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COVID-19 and Implementation of Online Learning in Ghana: Perspectives of Undergraduate Students in Higher Education Institutions

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ABSTRACT

The COVID-19 pandemic affected teaching and learning in higher education institutions globally, and Ghana was no exception. Educational institutions had to adapt to new models of teaching. Using the connectivism learning model and a purposive sample of 18 undergraduate students from three public and three private higher education institutions, this study explored perspectives on the institutional adaptation of online learning during the pandemic. The findings of the study indicate that although majority of higher education institutions did not have adequate structures to transition teaching and learning online smoothly, they could adapt to available technology that suited majority of students. There is a call for promulgating a policy to standardize online learning delivery in Ghana.

Keywords: academic engagement, COVID-19, Ghana, higher education institutions, online learning, undergraduate students

INTRODUCTION

The global COVID-19 pandemic affected institutions in various ways, and educational institutions were not spared. The outbreak of the COVID-19 pandemic began in December 2019 in Wuhan, Hubei Province, China. This led to the declaration of a public health emergency by the World Health Organization on 30th January 2020 (Sohrabi *et al*., 2020). This virus negatively affected the strategic plans of every country, leading to border closures, movement restrictions across

borders, and sensitization of citizens about preventive measures that need to be put in place to halt its spread (WHO, 2020). Globally, the COVID-19 pandemic has affected about 91 percent of students (UNESCO, 2020; Tang, 2023), as most countries are affected by the first, second, and third waves (UN News, 2021).

Importantly, the global effect of this virus was extreme as the variants continuously adapted to the environment, resulting in institutions (higher education included) having to emphasize the keeping of COVID-19 protocols at all times to halt its spread. In a statement on July 21, 2021, the Ghana Health Service enumerated the rising number of COVID-19 cases and associated mortality in various regions of Ghana. The statement further reiterated the need for citizens to abide by COVID-19 protocols to halt the effects of the third wave in its track (Tawiah, 2021). As of July 19, 2021, Ghana has cumulatively recorded 100,250 cases of COVID-19 and 819 deaths since March 2020 (Ansah & Nukunu, 2021). The onset of COVID-19 resulted in institutions of higher education implementing online teaching and learning engagement in various ways for undergraduate students. A definition of e-learning under which online learning falls as a subset, is provided by Selim (2007) as "the delivery of content via electronic media, such as internet, intranet, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM" (p. 397). E-learning is divided into different forms, ranging from web-supplemented courses through web-dependent to mixed-mode courses to fully online courses (OECD, 2005).

In Ghana, higher education institutions in both the public and private sectors were allowed to reopen and resume academic work in May 2020, after the government announced lockdown in March 2020 was lifted. As a result, various models of teaching, as well as student engagement, either through the use of technology or a blend of face-to-face learning, were adapted. During the pre-COVID-19 era, online learning was touted as an answer to the problem of access to quality higher education in sub-Saharan Africa (Asunka, 2008). Invariably, the onset of COVID-19 precipitated the use of digital technologies accessible in the Sub-Saharan African region to facilitate student learning and engagement. Research has noted the level of preparedness of higher education institutions in Sub-Sahara Africa (SSA), particularly Ghana, to engage students in online distance education (Forson & Vuopala, 2019), and the perceptions of students (Edumadze *et al*., 2019; Obeidat, 2020). Others have examined the perceptions of students about incorporating e-learning into teaching and learning in Ghana (Tagoe, 2012), and attitudes about students engaged in online learning during COVID-19 (Agormedah *et al*., 2020; Hussein *et al*., 2020). The outcome of research undertaken indicate that convenience, time effectiveness, and safety are included in favorable indicators influencing online learning (Aristovnik, et al., 2023; Zhang et al., 2022). However, outcomes that undergraduate students noted as negative were inability to focus, internet instability, and the high cost of data (Agormedah *et al*., 2020; Hussein *et al*., 2020). Using the connectivism learning model, this

study explored the perspectives of undergraduate students in three public and three private higher education institutions in Ghana about institutional adaptation to online learning in the COVID-19 era. This paper examined how connectivism was important to online learning as a theory, through the integration of information and technology within the realm of knowing by guiding students to look beyond their own understanding.

LITERATURE REVIEW

Research indicates that the current integration of information and communication technologies in higher education's instructional activities in SSA portrays increasing access via online learning (Asunka, 2008). Before the onset of COVID-19, technology-enabled instruction was recognized as an economical means of increasing access to higher education in SSA. However, challenges such as unstable and unreliable internet connectivity have reduced the usage of technology in most higher education institutions in SSA (Gakio, 2006). In a study by Agormedah et al., (2020) on the learning experiences of college students, the outcome indicated that participants described technology usage to include WhatsApp, Telegram, Zoom, Google Meet, and Google Classroom. Participants also indicated that lecture notes were sent in PowerPoint slides, portable document formats (PDF), or word documents to their email addresses to facilitate their online engagement. Among some of the challenges noted by participants was the high cost of internet data. The authors' findings corroborated the results of Owusu-Fordjour et al. (2020) and Entsie (2020), who found that most students accessing e-learning platforms due COVID-19 in Ghana, complained of the high cost of internet data and disruption of academic activities by household chores. Additional findings on college students' overall perceptions of online learning revealed that some of them wished that online learning would be suspended due to its associated challenges (Adeyokan and Soykan, 2020), such as device inequality among students, poor internet connectivity, and high cost of internet data. This study further suggested that a better understanding of the online learning experiences of college students may enable relevant stakeholders to put in place measures that would ensure a better online learning experience (Zhang et al., 2022). However, a study by Cheung et al (2023) that compared the effectiveness of face-to-face teaching with a synchronous online teaching revealed that the difference in learning outcomes was not statistically significant.

Forson and Vuopala (2019) sought to determine the readiness, capability, and interaction of the University of Cape Coast distance education students in an online learning environment. The outcome of the study indicated that respondents were of the opinion that conditions were ripe for universities in Ghana, especially the University of Cape Coast, to focus on online distance education models. Tagoe (2012), in his study on students' perceptions of incorporating e-learning into

teaching and learning at the University of Ghana, noted that its acceptance depended on three critical factors. These were computer ownership, prior experience, and student perceptions of e-learning. Invariably, those who do not have computer skills, for example, may address the shortfall through the university, friends, and family members, who may assist them with opportunities to acquire the requisite skills.

Various studies have been conducted on online learning in higher education in SSA (e.g., Asunka, 2008; Edumadze *et al*, 2019; Forson & Vuopala, 2019; Obeidat, 2020; Tagoe, 2012), with some gauging the experiences of a specific category of students such as level 200 undergraduate students (Agormedah *et al*., 2020). This study is unique in that it examined the perspectives of a sample of all levels of undergraduate students about their learning engagement and experiences as a result of COVID-19 in both public and private higher education institutions using the connectivism learning model. The implementation of online learning initiatives in SSA could be informed by in-depth empirical studies designed to unravel the circumstantial factors that influence the efficacy of such learning activities. The main research question guiding the current study is "What are the perspectives of undergraduate students about institutional adaptation to online learning during the COVID-19 pandemic? The findings from this study could offer policymakers in the higher education sector additional resources about making online teaching and learning more effective especially during periods of crisis and pandemics. Furthermore, the findings may also enable decisions about making digital transformations in the higher education sector.

Conceptual framework. This study draws on the connectivism learning theory to formulate a conceptual framework. Connectivism combines previous information with a current one to create novelle meanings. Thus, in online learning, students may be able to indicate a link between, for example, the use of technology to earlier knowledge about computing and the ability to connect them during the new phase of engagement using technology. Undergraduate students may find linkages between the social media handles they use, such as WhatsApp, and other Google apps, including Google Meet and Google Classroom, and targeted technology related online learning during the COVID-19 pandemic.

The connectivism learning theory has been associated with the work of Downes (2005) and Siemens (2004). It was developed to address the impact of new technologies on teaching and learning (Siemens, 2004). The new technologies of the digital age such as 'blogs' and 'wikis' have influenced learning engagement in higher education institutions globally. Further, the digital age has caused a massive growth in knowledge with some having a brief shelf life and measured in shorter period of months or span of years as opposed to previous eras when knowledge could remain relevant for centuries. As a result, students have to adapt in their quest to learn. Similarly, faculty members must adapt hybrid methods in

their engagement with students. Moreover, with the onset of the COVID-19 pandemic, both faculty members and students noted the need to adapt to their mutual engagements to make the most out of the situation. Knowledge acquisition has been linked to the theory of connectivism, in which an individual will not be able to work independently. Rather knowledge is acquired through connections with others (Marhan, 2006). In a connectivist learning space, higher education students learn efficiently within a network of connections as information is distributed. Thus, learning occurs when a student is able to construct and traverse these networks (Downes, 2007).

Through connectivism, learners use available technology to create networks, such as students using WhatsApp platforms, for instance, to access information from each other while keeping abreast with faculty engagements. These networks have information sources that students choose and act upon. Learning also occurs when peers collaboratively share opinions, viewpoints, and critiques through conversation and dialogue on a mutual basis compared to traditional teacher/learner relationships (Friesen & Lowe, 2011). With the connectivism learning model, students are able to learn both in class and out of class because of the use of mobile digital technologists (Guder, 2010).

RESEARCH METHOD

This study employed an in-depth interview framework to address the research question. The data collection procedures were semi-structured interviews in person or by phone (Maxwell, 2005; Rubin & Rubin, 2005). This study explored undergraduate students' perspectives on institutional adaptation to online teaching and learning during the COVID-19 era.

Participants. Eighteen undergraduate students from six public and private higher education institutions were purposively sampled (Maxwell, 2005). These 18 students have indicated that they had some form of online engagement in relation to teaching and learning during the COVID-19 pandemic. The sample was purposively selected from three public and three private higher-education institutions. Specifically, three student cohorts from various levels (100, 200, and 300) in their undergraduate programs were selected from each institution. Before the interviews, the researcher followed the approved ethical guidelines for research and informed consent was obtained from the participants. They were further informed that they were at liberty to stop participating in the interviews if at any point they felt uncomfortable answering questions. Each participant was informed about the nature of the study, and assigned a code to foster confidentiality.

Data collection. Eighteen in-depth face-to-face or telephone interviews were held with the participants. The interviews were personally conducted by the researcher,

and the risks and procedures for participating in the study were explained to the participants before data collection started. The interviewer also sought permission from the participants to audio record. All participants were asked open-ended questions about their perspectives on the implementation of online learning during the COVID-19 pandemic. Data collection continued until sample saturation was reached in 18 participants, where additional interviews did not provide any new information (Strauss & Corbin, 1998). Subsequently, the transcripts were transcribed verbatim and analyzed. Some of the major interview questions included the following: Before COVID-19, what online platform was your institution using? During the COVID-19 pandemic, when higher education institutions (HEIs) were asked to transition online, what did your institution do in terms of online engagement? Were you using a Learning Management System such as SAKAI, Blackboard, Google Meet and Zoom? Furthermore, the participants were asked to clarify questions based on responses given. The duration of each interview ranged from 30 to 45 minutes, and at the end of each interview, participants were given the opportunity to express their views on any related issue that was not addressed.

Data analysis. Data analysis included transcription of interviews, memos preparation, data coding, and summaries (Maxwell, 2005; Rubin & Rubin, 2005). Each interview was transcribed verbatim and then coded. This study applied content analysis to the primary data in addition to using both inductive and deductive approaches. According to Lauri and Kyngas (2005), the inductive approach is used when previous research is minimal or nonexistent. In contrast, the deductive method is applied when a theory is to be tested and the analysis is based on previous knowledge (Boyartis, 1998; Kyngas & Vanhanen, 1999).

The researcher examined themes that emerged from the interviews both deductively and inductively and further looked for linkages and patterns among themes. The coding was performed manually by reading the interview transcripts to look for repeating ideas that were relevant to the research question. Each interview transcript was read at least three times to acquaint the researcher with themes that emerged from the coding process. The first level of the coding process began with open coding, which enabled the researcher to accurately determine the thematic category to apply to the transcripts. The codes were applied to sentences/statements in the interview transcripts, while themes were generated by repeating ideas (Auerbach & Silverstein, 2003). A second coder also reviewed the data and identified major categories and themes that helped determine the accuracy of the identified categories and themes.

The researcher also addressed the issue of validity by being cognizant of threats. Maxwell (2005) defines validity as a "straightforward, common-sense way to refer to the correctness or credibility of a description, conclusion, explanation, interpretation, and other sort of account" (p. 106). Two threats to validity in

research are noted as the researcher's bias and the impact on interviewees, known as "reactivity." Thus, when the researcher's bias affects what the participant says, it can impact validity (Maxwell, 2005). Notably, the researcher was cautious about "reactivity" in the data obtained from the participants.

RESULTS

This section examines the themes generated from the data obtained from 18 purposively sampled participants. The resultant themes were as follows: differences in the implementation of online learning processes in public and private higher education institutions, implementation of blended format, benefits of online learning, challenges encountered, and recommendations by participants. All participants in this study at both public and private higher education institutions indicated that they were all engaged online during the pandemic.

Differences in implementation of online learning processes. The data analyzed indicated that before the onset of COVID-19, the sampled private higher education institutions had neither invested in infrastructure to enhance online learning nor deployed a robust infrastructure. Thus, during the pre-COVID-19 era, instructional activities at these private higher education institutions were mainly face-to-face and the online learning component was almost non-existent. Conversely, the sampled public higher education institutions had some level of online engagement with students before COVID-19. With the onset of the pandemic, private higher education institutions deployed media tools such as Zoom, Google Meet, Google Classroom, and WhatsApp, while public higher education institutions escalated their online engagement with students using learning management systems such as Moodle and SAKAI. Notably, each private higher education institution was unique in its engagement with students when it was permitted to reopen.

A participant at a private higher education institution that I call BAY indicated the following:

> After the lockdown was lifted in May 2020, we started using Zoom, Google Classroom, and Google Meet for online learning. The selected technology depended on the lecturer. We also used Google Classroom to submit assignments. However, before COVID-19, the university had not used any of these technologies for teaching.

The above comment resonated with the majority of the participants from private higher education institutions, who affirmed similar tools for their online engagement.

A participant called JY from another private higher education institution indicated that although most students were new to the usage of some of these

technologies for learning, they had "to quickly learn from their colleague students who were conversant with their usage."

This assertion also resonated with the other two selected private higher education institutions. This is in line with research conducted by Asunka (2008), indicating increasing student access to higher education through online learning. It must be noted that before the onset of the COVID-19 pandemic, most higher education institutions in Africa did not have the full complement of infrastructure to start online learning. However, data analyzed revealed that public universities varied in their implementation of online learning, although they had a relatively adequate infrastructural setup.

Implementation of blended format. The data analyzed indicated that some private higher education institutions implemented the blended approach to student learning after educational institutions were allowed to re-open in May 2020, although there were some variations in the details. A participant known as AB reiterated that her institution implemented both online and face-to-face components of student engagement. She noted:

> … level 100 and Level 200 undergraduate students will attend a face-to-face component for a number of weeks and then switch over to the online mode for another number of weeks. Levels 300 and 400 will also attend the face-to-face component for a number of weeks and then switch to the online version.

With the mutation of the COVID-19 virus, especially as the Delta Variant was still active in Ghana at the time, these measures were taken out of an abundance of caution so that students and staff would abide by the protocols in place and be kept safe. A number of participants from private higher education institutions that did not have a large number of students indicated that they continued with face-to-face engagement when the lockdown was lifted while taking cognizance of all COVID-19 safety precautions.

Invariably, sampled public higher education institutions also varied in their implementation of online learning and engagement of students through the use of diverse methods. All three selected public higher education institutions engaged their students using technological tools such as Google Meet, Google Classroom, Zoom, and Microsoft Teams. Two out of the three public institutions selected engaged students with methods similar to those implemented by private higher education institutions. These methods included engaging a section of the undergraduate student population with a face-to-face component, while another group of undergraduate students had the online version simultaneously. However, one of the public higher education institutions, based on the data analyzed, was unique in its implementation of online learning engagement with undergraduate students. This particular institution engaged students by implementing an online modular system of teaching and learning, with very limited face-to-face interaction

for programs demanding that type of engagement due to the unpredictable nature of the COVID-19 virus. In this modular system, 100 and 400 undergraduate students were engaged online for six weeks, after which a month's break was given. While the first group of undergraduate students was on vacation, levels 200 and 300 were engaged in their six-week module. This methodology was unique to this public higher education institution.

Challenges encountered. All the participants were unanimous in the varied challenges encountered and the types of problems that they had to address as a result of their involvement in online learning on their various campuses. The majority of participants noted the expensive cost of data as a major hindrance. Unanimously, the majority of participants in both public and private higher education institutions indicated difficulty in obtaining regular funds to buy data for their online engagement. Other challenges enumerated include "low online class attendance and participation" by participants, since they did not feel obliged to do so. A participant with a private higher education institution indicated that he had health issues, such as waist pain that emanated from sitting for long periods of time during online class sessions, as well as improper blood circulation. A unique challenge at a public higher education institution was elaborated upon by a participant called JON, as follows:

> There was an instance where during an online class session, some participating students who were having sex at the time had forgotten to switch off their video, and the recording went viral on Twitter.

Benefits of online learning. The majority of participants were of the view that they have gained a lot from participating in online learning during the COVID-19 era. One participant from a public higher education institution noted that:

> Online learning has helped us a lot. If it had not been for this online engagement, a lot of us would have had the virus since my university was one of the first to record a positive case."

Another participant (AMA) stated:

> Online learning has also provided an opportunity for shy students to contribute during class sessions. It has also helped us become more dynamic in the use of technology as we have had the opportunity to learn about technology usage from friends.

A participant from a private higher education institution indicated some benefits to include "sitting in the comfort of your home while having a class."

Recommendations by participants. A number of recommendations were made by participants. Some indicated that, since online learning places a lot of responsibility on students, participants should hold themselves accountable and

endeavor to take part fully in class. One participant who identified himself as a course representative of his class noted the following:

> As a course representative, I have to call members of my class using my phone at my own expense anytime an online class is scheduled to remind them of it. When I am unable to call some of them at certain times because I do not have call credit, they get upset.

Other participants at public higher education institutions recommended a blend of online and face-to-face engagement in the post-COVID-19 era instead of engaging students fully online for some courses (Cheung et al., 2023)**.** In addition, because there were sometimes unstable WIFI, even for participants who go to their various institutions to access a stable internet, attention has to be focused on increasing the robustness of institutional internet infrastructure to enable its stability.

DISCUSSION AND CONCLUSIONS

This study aimed to explore undergraduate students' perspectives on institutional adaptation to online learning during the COVID-19 pandemic. The results of this study suggest that faculty members in both public and private higher education institutions used tools such as Microsoft Teams, Google Meet, Google Class, Zoom, and WhatsApp, as well as Learning Management Systems to engage undergraduate students in teaching and learning, which corroborate research (Agormedah et al., 2020; Hussein et al., 2020; Zhang et al., 2022).

Based on the connectivism learning model, the results of the study indicated among others that undergraduate students who were not well versed in the usage of online media tools connected with their friends or course mates who had knowledge to assist them (Downes, 2005; Siemens, 2004). Ultimately, these findings are consistent with existing research (Edumadze, et al., 2019; Forson & Vuopala, 2019). Despite the challenges enumerated, such as the high cost of data and inappropriate behavior of some students during online class sessions, the participants lauded the benefits of online learning. These benefits included the acquisition of technical skills in the application of social media tools, a benefit that otherwise would not have been acquired. The findings associated with technology usage were consistent with the connectivism learning model.

The COVID-19 pandemic has fostered the growth and usage of technology enabled online learning tools in higher education institutions despite the associated challenges. Higher educational institutions in Ghana have embraced online learning as an alternative mode for engaging students in addition to the face-to-face mode. One notable limitation of this study was that graduate students were not a part of the sample. Thus, a quantitative or comparative study using graduate students as a sample could indicate whether a different heterogeneous sample size could confirm the results from this undergraduate study.

IMPLICATIONS

Despite the benefits accruing to undergraduate students who were engaged in online learning, to ensure continuity of engagement, policy makers and administrators of higher education institutions may need to ensure that relevant and robust infrastructures are put in place. This will ensure that issues relating to internet instability are reduced to the barest minimum, thus enhancing an uninterrupted engagement between students and faculty members. In addition, administrators could consider subsidizing the cost of data so that students can easily take full advantage of online learning. Ultimately, there is a call for the promulgation of a policy to standardize the delivery of online learning in higher education institutions in Ghana.

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