), which often incorporate social media elements. It explored how learner openness influences satisfaction with MOOCs. Results from the study showed that learner openness influenced participation in Massive Open Online Courses (MOOCs). Johnson's (2008) research, while not specific to social media, explored the relationship between learner openness to experience and satisfaction with online learning. It discusses how learners' openness can impact their overall satisfaction with online education. Lowenthal and Wilson (2010) examined the role of

instructor presence and learners' attitudinal dispositions, including openness, in predicting online learners' success and satisfaction. It touched upon the impact of learner openness on satisfaction. Results showed that learner openness had a positive impact on learner satisfaction.

Lee (2015) explored how the Big Five personality traits, including openness, influence online learner satisfaction. It considers the role of learner personality traits in the context of online learning, which can include social media components. Trepte et al. (2015) investigated the relationship between personality traits and social media use. While not focused on learning satisfaction, it provides insights into how learner openness might influence their social media use and interactions, which can relate to satisfaction.

These references offer insights into the relationship between learner openness and satisfaction in the context of social media-based learning. They highlight the importance of considering learner traits and dispositions, such as openness, when designing and facilitating social media-driven educational experiences. However, most of the studies that were reviewed considered only an aspect of connectivism, leaving out the remaining elements. Hence, there is a need to examine the entire connectivism involved in social media learning.

Social media learning perceived usefulness

Rahman, Ramakrishnan and Ngamassi (2020) examines Higher Education students' perceptions of social media use (SMU) and the impact of SMU on their learning satisfaction. The study finds that; perceived usefulness of social media has positive effect on the use of social media in student learning; SMU has positive effect on student satisfaction. Bray et al. (2020) examined student opinions and learning preferences in regard to five aspects

of distance learning identified as important: 1) teacher interaction, 2) content interaction, 3) student interaction, 4) computer interaction and 5) student autonomy. The results indicated students were generally satisfied with their learning.

Rahman et al. (2020) examined the influence of perceived usefulness on social media use. Results of the study indicate that Perceived Usefulness has a positive influence on the intention to use social media in learning. Al-Emran, Shaalan, and Karim (2016) explored the perceived usefulness of WhatsApp as a social media tool for learning. It investigates how students perceive the platform's utility in educational contexts. Madge, Meek, Wellens, and Hooley (2009) in their research examined how social media can enhance student engagement in higher education and how students perceive the usefulness of social media platforms for their learning. Chen and Gao (2016) in their study focused on students' perceptions of Twitter as a tool for informal learning in a Chinese higher education context, emphasizing the role of perceived usefulness in their engagement.

Junco, Heiberger, and Loken (2011) in their literature review discussed the impact of social media on higher education and highlighted the potential benefits for learning, which are closely related to students' perceptions of usefulness. García-Peñalvo, Fidalgo-Blanco & Sein-Echaluce (2018) investigated the role of social media in higher education and how it affects students' perceptions of usefulness and engagement.

Chapter Summary

This chapter reviewed various concepts related to the study. Concepts such as definitions of connectivism, benefits and challenges of social media learning were revealed. Moreover, connectivism served as the theoretical framework for the study.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter examines the research methodology that was used for the study. It is composed of research design, the population from which the sample is chosen, the sampling procedure, the research instrument, the data collection procedure and the data analysis procedure.

Research Design

Bada (2007) describes research design as a framework that provides details of the procedure required to obtain the necessary information to solve a research problem. This study employed a descriptive research survey methodology. This study's design also referred to 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). A descriptive research study establishes and documents the nature of the problems at hand, according to Gay (1992). The descriptive research approach will systematically document the current state of learner satisfaction with social media. Specifically, it will address the research questions rather than exploring the reasons behind them. Additionally, the descriptive research design allows for the analysis of the four variables involved in this study: learner autonomy, learner diversity, learner openness, and connectedness. Furthermore, this research design often employs the use of surveys that allows the researcher to collect data from a large sample size quickly and cost-effectively.

Study Area

The study was conducted at the University of Cape Coast. Cape Coast, the capital of Ghana's Central Region, is home to the University of Cape Coast. Cape Coast Municipality covers a total land area of approximately 122 sq. km. (12,200 ha.). The total population is 118,106 out of which 57,365 are males and 60,741 females. Located south of the Gulf of Guinea, Cape Coast is one of the nation's most historic cities and a World Heritage Site, known for the Cape Coast Castle. (W en.wikipedia.org/wiki/Cape_Coast). The town hosts several academic institutions (secondary and tertiary levels) that serve as the backbone of education in Ghana.

The University of Cape Coast has a total student population of about 74,720. The University has five colleges. Each college has different faculties, schools and departments. The University of Cape Coast was preferred, since it is one of the oldest universities in distance education in Ghana, providing a similar experience to other universities in the country. Moreover, the University of Cape Coast offers a wide range of educational courses similar to those at other universities, making the findings from this study representative of other institutions offering similar programs. Finally, the University of Cape Coast is ranked by the Times Higher Education World University Rankings as the No. 1 University in Africa for research influence, providing a strong foundation for gathering data for this study.

Population

A population is a group of elements or cases— individuals, objects, or events-that conform to certain criteria and from which data can be collected for analysis (McMillan, 1996). Thus, a population may be expressed as a body

of people or objects from which information could be obtained for statistical analysis. A population in research is a set of individuals with shared observable characteristics that a researcher intends to use in their study (Fraenkel & Wallen, 2003). Distance learning students from the Cape Coast Learning Centre constituted the study's target population. The study's population is approximately 2,023, consisting of both undergraduate and graduate students. The Cape Coast Learning Center has a total of 1,412 undergraduate students, with 696 males and 716 females. The programs offered at the center mainly consist of Bachelor of Education and Bachelor of Commerce degrees. Bachelor of Education programs include Accounting, Arts, Early Childhood, Management, Primary Education, Educational Psychology, Social Studies, Junior High Education, Mathematics Education, Mathematics, Basic Education, and Science Education. Bachelor of Commerce programs include Accounting, Finance, Human Resource Management, Management, Marketing, and Procurement and Supply Chain Management. (Students' Records Section of the University of Cape Coast 2023). This center was chosen because it is a main center for distance education, with the majority of students and hosts nearly all the programs offered at other study centers. Thus, the data gathered here will be representative of the other study centers. Additionally, it is easily accessible to both the participants and the researcher, allowing easy access to first-hand information. Table 1 provides the statistics of distance learning undergraduate students at the University of Cape Coast, Cape Coast Learning Centre.

Table 1: Total statistics of distance learning students in the University of Cape Coast, Cape Coast Centre

PROGRAM	Males	Females
Bachelor Of Education (Accounting) – Distance	8	0
Bachelor Of Education (Arts) – Distance	11	15
Bachelor Of Education (Early Childhood Education) – Distance	6	80
Bachelor Of Education (Management) – Distance	10	9
Bachelor Of Education (Primary Education) – Distance	34	79
Bachelor Degree In Educational Psychology – Distance	112	105
Bachelor Of Education (Social Studies) – Distance	33	21
Bachelor Of Education (Junior High School Education) – Distance	107	84
Bachelor Degree In Mathematics Education – Distance	5	0
Bachelor Of Education (Mathematics) – Distance	8	1
Bachelor Degree In Basic Education – Distance	38	83
Bachelor Degree In Science Education – Distance	4	1
Bachelor Of Education (Science) – Distance	3	0
Bachelor Of Commerce (Accounting) – Distance	107	34
Bachelor Of Commerce (Finance) – Distance	23	1
Bachelor Of Commerce (Human Resource Management) – Distance	33	54
Bachelor Of Commerce (Management) – Distance	91	104
Bachelor Of Commerce (Marketing) – Distance	20	18
Bachelor Of Commerce (Procurement and Supply Chain Management) – Distance	43	27
Total	696	716
Final Total	**1412**	

Sample and Sampling Procedure

The primary purpose of sampling is to select a subset that accurately represents the total population from which it was drawn. Sampling procedure are important because they are used to choose participants who accurately represent the study's overall population. The sample size in this study was determined based on the table proposed by Krejcie and Morgan (1970). For a population of 1,412, the Krejcie and Morgan table specifies a sample size of 302, as it balances the trade-off between accuracy and feasibility, accounting for the population's finite size while ensuring sufficient representativeness. This study involved multistage sampling (convenience, stratified and simple random sampling). In the first stage of sampling, the researcher used purposive sampling. The researcher chose this method because purposive sampling focuses on selecting participants with characteristics relevant to the research study. The problem with this sampling type is that it is prone to researcher bias. The researcher involved only the undergraduate students among the various categories of students at the center. This choice of sampling is due to the limited time and resources available to the researcher. In the second stage, the researcher used stratified sampling and proportional allocation to create a strata sample from the existing strata. This sampling technique was involved due to the homogenous nature of the existing strata. The strata samples are Education and Commerce. In the third stage of the sampling, the researcher made use of simple random sampling to select students from the various strata to ensure a fair distribution. The strata sample size of the various programs is presented in the table below

Table 2: Sample Size Distribution Table for Distance learning students

Name of Program	Strata Sample	Proportionate Sample
Bachelor Of Education	857	182
Bachelor of Commerce	558	119
TOTAL	**1412**	**301**

Data Collection Instruments

The study used a questionnaire to gather data from the respondents. A questionnaire is a type of research tool used to collect data from respondents for a survey or statistical analysis. It consists of a set of questions (or other forms of prompts). Typically, a research questionnaire will have both closed-ended and open-ended questions. Long-term, open-ended inquiries provide the respondent with the chance to go into more detail. The questionnaire was adapted with each section having eight items. There were thirty-two items in total which were presented in seven sections. The demographic information about the respondents is in Section "A," while learner **autonomy** on social media is in Section "B." Data on learner **diversity** on social media were gathered in Section 'C,' while Section 'D' investigated learner **connectedness** on social media. Section "E" looked at learner **openness** on social media among distance learning students. Section F examined learner satisfaction while section G looked at social media usage. A section consisted of five-point Likert scale items: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. The questionnaire was adopted from Parasuraman et al (1985) as cited in Anantha and Abdul (2012). The structured questionnaire collected data about social media usage and satisfaction. Social media tools common to the learners were also considered. It is significant to note that the researcher

chose to use a questionnaire since it is cost-effective and efficient for reaching a wide range of respondents. In comparison to certain other survey forms, questionnaires are more advantageous to use because they do not need as much effort from the respondent as verbal or telephone surveys and frequently include standardized answers that make it easy to gather data. Such standardized responses, however, could irritate users because they might not exactly reflect their expected responses. Secondly, the requirement that respondents be able to read the questions and reply to them severely restricts the use of questionnaires. Therefore, conducting a survey through questionnaire may not be practically possible for some demographic groups.

Validity of Instruments

The questionnaire was given to an expert to ascertain whether it meets the face construct and content validity. The first draft of the questionnaire was pre-tested at the Cape Coast Technical University. The pilot test involved 30 participants and the data gathered was computed and analyzed using the Statistical Product for Social Sciences (SPSS) version 21. for its reliability. After conducting the pilot test, several adjustments were made to improve the questionnaire. Ambiguous questions were rephrased for clarity, and two double-barreled items were split into separate questions to focus on single topics. The response scale was refined by adding a "Not applicable" option and standardizing Likert scale labels across all sections. Additionally, the order of questions was reorganized to group related topics and ensure a logical flow. Redundant items were removed to shorten the questionnaire, and detailed instructions were added to guide respondents through complex

sections. These changes were aimed at enhancing readability, accuracy, and overall respondent experience.

Data Collection Procedure

Fieldwork began immediately after the validity of the data collection tools was ascertained after the pretest. An introductory letter was taken to the Cape Coast study center, stating the aims and purpose of the study and the need for the participants to give their consent and cooperation. For participants to do their best to give a realistic response to each question, they were assured of confidentiality as the researcher made known the purpose of the research. These are the most important ethical issues to adhere to when conducting a survey (Kelley**,** Clark, Brown & Sitzia, 2003). Also, they were assured that all information obtained will be used for the intended purpose. The researcher was also present to explain how to answer sections of the questionnaire. The students were guided to answer their questionnaire instantly to avoid misplacement of the questionnaire and other excuses. Every question was thoroughly explained and all doubts were cleared. Room was given for questions and answers. To ensure a high return rate for the questionnaires, the researcher administered and collected the questionnaire personally. The administration of questionnaires was done on three consecutive Saturdays. This day was chosen because distance learning students are available mostly at weekends.

Data Analysis and Processing

Data collected from the field was cleaned. It is important to clean the data collected for analysis. According to (Sarantakos, 2013), the analysis of the data allows the researcher to clean the data collected during the study to

assess and evaluate the findings and arrive at some valid, reasonable, and relevant conclusions. This process included identifying and handling missing data through imputation or removal, correcting typographical errors, and standardizing formats such as dates, numerical precision, and text capitalization. Duplicate entries were removed to ensure the integrity of the dataset, while outliers were reviewed to determine if they needed adjustment or exclusion. Inconsistencies in coding or categorization were resolved, and the cleaned data were validated to ensure it meets predefined rules and ready for analysis. Each objective of the study had its tool. The statistical software which was used in the cleaning of the data that were gathered from the field is Statistical Package for the Social Sciences (SPSS). The SPSS is a tool created for complex statistical data management and analysis. SPSS provides researchers with a flexible, customizable way to get super granular on even the most complex data set. It is good for descriptive statistics like percentages and frequencies, mean and standard deviation.

Structural equation modelling (SEM) was employed in this study. SEM is a multivariate statistical analysis method for examining structural relationships. This method examines the structural link between measurable variables and latent constructs by combining multiple regression analysis and component analysis. This tool was chosen because it provides a path model that can describe and measure relationships among variables and indicators. Therefore, this tool can provide an understandable picture and support to demonstrate the results.

Ethical Clearance

Some measures were put in place to ensure compliance with accepted practices and ethical standards. Firstly, an introductory letter explaining the purpose of the study will be taken from the Department of Mathematics and Science of the College of Distance Education from the university and sent to the selected classes, where formal permission will be sought. Again, a clause assuring respondents of anonymity and confidentiality will be included in the introductory paragraph of the questionnaire. Special care was taken to avoid collecting identifiable information unless absolutely necessary. Given the potential for privacy implications, participants were reassured that their social media activity will not be monitored or traced, and that responses will only be analyzed in aggregate. Additionally, compliance with data protection regulations such as GDPR or similar local frameworks was ensured to safeguard participants' rights and data security.

CHAPTER FOUR

ANALYSIS AND DISCUSSION

Introduction

The outcomes of the analysis of the data gathered are presented in this chapter. The study examined the predictive relationship between connectivism, social media use and learners' satisfaction. The data was analyzed using two software: SPSS version 26 for the descriptive aspect and Smart PLS 4.0 for the structural model. The analysis involved summarizing the data in descriptive statistics to answer the research questions, while inferential statistics was used to test the hypotheses formulated. The hypotheses were tested using Partial Least Squares - Structural Equation (PLS-SEM).

Demographic Information

The demographic information of students comprises sex, age, programme and level. Table 3 displays the findings.

Table 3: Demographic information

	Frequency	Percent
Sex		
Male	54	38.3
Female	87	61.7
Age		
Below 19years	3	2.1
20-25	24	17.0
26-30	59	41.8
31-35	40	28.4
Above 36years	15	10.6
Programme		
Bachelor of Education	92	65.2
Bachelor of commerce	47	33.3
BSC. IT	2	1.4
Level		
100	3	2.1
200	6	4.3
300	64	45.4
400	68	48.2

Source: Field Data

The result as presented in Table 3 shows that 61.7% of the respondents are females, the results also shows that 41.8% of them are between the ages of 26 and 30, 65.2% of them are reading Bachelor of Education and 48.2% are in level 400. This shows that a greater number of the students are females. A larger number are offering education and more of the students are in level 400.

Table 4: Description of variables

Descriptive	**M**	**SD**
Social Media Use	3.6879	.78518
Learners' satisfaction	3.3816	.98905
Connectivism	3.4085	.78006
Learners' Openness	3.4014	.90095
Learners' Connectedness	3.2142	.97531
Learners' Diversity	3.5957	.88138
Learners' Autonomy	3.4227	.99745

Source: Field Data

The results presented in Table 4 indicate that a high level of Learners' Diversity (M = 3.5957, SD = .88138) was observed in connectivism, followed by Learners' Autonomy (M = 3.4227, SD = .99745, Learners' Openness (M = 3.4014, SD = .90095) and Learners' Connectedness (M = 3.2142, SD = .97531). The overall level of connectivism was also high. The results also revealed a high level of social media usage among learners (M = 3.6879, SD = .78518) as well as learners' satisfaction (M=3.3816, SD= .98905).

Testing of Research Hypotheses

This section describes the analytical techniques employed to draw inferences about a population based on responses from a sample. To achieve the objective of inferential statistics, PLS-SEM was utilised, which enables

generalisations to be made about a population based on the study's hypotheses. The analysis proceeded by evaluating both the measurement instrument and the structural model. PLS-SEM, or Partial Least Squares Structural Equation Modelling, is a statistical procedure used to examine relationships between variables in research. It consists of two primary steps: the measurement model and the structural model. In the measurement model, the connections between latent variables (unobservable constructs) and their indicators (measurable variables) are examined. PLS-SEM assesses the strength and significance of these relationships, enabling researchers to understand how effectively the indicators represent the underlying constructs.

Indicator reliability

The item outer loadings are primarily used in PLS-SEM to examine the reliability of the measuring items of a specified construct (Hair *et al.*, 2019). Thus, to guarantee the indicator reliability of a concept, the indicator outer loadings must be greater than .7 (Hair *et al.*, 2014). Nonetheless, it is worth noting that indicators with relatively weaker outer loadings are retained in some cases due to their contribution to content validity, as Hair and Sarstedt (2021) suggested. Figure 1 shows that all measuring items loaded above the acceptable threshold set by the various authors for the application and evaluation of PLS-SEM results in research (Hair *et al.*, 2019), with a minimum loading of .503 and .829 as the maximum loading. As a result, the ultimate model provided below (Figure 1) represents the base for further examination of the structural model.

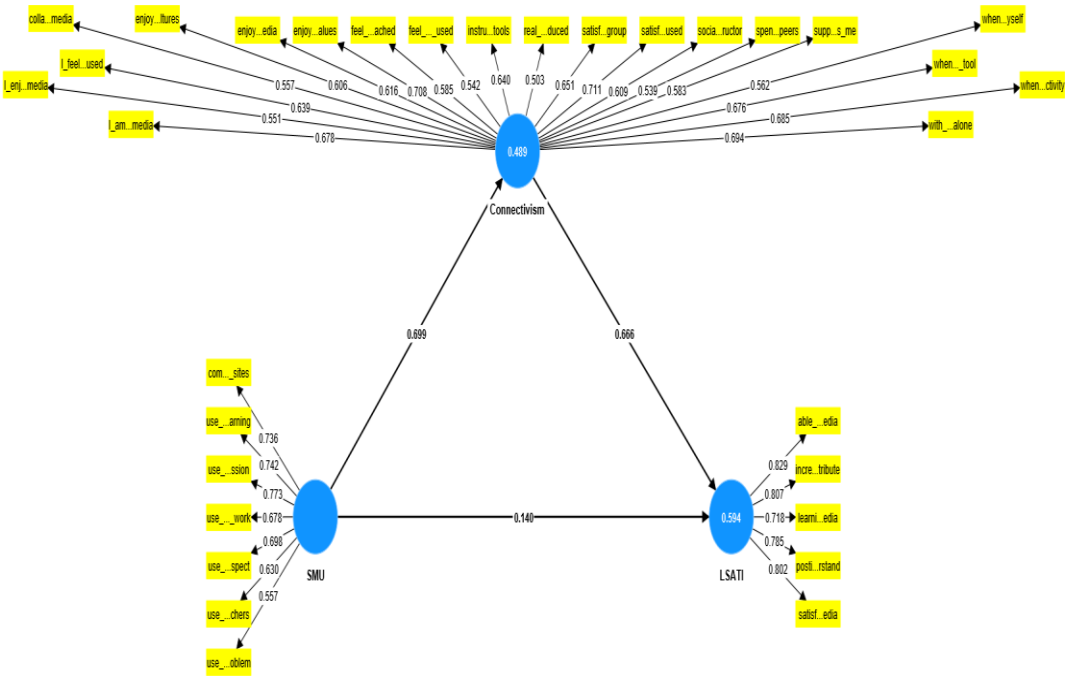

Figure 4: Indicator outer model assessment output

Table 5: Reliability and validity output of indicators

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Connectivism	.915	.918	.925	.384
LSATI	.848	.852	.892	.623
SMU	.816	.828	.864	.478

Source: Field Survey

Internal consistency reliability

The metric used in this context is based on the correlations between individual test items (Hair *et al.*, 2019). To evaluate the reliability of the construct, two commonly used measures are employed: Cronbach's alpha (α) and composite reliability. Both measures assess the consistency and dependability of the construct's measurement. The generally accepted guideline for reliability criteria is that values should exceed .70 (Sarstedt *et al.*,

2022). Therefore, to determine the construct's reliability, both Cronbach's alpha and Composite Reliability (CR) must meet this threshold. Weighted composite reliability is considered more accurate than unweighted Cronbach's alpha because it takes into account the varying reliability of different indicators. Consequently, in Table 5, the assessment and reporting of the construct's reliability are based on composite reliability. The results as presented in Table 5 shows that α (Connectivism = .915, LSATI = .848 and SMU = .816) and Composite Reliability, thus rho a (Connectivism = .918, LSATI = .852 and SMU = .828) and rho c (Connectivism =. 925, LSATI = .892 and SMU = .864) scores loaded greater than the .70 threshold established by Hair *et al.* (2014), hence they are acceptable.

Convergent validity

Convergent validity refers to the degree to which a measure demonstrates a positive correlation with other measures that assess the same construct (Taherdoost, 2016). In the domain sampling model, indicators of a reflective construct are treated as distinct approaches to measuring the identical construct. In the context of Partial Least Squares Structural Equation Modelling (PLS-SEM), Convergent Validity (CV) is commonly evaluated using the Average Variance Extracted (AVE) metric. The Average Variance Extracted is computed by averaging the reliabilities of a construct's indicators. This metric assesses the extent to which the concept and its measurements share a common variance. According to the criterion established by Fornell and Larcker (1981) and supported by Sarstedt *et al.* (2019), an Average Variance Extracted value should be above .5, indicating that more than 50% of the variance is captured by the construct's indicators. Table 5 displays the

AVE values (Connectivism = .348, LSATI = .623 and SMU = .478) for the constructs, demonstrating that the loadings for SMU and connectivism are lower than the Fornell and Larcker (1981) criterion of .5. As a consequence of not meeting the established criterion for AVE and displaying satisfactory convergent validity, the constructs in question should be considered for removal. Nonetheless, it is worth noting that in some cases, indicators with relatively weaker outer loadings are retained due to their contribution to content validity, as suggested by Hair *et al.* (2021). As a result, these indicators with weaker loadings are kept in the analysis to ensure a comprehensive representation of the construct's content and meaning.

Discriminant validity

Discriminant validity refers to the extent to which a construct is genuinely different from other constructs, based on empirical standards. It involves demonstrating that a construct captures phenomena that are distinct and not already accounted for by other constructs in the model (Hair *et al.*, 2021). To evaluate the uniqueness of a construct and establish its discriminant validity, the Heterotrait-Monotrait (HTMT) ratio approach was used. The Heterotrait-Monotrait (HTMT) causal connection ratio, which was introduced by Henseler *et al.* (2015) is used to assess the presence of discriminant validity between two reflective constructs. When the calculated HTMT value is below .90, it signifies that discriminant validity is established between the two constructs, indicating their distinctiveness.

Table 6: Heterotrait-Monotrait Ratio (HTMT) output

	Connectivism	LSATI	SMU
Connectivism			
LSATI	.853		
SMU	.725	.706	

Source: Field Survey

According to the HTMT statistics presented in Table 6, all of the causal links demonstrated values below the threshold of .90. This indicates that each construct was clearly distinct from the others, confirming the absence of common biases in the methodology.

Assessment of the structural model

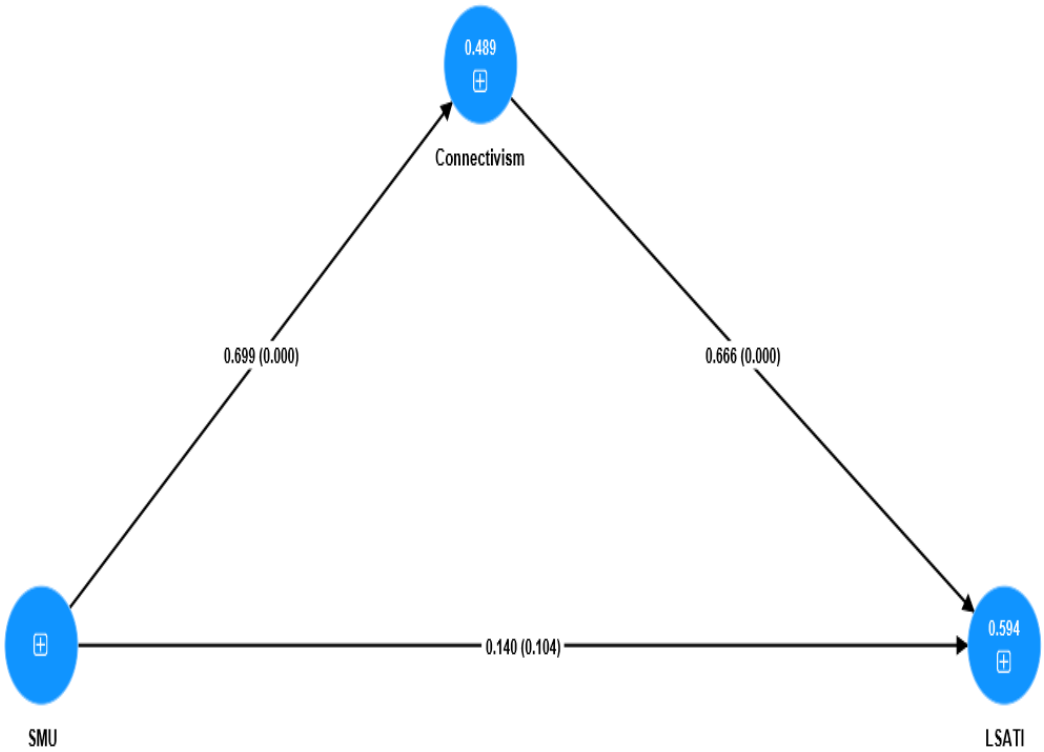

Figure 5: Structural model

The study used Smart PLS 4.0 to evaluate the hypotheses proposed after adopting a satisfactory measurement model. For the path model, 5000 replications were used for bootstrapping analyses. According to Hair *et al.*

(2016), the resulting test statistic, that is, effect size (f^2), coefficient of determination (R^2) and the variance inflation factor (VIF), reports the model's collinearity, path coefficient, and significance, were evaluated in order to supplement the quality of the study objectives examined.

Assessment of common method variance (CMV)

Common method variance refers to comorbidity between metrics of different constructs generated by identical measurement modalities instead of the constructs themselves (Brannick *et al.*, 2010). This study employed the VIF in testing for every measure's error probability. The VIF measures the degree of multicollinearity by quantifying how much the variance of an indicator is inflated due to the correlation with other indicators. A rule of thumb is to consider indicators with VIF values greater than 5 or 10 as having potential collinearity issues. These results provide insights into the potential influence of common method variance and its impact on the reliability and validity of the measurement instruments used. Table 4 presents the results of the collinearity test conducted for the indicators examined in this study.

Table 7: Collinearity statistics (VIF)

	VIF
Connectivism ➔ LSATI	1.957
SMU ➔ Connectivism	1.000
SMU ➔ LSATI	1.957

Source: Field Survey

In general, a VIF value of 1 indicates no collinearity, while values above 1 suggest increasing levels of collinearity. As a rule of thumb, VIF values exceeding 5 or 10 are often considered problematic and may require

further investigation or remedial actions. It can be observed in Table 7 that the VIF values were less than 5, there was no potential collinearity issues

Path coefficient (β)

The path coefficients inside the measurement models are normalised values, and path coefficients (β) in the structural model ranging from "0 to.10,.11 to.30,.30 to .50, and >.50 are indicative of weak, modest, moderate, and strong effect sizes, respectively" (Hair *et al.*, 2021; Hair & Almer, 2022).

Table 8: Path coefficient

	Connectivism	LSATI	SMU
Connectivism		.666	
LSATI			
SMU	.699	.140	

Source: Field Survey

The outcomes are shown in Table 8 and Fig.5, the β value for connectivism ➔ LSATI = .666 (strong effect), SMU➔ connectivism = .699 (strong effect) and SMU ➔ LSATI = .140 (modest effect). As a result, all of the hypothesized paths outlined in the predictor constructs are statistically considerable.

Table 9: Output of the structural model analysis

IV ➔ DV	**R^2**	**Adjusted R^2**	**f^2**	**Q^2**
SMU ➔ connectivism	.489	.485	.957	.468
SMU ➔ LSATI	.594	.588	.025	.347
Connectivism ➔ LSATI	.594	.588	.558	.347

Source: Field Survey

Coefficient of determination (R^2)

After ensuring that the model lacks collinearity concerns and that the connections are significant, the following process evaluates the R^2 significance in the result (Hair & Alamer, 2022). This forecast represents the variance described by the exogenous constructs in the output. Hair *et al.* (2019) established that "R^2 values between 0 to .10, .11 to .30, .30 to .50, and > .50 are indicative of weak, modest, moderate, and strong explanatory power, respectively". The R^2 values shown in Table 9 demonstrate that SMU, as a predictor construct, has a moderate descriptive value of .489 or 48.9% over connectivism in the relationship between SMU and connectivism. Again, as displayed in the Table, SMU as a predictor construct had a strong (.594 or 59.4%) interpretative power over LSATI in the SMU ➔ LSATI relationship and connectivism as a predictor construct also had a strong (.594 or 59.4%) interpretative power over LSATI in the Connectivism ➔ LSATI relationship.

Effect size (f^2)

The effect size (f^2) component of SEM analysis assesses the effect of the causative concept on the intrinsic one (Cohen, 1988). The f^2 is used in this study to determine whether the prescribed causative latent factors significantly influence the consequent variables (Tolliver *et al.*, 2020). Cohen (1988) suggested the preceding rough guidelines: "A score less than .02 indicates no effect, .02 - .15 indicates a small effect size, .15 - .35 indicates a medium-sized effect and greater than .35 indicates a large effect size". The f^2 scores presented in Table 9 range from f^2 = .025 for SMU ➔ LSATI, f^2 =.558 for Connectivism ➔ LSATI and f^2 = .957 for SMU ➔ connectivism, depicting small effect size and medium-sized effect respectively (Hair *et al.*, 2016).

Predictive relevance (Q^2)

The Q^2 indicates the data sets of reflective metrics exogenously in models, allowing the prognostic significance of a specified latent variable endogenously to be assessed (Russo & Stol, 2021). Predictive precision can be low ($Q^2 < 0$), medium ($Q^2 > .25$), or strong ($Q^2 > .50$) (Hair *et al.*, 2019). Table 9 shows the Q^2 predict scores for each of the independent variables on the explained variables, which are as follows: $Q^2 = .468$ for the relationship between SMU and connectivism, $Q^2 = .347$ for the relationship between SMU and LSATI and $Q^2 = .347$ for the relationship between Connectivism and LSATI indicating low and acceptable predictive relevance (Henseler *et al.*, 2015).

Results of evaluation of structural model

The structural model indicates the causal relationships between the latent variables. The study tested the model presented in Figures 1 and 2, using the *PLS* algorithm was used to test the hypotheses. PLS-SEM test of significance is achieved through bootstrapping of the endogenous latent variables. The structural model tested in this study involved the direct and indirect effects of social media use on connectivism and learners' satisfaction.

Significance of the structural model

After confirming the model's predictive and explanatory strength, the last step is to evaluate the statistical importance and applicability of the coefficients of the suggested structural paths in the model (Hair *et al.*, 2018).

Table 10: Significance and size of structural model coefficient

	β	*SD*	*T*	*p*	**Remarks**
Connectivism ➔ LSATI	.666	.077	8.670	.000	**Supported**
SMU ➔ Connectivism	.699	.052	13.484	.000	**Supported**
SMU ➔ LSATI	.140	.086	1.628	.104	Not supported
SMU ➔ Connectivism ➔ LSATI	.466	.069	6.478	.000	**Supported**

Source: Field Survey

According to the t-statistic and p-values, all of the variables considered for this study, only three (3) were statistically significant. The results were reported using the Hair *et al.* (2014) suggested t-stat values. They indicated that "t-stat values greater than 1.96 has a significant coefficient at a certain significant level. In addition, the path coefficients were outlined using Cohen (1988)'s criteria. He proposed that a "correlation coefficient (R) of .10 indicates a weak or small correlation, a correlation coefficient of 0.30 indicates a moderate correlation and a correlation coefficient of 0.50 indicates a large or strong correlation".

Hypothesis one: There is a significant influence of social media use (SMU) on a) Connectivism and b) learners' satisfaction (LSATI)

The first hypothesis assumed that: social media use will influence a) connectivism and b) learners' satisfaction. The result, as presented in Table 10 showed that the effect of social media use on connectivism (β = .699, p < .001) was significant, but on learners' satisfaction (β = .140, p = .104) was not significant. The results show that a good use of social media could improve connectivism among learners but not their satisfaction.

Hypothesis two: There is a significant influence of connectivism on learners' satisfaction

The second hypothesis postulated that: connectivism will influence learners' satisfaction. The result as presented in Table 10 showed that the effects of connectivism on learners' satisfaction (β = .666, p < .001) was significant. The results show that an increase in connectivism could improve learners' satisfaction.

Hypothesis three: Connectivism will mediate the influence of social media use (SMU) on learners' satisfaction (LSATI)

The third hypothesis assumed that Connectivism will mediate the influence of social media use (SMU) on learners' satisfaction (LSATI). The results revealed that the indirect effect of social media use on learners' satisfaction was significant (β =.466, p < .001). This indicates that social media use through connectivism increases learners' satisfaction. This type of mediation is termed "full mediation." This is because the direct effect is not significant (β = .140, p = .104), but not the indirect effect (β =.466, p < .001) (Hair *et al.*, 2021).

Discussion of findings

Connectivism

The findings of the present study indicate that a high level of Learner' Diversity was observed in connectivism. This suggests that learners in the study had diverse backgrounds, experiences, and perspectives, which contributed to a rich and varied learning environment. The inclusion of diverse viewpoints can enhance learning outcomes by exposing learners to a wide range of ideas and insights. The findings of the study are similar to the

findings of Zhu, Jiang, Han and Sun (2010) and Lai and Fu (2021). Zhu et al. (2010) indicated learners' diversity when engaging on various social media platforms. It can be established that the respondents in this study demonstrate a favorable disposition towards engaging with diverse perspectives and cultures on social media as part of their learning experiences. This positive attitude toward diversity indicates the potential of social media platforms to foster inclusive and enriching learning environments.

Learners' Autonomy

Learners' Autonomy was also reported to be high. This indicates that the learners demonstrated a significant degree of self-directed learning, taking ownership of their education and actively seeking out knowledge and resources. Autonomy is a key component of connectivism, as it empowers learners to drive their own learning journeys. The findings of this study are in line with several studies, for instance, Muhammad (2020), indicated that the use of the learning system successfully promoted learner autonomy by increasing students' active participations through logging in and commenting on others among others. Ke and Kwak (2013) indicated that student learner autonomy predicted students' perceived satisfaction with online courses and web-based distance education.

Learners' Openness

Learners' Openness was another aspect where a high level was observed. Openness in connectivism refers to the willingness to explore new ideas, engage in discussions, and collaborate with others openly. A high level of openness suggests that learners were receptive to new information and valued the exchange of ideas in their learning process.

Learners' Connectedness

Learners' Connectedness was reported to be high as well. Connectedness in connectivism refers to the ability to create and maintain connections with peers, resources, and networks. High connectedness indicates that learners were actively engaged in forming and sustaining connections, which can lead to collaborative learning and knowledge sharing. The findings of the present study do not confirm the findings reported by Moll, Nielsen and Linder (2015) who reported a high level of learner satisfaction concerning connectedness and Suzanne and Logan (2018) who also reported that the use of social media platforms creates opportunities for students to build a sense of connection and the basis for developing a learning community hence promoting learner satisfaction. The variation in findings could be attributed to the research approach and study area. Moll, Nielsen and Linder (2015) employed a qualitative research approach while this study employed a quantitative approach. On the other hand, Suzanne and Logan (2018) conducted their study in Ireland, a developed country.

Influence of Social Media Use on Connectivism and Learners' Satisfaction

The first hypothesis suggests that social media use will influence both connectivism and learners' satisfaction. According to the results, the effect of social media use on connectivism was found to be significant. This indicates that using social media platforms in educational contexts can positively impact learners' ability to connect and collaborate with others, share information, and engage in collective learning experiences. However, the effect of social media use on learners' satisfaction was not found to be significant. This suggests that while social media might enhance the connectivism aspects of learning, it may

not directly contribute to learners' overall satisfaction with their educational experience. Contrary to the findings of this study, Rahman et al. (2020) found that social media use has a positive effect on student satisfaction. This suggests that social media usage among students increases their satisfaction. It is worth considering why this discrepancy exists and whether other factors might play a role in determining learners' satisfaction. The variation in findings can be attributed to geographical location, in that while the present study was conducted in Ghana, a developing nation Rahman et al. (2020) conducted their study in the United States, a developed nation. The difference can be further attributed to the fact that students in the United States are more familiar with social media tools since they were introduced to it at an earlier stage. Moreover, there is quality access to internet service due to the availability of well-performing internet service providers.

Influence of Connectivism on Learners' Satisfaction

The second hypothesis suggests that connectivism will influence learners' satisfaction. The results indicate that there is a significant relationship between connectivism and learners' satisfaction. This suggests that learners who are actively engaged in connectivism learning approaches, which emphasize collaboration, interaction, and networked learning, tend to report higher levels of satisfaction with their learning experiences. The findings of this study confirm several studies that indicate that domain connectivism will influence learners' satisfaction. For instance, Luo (2018) indicated that there was a positive relationship between learner autonomy and social media learning satisfaction, meaning the more students are autonomous, the more satisfied they become. In terms of diversity, Walters and Green (2013) showed

that students were satisfied with the overall learning experience. Baber (2020) discovered that student connectedness influences and enhances students' learning satisfaction. Johnson's (2008) research, while not specific to social media, explored the relationship between learner openness to experience and satisfaction with online learning.

Connectivism Mediating the Influence of Social Media Use on Learners' Satisfaction

The third hypothesis posits that connectivism acts as a mediator in the relationship between social media use and learners' satisfaction. The findings reveal that there is a significant indirect effect of social media use on learners' satisfaction through the mediating role of connectivism. This suggests that when learners use social media platforms to engage in connectivism learning activities, their sense of satisfaction is enhanced. The concept of "full mediation" implies that the influence of social media use on satisfaction is entirely channeled through connectivism, with no significant direct effect.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The objective of this research was to assess the extent to which social media learning enhanced learner satisfaction among distance learning students, in the field of learner autonomy, learner diversity, learner openness and learner connectedness. The chapter highlights the summary, conclusions, recommendations and suggestions for further research.

Summary

The study was necessary because the emergence of connectivism has been theoretical for a while now in our part of the world. There is therefore the need to put it into practice in our educational system. Understanding the level of satisfaction students derived from social media learning will make available information that will help various educational instructors, educational planners and policymakers to identify the right channels for promoting connectivism in teaching and learning across Ghana. To achieve the research objectives, the following research questions were formulated:

1. Are distance learning students satisfied with autonomy in learning on social media?
2. Are distance learning students satisfied with the diverse nature of social media learning?
3. Are distance learning students satisfied with the openness involved in social media learning?
4. Are distance learning students satisfied with learning when connected on social media?

Consequently, the following research hypotheses were formulated:

1. There is no statistically significant relationship between social media use (SMU) and Connectivism.
2. There is no statistically significant relationship between social media use (SMU) and learners' satisfaction.
3. There is no statistically significant relationship between connectivism and learners' satisfaction
4. Connectivism will not mediate the influence of social media use (SMU) on learners' satisfaction (LSATI)

This work assessed social media learning satisfaction among distance learning students in Ghana. This study was quantitative and used a descriptive research design. Further analysis was done using mean and standard deviation to determine the average response for each statement.

This study involved multistage sampling (convenience, stratified and simple random sampling). Convenience sampling was used to select the University of Cape Coast distance learning centre among the several distance learning centres in Ghana. Probability sampling distinguished 302 students among 1412 students in the University of Cape Coast Learning Centre

Key Findings

Objective one sought to assess Learners' experience satisfaction with social media learning with regards to learner autonomy. Learner's Autonomy was reported to be high. This indicated that the learners made use of self-directed learning, taking ownership of their education and actively sought knowledge and resources. Students were able to assess themselves after learning using the various social media learning tools. Again, students had

control throughout each learning activity on social media. Learners were able to learn at their preferred pace and were able to allocate time to various subject matters based on their weaknesses. Finally, learners were generally satisfied when they learnt on their own on social media

Objective two sought to assess social media learning satisfaction with regards to learner diversity. The findings of this study indicated that a high level of Learner' Diversity was observed in connectivism. This suggested that learners had diverse backgrounds, experiences, and perspectives, which contributed to a rich and varied learning environment. Learners shared ideas, views and enjoyed discussions on social media with individuals who held different ideas and values other than their own. Learners derived pleasure learning from different sociocultural backgrounds on social media. Additionally, most learners took courses on social media that challenged their beliefs and values which indicated that respondents possessed a positive attitude toward the diverse nature of social media learning.

Objective three sought to assess Learner' experience satisfaction with social media learning with regards to learner connectedness. Learner' Connectedness was high as well. High connectedness showed that learners were actively engaged in forming and sustaining connections, which led to collaborative learning and knowledge sharing. The findings indicated that learners felt free to express themselves when they learnt on social media. Learners were happy working with their peers when social media is used in teaching and learning. In general, it can be said that, learners had the freedom in expressing themselves and are satisfied learning with peers.

Objective four sought to assess Learners' experience satisfaction with social media learning with regards to learner openness. Learner' Openness was another aspect where a high level was observed. A high level of openness suggested that learners were receptive to new information and valued the exchange of ideas in their learning process. The findings showed that social media learning promoted peer-to-peer understanding. Secondly, learners were satisfied when assigned to the same group as their chosen peers for online activities. Support from peers motivated learners to complete tasks. Learners used several social media tools to stay connected with one another. Additionally, the social media platforms used by instructors for online classes were effective and convenient. Learners were generally satisfied with the level of openness involved in social media learning.

The research question aimed to assess the satisfaction of distance learning students with social media learning. Learners made use of most social media tools such as Facebook, Twitter, Schoology, and YouTube among others. Findings from the study indicated that social media enhanced interactivity in the learning process. Learners were able to effectively communicate when they were allowed to contribute through social media. Learners readily got answers to questions they posed on social media indicating satisfaction with the learning experience facilitated on social media. Overall, learners were satisfied with social media learning.

Hypothesis 1 suggested that social media use (SMU) influences both connectivism and learners' satisfaction.

Hypothesis 2 suggested that connectivism influences learners' satisfaction.

Hypothesis 3 suggested that connectivism mediates the influence of social media use (SMU) on learners' satisfaction (LSATI).

Conclusion

This study's main goal was to find out the nature of distance students' learning satisfaction with the use of social media through connectivism. The research described learner satisfaction with learner autonomy, diversity, connectedness and openness. The findings indicated that the advent of social media tools such as Facebook, twitter among others has been of great benefit to teaching and learning. These tools have gradually changed the way people communicate, interact, acquire, share knowledge, search, investigate and participate in the creation and re-use of information. Moreover, educational stakeholders used social media a lot for teaching and learning and were highly satisfied with it through the various ways they used it (i.e. autonomy, diversity, connectedness and openness). All students in the university should embrace new technologies when they emerge.

Recommendations

Based on the findings, the following propositions were made:

1. Educators and students should be provided with training to deepen their knowledge and effective use of various social media learning tools.
2. Universities across Ghana should integrate social media learning into their programs and invest in electronic resources to support seamless learning experiences.
3. University management should prioritize accessible electronic resources, such as Moodle and Schoology, to improve the quality of distance learning.

4. Institutions should use social media platforms like Facebook, Instagram, Linkedin, Twitter, and YouTube to engage learners and share educational resources effectively."
5. It is recommended to proactively assess and address potential challenges such as data privacy, cybersecurity, and equitable access to technology. Robust data protection measures, including secure platforms and encryption, should be implemented to safeguard participants' personal information and social media interactions. Clear policies must be established to address cybersecurity concerns, such as unauthorized access or misuse of data. Furthermore, steps should be taken to ensure equitable access to technology by providing necessary tools, internet connectivity, or alternative means of participation for those with limited resources. Regular training on digital literacy and ethical usage of social media can further support successful implementation.

Suggestions for Further Research

It is recommended that upcoming researchers should do further research to investigate the usage of social media among basic school learners in Ghana and also examine the challenges in implementing social media learning in Ghanaian institutions.

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APPENDIX

UNIVERSITY OF CAPE COAST
QUESTIONNAIRE

Dear respondent, the purpose of this study is to investigate students' satisfaction with social media usage in distance learning. through 'connectivism theory'". I, therefore, solicit your cooperation and consent to participate in this study. The confidentiality of your response is assured. Thank you.

SECTION A: Demographic Information

Sex: Male [ ]

Female [ ]

Age:

Below 19 years [ ]
20– 25 years [ ]
26-30 years [ ]
31 – 35years [ ]
Above 36 years [ ]

Program of study:

Bachelor of Education [ ]
Bachelor of Commerce [ ]

Level:

100 [ ]

200 [ ]

300 [ ]

400 [ ]

The social media learning scale

SD	Strongly Disagree
D	Disagree
U	Undecided
A	Agree
SA	Strongly Agree

SECTION B: Learner autonomy of social media

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

	Statement	SD	D	U	A	SA
1.	I am satisfied when I decide what to learn on social media					
2.	I am satisfied when I am given the opportunity to choose the social media tool of my choice to learn					
3.	I am satisfied when I am given the opportunity to assess myself using the various social media tools					
4.	I am satisfied when I decide how long to spend in each activity while learning on social media					
5.	I am satisfied with my overall experience learning alone on social media.					

SECTION C: Learner Diversity in social media

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

	Statement	SD	D	U	A	SA
1.	I enjoy having discussions on social media with people whose ideas and values are different from my own					
2.	The real value of education lies in being introduced to different values.					
3.	I enjoy talking with people who have values different from mine on social media because it helps me understand myself and my values better.					
4.	I enjoy learning about people from different cultures on social media.					
5.	I enjoy taking courses on social media that challenge my beliefs and values					

SECTION D: Learner connectedness in social media

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

	Statement	SD	D	U	A	SA
1.	I feel free to express myself when social media is used in teaching and learning.					
2.	I feel emotionally attached to other students when social media is used in teaching and learning.					
3.	I spend a lot of time with my peers when social media is used in teaching and learning.					
4.	I feel students depend on me when social media is used in teaching and learning.					
5.	I am satisfied working with peers when social media is used in teaching and learning.					

SECTION E: Learner openness in social media for learning

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

	Statement	SD	D	U	A	SA
1.	The collaborativeness of social media for learning promotes peer-to-peer understanding					
2.	I am satisfied when I'm placed in the same group with my chosen peers for online activities					
3.	Support from peers motivates me to finish tasks					
4.	My instructor uses more than two social media tools to stay connected with students.					
5.	Social media platforms used by my instructor for online classes are effective and convenient.					

SECTION F: Learner satisfaction (Perceived Usefulness) with social media

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

	Statement	SD	D	U	A	SA
1.	Learning becomes interactive while using social media					
2.	I am able to communicate effectively through social media					
3.	I increase my participation in classes when I am allowed to contribute through social media					
4.	Posting questions to my peers helps me understand my readings better					
5.	I am satisfied when I learn through social media					

SECTION G: Social Media Use

	Statement	SD	D	U	A	SA
1.	I use social networking sites to solve my academic problem.					
2.	I use social networking sites to do research work.					
3.	I use social networking sites for online academic group discussion.					
4.	I communicate with my friends via social networking sites for preparation of exam.					
5.	I use social networking sites for collaborative learning.					
6.	I use social networking sites to learn about my curricular aspect.					
7.	I use social networking sites to seek help from my teachers.					

Thank you