Online Instructional Technologies Tutors Adopted During the COVID-19 Pandemic in Selected Colleges of Education in Ghana

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Abstract: This research investigates the specific instructional technologies adopted by tutors in Ghanaian Colleges of Education during the COVID-19 era. The study is grounded in an interpretive, existential-phenomenological perspective to prioritise subjective experiences. Davis's Technology Acceptance Model (TAM) provided the framework for understanding lived experiences during the pandemic. A sample of thirty-five (35) participants out of a population of 2,249, including tutors and principals, was selected for the study. Participants were selected from the population based on their relevance to the study and their ability to provide detailed insights using critical case purposive sampling, yielding a sample of 35 participants. This comprises five (5) principals, ten (10) tutors, and twenty (20) Social Studies students from five (5) selected Colleges of Education in Ghana. Data were collected through interviews to gain insight into the realities of virtual instruction. Data were thematically analysed. It followed the structured steps of Braun and Clarke's six-step framework, which include familiarisation, coding, theme development, reviewing and naming themes, and the use of pseudonyms. Pseudonyms were employed throughout the transcription and coding process to maintain anonymity. It was revealed that tutors primarily utilised LMS, ZVC, WhatsApp, and Google Meet to sustain academic activities. These digital tools were essential for ensuring academic continuity when in-person classes were suspended. Analysis suggests tutors require enhanced technical support and high-quality connectivity. Improving these resources is vital for the effective delivery of the Social Studies curriculum. The study recommends that Ghanaian colleges prioritise technological innovations to address current instructional needs.

Keywords: COVID-19 Pandemic, Instructional Technology, Tutors, Colleges, Education, Online Teaching

INTRODUCTION

Instructional delivery has evolved significantly over recent decades, shifting from traditional tools such as slates and chalkboards to modern technologies such as laptops, tablets, and smartboards. The global disruption of face-to-face teaching caused by the COVID-19 pandemic established online technology as a critical medium for ensuring educational continuity. Within the context of this study, technology is defined as the use of computer hardware, digital tools, and internet access to facilitate instructional delivery.

The tutors' training was given the new curriculum rolled out by the Ghana Education Service (GES) in 2018. According to Ayub (2020), the new GES curriculum is standards-based. This means that every student or learner should demonstrate competence and mastery of the subject matter. Additionally, the new curriculum is based on global best practices. It is to be utilised by educators in basic schools nationwide, where ICT is a component of the curriculum at different stages. Accordingly, the Colleges of Education are responsible for training teachers for basic schools and therefore need to align their curricula with the Ghanaian basic school curriculum.

The COVID-19 pandemic highlighted several challenges in preparing trainee teachers to teach Social Studies in basic schools. The difficulty of achieving instructional outcomes was most pronounced during the COVID-19 pandemic. It was challenging for the implementers to fully engage their learners as expected (Ayub, 2020). This challenge is set against the backdrop of the complexities of COVID-19, with technology at the forefront or in the background of instruction. These disruptions, stemming from tutors' and learners' inability to incorporate technology into teaching, tend to adversely affect students' final learning outcomes, particularly during the pandemic. Among faculty in the colleges of education, the integration of technology into instruction, as mandated by the NaCCA curricula, revealed some tutors' lack of responsiveness to technology in pedagogy. This confusion has led to low tutor morale and competence, with technology at the centre of instruction, and reduced learner confidence in the tutor, resulting in failure to attain projected instructional outcomes.

Also, when faculty in the colleges of education are inadequately prepared to comply with the dictates of the syllabi, due partly to the technology component, little can be achieved. Mourlam, Strouse, Newland, and Lin (2019) argue that inadequately prepared tutors in computer technology instruction are unlikely to have the capacity to engage learners in technology-oriented instruction. By extension, they

may have to become the ones to help their friends in this regard. The importance of the tutor's technological competence in integrating technology into teaching at colleges of education, as indicated in syllabi and textbooks used in Social Studies, in particular, cannot be overlooked.

Aside from tutor readiness, the effectiveness of supervision is essential for the successful running of any institution (Ayub, 2020). Studies indicate that some of these supervisors do not visit schools at all, and even those who do visit do not adhere to the required procedures. However, in the space of time, short-term training programmes and workshops have been recommended by the Ghana Tertiary Education Commission (GTEC) to re-equip tutors and other facilitators in the COVID-19 era with up-to-date instructional technology skills to enable them cope with the demands of the COVID-19 emergencies.

Mishra and Koehler (2006), aver that technology in pedagogy as a concept of teaching, can effectively be applied to the teacher trainees and professional development programmes to enrich their capacity when they recognize that "The basis of good teaching with technology requires an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies to teach content; knowledge of what makes concepts difficult or easy to prepare and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and knowledge of how technologies can be used to build on existing knowledge and to develop new epistemologies or strengthen old ones" (p. 1029).

This contention has proven more critical during the COVID-19 pandemic, when in-person contact hours became virtually non-existent due to the disease's transmissibility, particularly in clustered environments such as lecture halls and theatres. The emergence of the COVID-19 pandemic rendered the teaching and learning environment no longer congenial, and, as such, other potentially viable alternatives to in-person instruction became the "new normal" for instructional delivery. In this regard, teachers' expertise in applying technology to teaching and learning has become essential. Unfortunately, many teachers were either unprepared or lacked the basic skills required to deliver online teaching and learning effectively, as class activities, assignment-based assessments, class exercises, final examination writing, score recording, grading, and other related academic activities became web-based. In some cases, a few faculty members with some technological knowledge find it difficult at times to operate the equipment and tools effectively and to integrate them with the lesson content to achieve the desired objectives. In this vein, Harris, Mishra, and Koehler (2009) contend that learning about technology is insufficient; rather, teachers must know how

to use technology in the teaching and learning environment, which is particularly significant.

Interestingly, Knolton (2014) noted in a study that faculty possess the pedagogical and content knowledge but fall short of the much-needed technological expertise required for effective instructional delivery at any given time. So, that was the reality on the ground. This situation nonetheless leaves the faculty with no option but to resort to traditional teaching and learning, which may not conform to COVID-19 pandemic social distancing protocols, given the disease's contagious nature.

While there was general difficulty integrating technology and resulting confusion among faculty, there is a deficit of understanding of the specific digital tools (beyond general mandates) that Colleges of Education tutors actually adopted and implemented to sustain the delivery of the Social Studies curriculum when face-to-face instruction was suspended. This calls for phenomenological insight into the "lived experiences" of these tutors to understand the challenges and successes of technology adoption, particularly given existing disparities in faculty technological responsiveness.

Against this backdrop of mandatory curriculum alignment, unexpected global disruption (COVID-19), and reports of varying technological readiness among faculty, a critical research gap remains: specifically, what practical, digital strategies and instructional technologies were actually adopted by Social Studies tutors in selected Colleges of Education in Ghana to ensure instructional continuity during the mandatory suspension of in-person classes?

Therefore, this paper examines the instructional technologies used by Social Studies tutors at selected colleges of education in Ghana to sustain instruction during the COVID-19 pandemic.

Objective of the Study

The research sought to examine the instructional technologies that tutors employed in their teaching during the COVID-19 pandemic.

Research Question

The study was primarily grounded on this research question:

What instructional technologies did the tutors of the Colleges of Education employ in their teaching activities during the COVID-19 pandemic?

Significance of the Study

The significance of this study lies in its ability to offer a multifaceted view of the state of teacher education in Ghana during an unprecedented

period of global disruption. By focusing on the lived experiences of tutors and principals, the research offers critical insights that extend beyond simple data collection to influence policy and practice.

LITERATURE REVIEW

The study's literature review highlights the emergence of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), also known as Coronavirus Disease 2019 (COVID-19), which led to the temporary closure of schools worldwide and necessitated alternative means of sustaining instruction. According to Emrani, Ahmed, Jeffers-Francis, Teleha, Mowa, Newman, and Thomas (2021), COVID-19 is a respiratory disease responsible for the COVID-19 pandemic. They indicated that the virus was previously given the provisional name coronavirus (2019-nCoV) and has also been called human coronavirus 2019 (HCoV-19 or hCoV-19). It is well documented that the COVID-19 pandemic, which emerged in late 2019 in Wuhan, China, had fatal and global effects as it spread from an endemic community (Yu & Jee, 2021).

According to UNICEF (2021), as of 12 January 2021, approximately 825 million school children worldwide had their schools closed down in response to the pandemic, with nearly 2 million deaths. This highlights the severity of the pandemic and the danger it poses to educational processes and activities worldwide. During the brief COVID-19 pandemic, various investigators have made their findings on instructional processes available in diverse ways (Pokhrel & Chhetri, 2021). They add that several schools, colleges, and universities discontinued face-to-face teaching. Pokhrel and Chhetri again emphasised that the looming fear of wasting the 2020/2021 academic year, or even more in the future, was not downplayed.

An exploratory journey to Europe: From the point of view of Donnelly and Patrinos (2022) and Schult et al. (2022), even in high-income countries like the Netherlands, Belgium, Germany, and Italy, where distance instruction was feasible, Colleges of Education (CoE) tutors' and other teachers' instructional outcomes fell short of their usual standards. This indicates the pandemic's negative impact on education, even in technologically advanced economies.

A review of a study on the loss of instructional hours during the pandemic by Contini, Di Tommaso, Muratori, Piazzalunga, and Schiavon (2021) from South America revealed that there was evidence of a loss of instructional hours averaging 0.17 standard deviations during the pandemic for 32 out of 35 low-income and middle-income countries (LMICs) and higher-income countries (HICs). The analysis shows that LMICs experienced greater losses than HICs (Donnelly & Patrinos, 2022). LMICs included in the review are Mexico (0.55 standard deviation loss)

and Brazil (0.32 standard deviation loss), according to Donnelly and Patrinos. From the perspective of Donnelly and Patrinos (2022) and Schult et al. (2022), even in high-income countries such as the Netherlands, Belgium, Germany, and Italy, where distance learning was feasible, Colleges of Education (CoE) tutors and other teachers' instructional outcomes fell short of their usual standards. This indicates the pandemic's negative impact on education, even in technologically advanced economies.

In this context, a collaboration between the Global Partnership for Education (GPE) and several African countries emerged during the crisis to develop an educational response and support, aimed at countering the pandemic (ADEA, AU/CIEFFA, & APHRC, 2022). What was the state of the CoE system in Africa and in Ghana? In congruence, Africa also had its 'fair share' of the COVID-19 pandemic and its disruptive consequences in colleges.

Online Instruction and Virtual Classroom Interventions

Online teaching and virtual classroom engagements were among the instructional technologies that many educational institutions were expected to rely on to facilitate instruction during the COVID-19 pandemic's transitional periods. Sharma and Kitchens (2004) defined online instructional sessions as the use of web-based training tools, such as virtual universities and classrooms, that enable digital collaboration and technology-assisted distance instruction. Online instruction enables the transmission of instructional activities. One can reasonably say that for online teaching and learning to be efficient, the facilitator and students must have reliable internet access and adequate, electronically compatible devices.

According to Gyampoh et al. (2020), in response to the COVID-19 emergency, the National Council for Tertiary Education (NCTE), in collaboration with Transforming Teacher Education and Learning (T-TEL) in Ghana, established a Virtual Teaching Taskforce (VTT) for Teacher Education. Gyampoh et al. (2020), as cited in Salifu and Todd (2020), subsequently maintained that the task force included all five mentoring universities, key stakeholders such as the Principals' Conference (PRINCOF), College of Education tutors, and non-teaching staff, as well as student teachers (through their respective unions).

Motives for the Application of Instructional Technology

The need to keep pace with society and to prepare students for their roles in society are among the several reasons to use technology in education. Educators and researchers highlight the potential of technology to enhance teachers' and learners' motivation and engagement by accommodating individual learning styles and improving instructional outcomes (Eady & Lockyer, 2013). The literature review

highlighted that one of the primary motivations for teachers' use of technology in their instruction stems from the COVID-19 pandemic. Again, the reviewed literature shows that instructional innovation helps teachers implement effective educational practices and integrate computer technology tools to meet students' needs (Klein, 2005; Eady & Lockyer, 2013). They declared that the idea of incorporating technology into the curriculum arose from a concern that tutors may have been teaching about using technology but not addressing how students can apply technology-related knowledge and skills.

It is important for teachers not to use technology for its own sake, but rather to embed it appropriately (Eady & Lockyer, 2013). Here, teachers draw upon their expertise and experience in what to teach and how to teach it. A teacher faces many considerations and influences in designing learning experiences for students, and the appropriate use of technology and its acceptance, as posited by TAM, are among them.

Consequently, college lecturers' use of technology in their lessons will be perfect, valid, advantageous, educative, and practical (Yalcin et al., 2011) for the teacher trainees learning to incorporate technology in their teaching. This assumption by Yalcin et al. is a clear pointer to TA, as theorised by Davis's TAM. What made this practice more crucial in instructional delivery was the COVID-19 pandemic. It is hoped that, even in the absence of COVID-19, teachers will make it a habit to integrate modern educational technology into their day-to-day lessons.

THEORETICAL FRAMEWORK

It is widely acknowledged that models represent efforts to explain the world by perceiving phenomena and striving to understand how they are (Anderson, Curtis, & Wittig, 2014). Acceptance of a theory influences how investigators perceive and interpret spectacles in terms of the values advocated by the model. These models enhance investigation and enable predictions and extrapolations, which are subsequently verified by the outcomes of investigative studies (Myerson, 2013), and they provide descriptive contexts. Therefore, Davis's (1989) Technology Acceptance Model (TAM) and other conceptual models were used as the theoretical basis for this study. Therefore, Davis's (1989) TAM posits that when users perceive a technology as beneficial and easy to use, they are more likely to adopt it for the activities they intend to perform. Therefore, as users recognise that the work processes will be easy to undertake, the greater the likelihood that they will adopt and adapt to innovative technology (Ajibade, 2018). In the context of this investigation, Davis's (1989) TAM was applied to the "Instructional Technologies Lecturers at the Colleges of Education adopted during the COVID-19 Pandemic". It investigated how computer technology facilitated instruction among CoE tutors during

the COVID-19 pandemic, when face-to-face instruction was temporarily halted due to the disease's transmissibility.

Integrating Literature and the Technology Acceptance Model (TAM)

The study utilises the COVID-19 pandemic's disruption of face-to-face instruction in Ghanaian Colleges of Education (CoE) as the context for applying Davis's Technology Acceptance Model (TAM). TAM, which explains technology adoption through Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), is essential for interpreting tutors' shift to online teaching.

The pandemic immediately validated the PU of instructional technologies (such as LMS, ZVC, WhatsApp, and Google Meet). Tutors recognised these digital tools as necessary for sustaining academic activities, maintaining educational continuity, and meeting the new standards-based curriculum. The technology's role in promoting student engagement and enabling distance instruction further boosted its perceived value.

However, the literature also highlighted significant challenges related to Perceived Ease of Use. Many CoE tutors lacked the technological competence, skills, and adequate infrastructure (e.g., reliable internet and technical support) required for effective integration. This deficiency led to calls for capacity-building workshops to enhance PEOU, thereby increasing the likelihood of adoption.

The findings confirm that tutors, motivated by the pandemic's necessity and the observed student enthusiasm, chose technology (low-grade or high-grade) that they perceived as beneficial, aligning their behavioural intention with TAM's core principles. Thus, TAM provides the framework for understanding why tutors, despite facing infrastructural hurdles, embraced technological innovation to bridge the gap created by school closures.

METHODOLOGY

This paper outlines the discourse on the adoption of technology and innovation in work processes by tutors in Ghanaian colleges of education as they sought to sustain instruction during the COVID-19 pandemic. Existential phenomenology, which focuses on understanding the experiences of a small audience regarding the nature of things from their positions, as articulated by Hugh (2023), is the research design used in this study. It outlines the processes involved in the investigation from start to finish, providing direction on how data were collected and analysed throughout the study. Pseudonyms such as BCE, SJCE, ACE, AFCE, and SACE were used to represent the study setting, with the

College Principals (CPs) and Social Studies tutors (CTs) constituting the study's population. The pseudonyms used helped to obscure the identities of the phenomena and participants used in the study.

Again, this study employed a qualitative approach rooted in the interpretivist paradigm to gain an in-depth understanding of online instruction by Social Studies tutors at selected Colleges of Education in Ghana during the COVID-19 pandemic. Participants were selected from the population based on their relevance to the study and their ability to provide detailed insights as required by the research questions, using critical case purposive sampling, yielding a sample of 35 participants.

Data were collected through scheduled interviews, which were divided into two parts (demographic characteristics and the thematic areas arising from the research questions). The participants were also given prior notice of the interviews via email and WhatsApp communication. The duration for each interview lasted between 40 and 70 minutes. The intensive analysis of the 35 participants' accounts led to data saturation. This was the point at which no new themes or information emerged regarding the instructional technologies adopted, the challenges faced, or the motivations for use. Consequently, the collected data were analysed thematically and inductively, using pseudonyms.

The thematic analysis followed the structured steps of Braun and Clarke's six-step framework. This included details on: familiarisation (e.g., repeated reading and transcription verification); coding (e.g., open coding applied line-by-line to identify initial concepts, as indicated by the mention of data being "coded"); theme development (e.g., grouping codes into broader themes); reviewing and naming themes (e.g., refining and clearly defining the final themes discussed in the findings); and use of pseudonyms. Pseudonyms were employed throughout the transcription and coding process to maintain anonymity.

Ethically, participants in the study were assured of anonymity, confidentiality, and the study's purpose, which facilitated their willingness to provide the required data. This data was subsequently transcribed, interpreted, and coded. The results were subsequently analysed and discussed, conclusions drawn, and recommendations made.

DESCRIPTIVE PRESENTATION OF FINDINGS

The sampled population consisted of five (5) principals, ten (10) tutors, and twenty (20) Social Studies students from five (5) selected colleges of Education in Ghana. Subsequently, the participants' interviews were coded to facilitate analysis of the instructional technologies tutors employed during the COVID-19 pandemic.

The study asked the participants about the instructional technologies the tutors incorporated into their teaching and learning activities during the pandemic. To adequately answer this question, various interview items were resorted to. In the inquiry, participants were asked questions on the following: (1) Instructional technologies available at their institutions for use during the COVID-19 pandemic; (2) On-the-job training on how to utilise specific instructional technology; (3) Motives for the utilisation of instructional technology; and (4) Students' response to technology utilisation in instruction.

Available Instructional Technologies in The Colleges for Use During The COVID-19 Pandemic

The findings reveal that tutors primarily adopted four main instructional technologies: LMS, ZVC, WhatsApp, and Google Meet. Their quotes were used as supporting evidence.

The following are participants' responses regarding instructional technologies available at their college during the COVID-19 pandemic:

Participant SJCP revealed that;

The school has computer and internet facilities at the ICT resource centre, equipped with Wi-Fi, to facilitate online and virtual academic work for tutors and student-teachers. Additionally, plans are well advanced to equip lecture rooms with similar facilities and projectors, making instruction via LMS, Zoom Video Conferencing, Google Meet, Skype, and other internet-based platforms more convenient and accessible. This is particularly important in the current COVID-19 pandemic, during which in-person instruction is temporarily suspended.

BCP emphasised that;

The school has internet access and various facilities, including many well-equipped and secure computers in each lecture room for instruction. The COVID-19 pandemic has enabled us to realise the full benefits of the facilities, as physical interaction between tutors and students is not permissible. Tutors and students use technological tools such as WhatsApp, Google Classroom, and Zoom to facilitate online teaching and cooperative learning.

SACP also responded by saying that;

Although our school has ICT facilities, their full benefits have not yet been realised because internet access is not as efficient as expected due to persistent issues from telecommunications providers. This situation affects teaching and learning during the COVID-19 pandemic, as distance

and online tuition, as well as collaborative studies, are impeded by inconsistent internet connectivity. Therefore, the facilities are available but have not yet been optimally utilised to support instruction during the COVID-19 pandemic and school closures.

ACP's view was not different from some earlier views when he said that;

As COVID-19 is a pandemic, almost all our classrooms are equipped with whiteboard markers, screens, and multiple projectors. However, we are hindered by the lack of Wi-Fi access, which significantly affects our instructional delivery.

However, AFCP vehemently stated that;

Indeed, my institution is disadvantaged in terms of modern educational technology facilities, partly due to our relatively "infantile" nature. We still lack access to Wi-Fi and other essential educational technology, including equipment and tools necessary for teaching and learning. Some individual tutors use WhatsApp on their handsets to improve lesson delivery.

Some CT participants responded to the instructional technology facilities available to their college in these ways: SJCT-1 stated that.

The college has improved its computer technology facilities, which we used to access the LMS and Google Meet online during the COVID-19 pandemic. However, intermittent power cuts have been our primary obstacle to effectively utilising the internet to reach our students for distance instruction.

SJCT-2 also resonated this better when he said that;

As long as none of the six college departments has a projector without a laptop in their possession, it is difficult for them to be fully utilised. Although some lecture halls are fitted with tabletop computers, they may not be in good condition. This inconvenience typically makes it very difficult for us in the current pandemic to reach students effectively. However, I have a laptop that allows me to use Zoom or LMS via Wi-Fi, enabling me to engage students during the COVID-19 pandemic. Some internet and other instructional technology facilities are available, but they are grossly inadequate.

BCT-1 equally contends that;

Our classrooms indeed have a good number of computer technology facilities. Nevertheless, to my knowledge, some of them are not in good

condition. It amounts to not having them, as many are non-functional, and the purpose of installing them in lecture rooms is undermined. However, I utilise Zoom videoconferencing with my devices to engage students during the COVID-19 pandemic.

BCT-2 expressed no different view when he uttered that;

Although the school has had some computer equipment for some time, it has been malfunctioning and cannot be relied upon for lessons, as many are broken or stolen. It is also challenging for us to sustain online tuition during COVID-19 due to the college's technological inadequacies. Nevertheless, I contact the students at my own expense via Google Classroom to engage them in a lesson.

SACT-2, from his perspective, responded that;

Except for the ICT resource centre, which is generally open to tutors and student teachers, little can be said about the resources needed in lecture rooms, as there is little to discuss. Meanwhile, COVID-19 has compelled us to devise ways to reach students via Google Meet or Zoom, which I consider appropriate.

AFCT-1 voiced out that;

Although we are told that our school has been supplied with facilities, such as projectors and computers, specifically to facilitate instruction, the less said about them, the better, since we do not have access to them during instruction. However, I sometimes provide instructional information to students through a WhatsApp group created for academic purposes on our cell phones, as it is more accessible and affordable.

On-the-job training on how to utilise specific instructional technology

Responding to “on-the-job training on how to utilise specific instructional technology to facilitate instructional delivery during the COVID-19 pandemic”, SJCP participants in category CP emphasised that:

We have tasked our Information Technology (IT) department with organising workshops and training programmes to update our tutors on incorporating technology into teaching to enhance instructional delivery. Indeed, these workshops and training programmes have proven significant for teaching faculty and students in their teacher training programmes.

BCP mentioned that;

Career development for our tutors has been an important part of the college programmes throughout the semester. Some days have been set aside to update our tutors on emerging issues related to the development of their instructional delivery.

Participant SACP confirmed this assertion when he indicated that;

Tutors have attended career workshops and training programmes within and outside the college. Within the college, the T-TEL secretariat, in collaboration with the Ministry of Education, has been addressing this on Wednesdays each week. At the same time, other governmental organisations occasionally organise workshops and training programmes outside the college for selected tutors on teacher-training curricula.

ACP claimed that;

In frank terms, the college has not yet organised on-the-job training in the use of specific instructional technologies. However, the college is fortunate to have a workshop regularly organised for our entire teaching staff on the transformation of teacher education and learning, which incorporates diverse perspectives on the teaching and learning process. We anticipate such a workshop sooner rather than later to imbibe the much-needed innovative concept into the instructional process.

AFCP alleged that;

Initially, our tutors attended workshops at sister colleges, including SJCE. This is because our school came on stream when our sister college had already begun the T-TEL workshop. We were tasked with consulting their resource persons to update our tutors on the expected transformation processes, enabling us to align our teaching performance as a teacher training institution. Specific training, however, was not available at that time. However, the college hopes that career development will soon be part of our retraining agenda as we acquire the technological equipment we so much desire to facilitate our teaching and learning.

Capacity building in teacher education enables tutors to adapt to the emerging trends in educational delivery, particularly in emergencies such as the COVID-19 pandemic. In all sincerity, tutors made a strong case for on-the-job training and workshops to help faculty become more astute and responsive to the demands of 21st-century educational delivery in Ghanaian colleges of education and elsewhere. Adding their voice to this discourse, SJCT-1, ACT-1, AFCT-1 and 2, SACT-1 and 2, and BCT-1 and BCT-2 gave the ensuing responses:

SJCT-1 revealed that;

We in the Social Studies unit of the Social Science Department, along with colleagues from other departments, are occasionally required to attend on-the-job career development training and workshop programs held at designated locations to stay current with emerging educational technology trends in teacher education.

ACT-1 similarly indicated that;

Workshops and training programmes have become part of our daily routine as tutors since the GTEC; in our view, teacher education should be dynamic enough to stand the test of time. As a result, workshops are, from their perspective, the antidote to reequip tutors, enabling them to meet the constantly changing demands of their job. Consequently, workshops have become an indispensable part of our responsibilities.

Participant AFCT-1 correspondingly proposed that;

Initially, we attended workshops and training programmes on T-TEL at intervals at St Joseph College of Education and Berekum College of Education. However, we now do this on our campus every Wednesday.

AFCT-2 equally proposed that;

We attend on-campus workshops, but other training programmes are held off campus at certain times. These workshops have helped us bridge gaps that technology creates in our teaching and learning.

SACT-1 similarly contends that;

We offer general training and workshop programmes on our campus, organised by T-TEL and GTEC, that focus on the changing face of teacher education. Some of our Social Studies colleagues occasionally attend other educational technology training programmes to retrain those who were not privileged to attend such workshops. However, a lack of information technology resources makes it impossible for us to put into practice what we have learned, to the detriment of our student-teachers.

SACT-2, in agreement with SACT-1, opined that;

The introductory and reliable workshop we have participated in and continue to participate in is T-TEL, which concerns all the courses we take on campus. Aside from this, little can be said about training in instructional technology for Social Studies.

BCT-1 declared that;

Fundamentally, we have incorporated ICT into the Social Studies lessons training programme during the COVID-19 pandemic. Additionally, the weekly T-TEL training workshop has been ongoing for nearly five years, if my memory serves me correctly.

BCT-2 also added that:

The colleges of education have been attending IT workshops within the zone to participate in short training programmes that equip them with essential application tools for computer technology and related equipment to facilitate instruction.

Also, the tutors indicated that the COVID-19 pandemic has further institutionalised the use of digital technologies in education, particularly for information transmission in teaching environments. As Davis's TAM emphasised, these sentiments indicate the inevitable need to incorporate technology into work processes.

From the viewpoint of SJCT-2 stated that;

I had an appointment at the college when the technology into lesson workshop had already been completed. Since then, such workshops have not yet been organised for us, so I could also have been fortunate to be part of one.

ACT-2 echoed that;

Since my appointment at the college, I have not been privileged to attend IT workshops and training programmes. It has not been easy, as some of us must align with technology-driven changes in lesson delivery.

ACT-2 shared the notion that;

Specifically, I have not attended on-the-job instructional technology training programmes, except for the one the school recently organised for us.

BCT-2 also reported that;

I attended a private training course on Computer applications, including word processing, Excel, PowerPoint presentations, and graphic design, while at the University for undergraduate and graduate programmes. However, there has not been such specific on-the-job training on technology that I have attended.

Motives for The Utilisation of Instructional Technology

As it progresses, the study highlights the motivations for utilising instructional technology in instruction during the COVID-19 pandemic. Consequently, the CP participants shared the following motives:

SJCP suggested that;

The rationale is to make teaching and learning less stressful and more sustainable by applying these principles in the circumstances they face, such as the current COVID-19 era, in which knowledge of educational technology dictates the pace of academic work due to the temporary closure of schools. We had no option, for instance, to engage the students in some distance learning at that time to mitigate the situation. That is when the knowledge of educational technology became highly beneficial to both tutors and students.

BCP echoed that;

Instructional technology is used to help students better understand the lesson and bring reality to learners' doorsteps. Moreover, the lengthy verbal communication between the teacher and students is curtailed to some extent, as much of the instructional output in technology applications is visual and delivered through virtual learning, particularly during the COVID-19 pandemic, when face-to-face meetings between faculty and students are not permissible.

SACP likewise conveyed that;

Some tutors resort to educational technology partly because they are highly interested in and adept at using technological devices, such as iPads and smartphones. Therefore, incorporating educational software into their lessons demonstrates motivation and addresses individual differences among the ability groups in the class.

Regarding the motives for utilising instructional technology, BCT-1, SACT-1, and SJCT-1 are of particular note, underscoring that the infusion of educational technology into instruction provides insight into the lessons taught. They individually responded as follows:

BCT-1 proposed that;

As tutors, the key element expected to be demonstrated in your tuition at the end of your lesson is the learner’s ability to comprehend and apply what you have taught them. In this regard, the involvement of computer devices and other learning software usually plays an important role in the success or otherwise of your lesson.

SACT-1 compatibly anticipated that;

Learning with educational devices, such as computers, tends to enhance teaching and learning. Unfortunately, some people lack access to the Internet, which is often regarded as the information superhighway, where invaluable sources of knowledge abound. Unquestionably, the contribution of technology to education cannot be downplayed.

SJCT-1 asserted that;

The rationale for incorporating technology into my daily lessons is to expose trainee teachers to current technological practices in teaching and learning. Exposing student teachers to learning tools such as LMS, Skype, and Zoom gives them the confidence to excel in future professional tasks. Equipped with this information, students' desire and willingness to use them in their learning process, at their convenience, to complete assignments, class exercises, project work, and quizzes are assured.

Equally, participant BCT-2 stated that;

During the peak period of the COVID-19 pandemic, students often submitted assignments via Google Classroom and WhatsApp, typically in PowerPoint format, while other teaching and learning activities were conducted via Skype and Zoom. Therefore, almost all lessons were conducted virtually, as in-person interaction was not permitted during the COVID-19 pandemic. In all these, tutors' aspiration is that the trainee teacher will have the opportunity to gain experience in the practical application of technology in lesson delivery so that they can replicate it in their future lessons.

SACT-2 verbalised that;

Although my school is not technologically advanced in terms of educational devices, some of us are driven to utilise these tools to deliver instruction in the interest of students who exhibited enthusiasm for them during the COVID-19 pandemic.

SJCT-2 articulated his views this way;

My interest in educational software for emerging smart devices and its ease of use in my lessons has motivated my use of educational technology, particularly for my students' assignments, quizzes, short tests, and other class activities.

In contrast to the earlier made submissions, ACT-1 and ACT-2, and AFCT-1 and AFCT-2 still resort to the traditional “talk and chalk” procedure without recourse to “modern technology”. However, they indicated that most students do not prefer this “talk-and-chalk” procedure. For instance, AFCT-1 confirmed that:

In many circumstances prior to the COVID-19 pandemic, I used the markerboard and a marker to convey knowledge in my lessons. Almost all activities were done with illustrations on the board, including class tests and quizzes. However, it is now difficult to physically engage students in “talk-and-chalk” activities during the COVID-19 pandemic due to temporal prohibitions. However, resource constraints also make it difficult to use online instruction, as we all expect.

Students’ Response to Technology Utilisation in Instruction

When the question of “the response of students to online technology usage in the tutor’s lesson” was posed, the following responses were given:

SJCT-1 described that;

Students’ interest and participation in a technology-based lesson are more encouraging than in a lesson without technology integration. In this instance, the desire to learn something new typically motivates their participation in the lesson. This explains why, during this period of the pandemic, despite internet connectivity issues, students’ participation in synchronous and asynchronous lessons is very encouraging.

SJCT-2 equally avers that;

Although some teachers are unfamiliar with technology-incorporated lessons, their enthusiasm and assertiveness toward virtual instruction during COVID-19 are encouraging. Such a desirable atmosphere typically fosters productive exchanges during in-class activities.

BCT-1 also proposed that;

The COVID-19 pandemic has highlighted the need for student trainees to integrate technology into instruction. This incident demonstrates the substantial influence of technology on students' lesson delivery.

BCT-2, in affirmation, stated that;

Students value the use of technology in lesson delivery because it enables them to display images, videos, and other visuals on a projector, which would otherwise be impossible. The pandemic necessitated

technological innovation in instruction to bridge the gap between tutors and students.

ACT-1 submitted that;

Before the COVID-19 pandemic, technological proliferation in academia was not widespread in our region. However, every tutor now wishes to utilise emerging technologically productive ways in virtual tutorials. This indicates the strong preference among tutors for regularly using technology in their lessons, especially during COVID-19. However, as stated earlier, my school lacks some devices to facilitate online instruction.

SACT-1 certified that;

Students have been responsive in lessons oriented toward information and communication technology. However, due to setbacks, we are often not well-equipped to utilise such facilities effectively. In the context of COVID-19, integrating technology into lessons is the most effective option, given social distancing.

SACT-2 equally claims that;

Students are always eager to see tutors employ technology in their teaching. However, their aspirations often remain unmet because we lack modern infrastructure, such as broadband services, that would enable them. Therefore, we often make do with what is available, particularly during the SARS-CoV-2 pandemic, when face-to-face meetings are not feasible.

AFCT-1 and AFCT-2 reported that the use of technology in instructional processes could benefit tutors and trainee teachers. However, we are significantly under-resourced in terms of the technological tools needed to facilitate regular class activities, particularly during the COVID-19 pandemic.

This was exemplified, for instance, by AFCT-1 as;

Teaching with technology is highly engaging and valued by both tutors and students. However, resource inadequacy makes such dreams and changes in our approach to instruction difficult to realise consistently as envisaged.

ACT-2 shared the notion that;

Our school's limited technological resources have been the primary reason some of us are unable to utilise technology in our teaching and learning. It has been a significant worry to some of us.

Also, the CP participants in the study articulated their views on students' responses to the integration of technology into instruction.

SJCP remarked that;

To my knowledge, tutors' incorporation of technology into lessons has always appealed to students. Meaningful interactions between them are the environment I often witness during my usual supervisory rounds, as I peek through the windows at the lecture rooms to immerse myself in the activity underway.

BCP participants equally voiced that;

Teaching- and learning-friendly environments are fostered when educational technology is incorporated into the teaching and learning process of a Social Studies lesson, as in other courses. The robust interactions between tutors and students indicate that the future of technology in academia is promising.

SACP did indicate that;

Students' interest in technology-friendly instruction cannot be underestimated. Tutors commonly justify the need for the college to acquire teaching and learning technologies by citing students' interest in lessons when these tools are employed.

The expression of AFCP was markedly different during his deposition.

The lack of up-to-date facilities for academic work in our school did not hinder students' desire or readiness to incorporate technology into their learning process during face-to-face lessons, thanks to their internet-compatible handsets. Their ability to complement the teacher's efforts indicates their enthusiasm for technology-backed lessons. Unfortunately, the COVID-19 pandemic prevented the implementation of this teaching and learning environment, as the college lacks a relatively new distance-learning facility.

ACP admitted that;

Students are highly responsive to lessons that incorporate technology. This scenario encourages learners to participate in ongoing in-class lessons at any time. However, we lack the necessary technological infrastructure to support this process, particularly during the COVID-19 pandemic.

DISCUSSION

This section discusses the descriptive findings and interprets them in light of theory and the literature. Subsequently, the participants' interviews were coded to facilitate discussion of the instructional technologies that tutors employed during the COVID-19 pandemic. The findings were discussed under the following themes: (1) Available instructional technologies in the colleges for use during the COVID-19 pandemic; (2) On-the-job training on how to utilise specific instructional technology; (3) Motives for the utilisation of instructional technology; and (4) Students' response to technology utilisation in instruction.

Available Instructional Technologies in the Colleges for Use During the COVID-19 Pandemic

In response, SJCP indicated that his school has computer and internet facilities at the ICT resource centre, as well as some lecture halls available to tutors, and student-teachers to facilitate online and virtual academic work. This agrees with what BCP and SACP said. Therefore, tutors willingly use these facilities as needed. These statements made by the SJCP, BCP and SACP resonate with Huang et al.'s (2020) perspective that the use of distance instructional programmes, online educational applications platforms, and other information communication technology platforms that schools and teachers can resort to, to reach learners remotely and limit the disruption of education, was highly endorsed.

However, ACP, like AFCP, noted that although their school is equipped with some computers and projectors, it lacks Wi-Fi connectivity. The absence of Wi-Fi connectivity in ACP and AFCP's respective schools stands in sharp contrast to that in SJCP, BCP, and SACP's colleges. It therefore implied that some colleges were far more technologically endowed than others and, as such, determined the sustainability of online distance instruction during the pandemic. Adding his voice to the discourse, Holmes (2020) stated that the broadening of computer technology, the internet, and online tools as areas of interest in academia has benefited that sector.

It could therefore be inferred from the responses that many of the colleges of education in the investigation are equipped with some form of computer technology. This, to some extent, enabled some of them to engage their students with Zoom Video Conferencing, LMS, Google Meet, and WhatsApp technology in instructions during the period of the pandemic upon their realisation of their usefulness and conception of their ease of use as indicated by Davis's TAM of 1989, and Rogers's (2003) IDT. Realising the availability of novel instructional technology tools on the internet and their ease of use, these tutors decided to utilise them

in their lessons to bridge the significant gap created by school closures during the COVID-19 pandemic. The students' mass participation also attests to their approval of the computer technology their tutors employed.

On the other hand, technological inadequacies prevented some of them from realising the full benefits of the available facilities. Instances like these make Eady and Lockyer's (2013) assertion very viable, as they postulated that with technology now dictating the pace of all facets of human life, it is about time that curriculum planners and implementers integrate technological tools and equipment into the curriculum to make it more entrenched in the schools' pedagogy.

Regarding Eady and Lockyer's remark, Aboagye and Yawson (2020) emphasised that the revised Ministry of Education (2018) curriculum framework prioritises the use of ICT as a pedagogical tool. This endorsement by the ministry also serves as an endorsement of Rogers's (2003) IDT in instructional delivery, where adaptation to ICT has gained widespread recognition. Unfortunately, the use of ICT as a pedagogical tool in the new curriculum does not align with Ghanaian school infrastructure, as some teachers lack access to communication networks. Hence, the prevalence of COVID-19 presents an opportunity to make necessary technological resources accessible to facilitate instruction.

A consistent level of response has been observed among tutor participants. For instance, SJCT-1 and SJCT-2 shared similar convictions in their submissions, affirming that some computer facilities are available at their college but are grossly insufficient and cannot be relied upon effectively for academic work. This explains why, to a large extent, some college tutors rely on their handsets and other personal devices to deliver lessons via LMS, Zoom Video Conferencing, and Google Meet, among other tools, especially during the COVID-19 pandemic. For instance, according to Tenebruso (2020), the Zoom video conferencing platform ended the second quarter of 2020 with more than 370,000 customers, representing a substantial year-over-year growth rate of 45.8%.

Consequently, the provision of digital resources to facilitate instruction at the colleges of education, as the participants indicated, is in alignment with Daniel's (2020) revelation that educational organisations should increase the opportunities for distance education through digital resources, using them in organising asynchronous instruction, especially in the period of a pandemic like COVID-19, when in-person interaction is impossible. The participant's submission further aligns with the ADEA, AU/CIEFFA, and APHRC (2022) submission, which identifies distance teaching and learning tools, as recommended by GPE, to enable all teachers to sustain instruction in the event of school closures, as commendable and worth emulating. These studies by Daniel

(2020) and ADEA, AU/CIEFFA, and APHRC (2022) exhibited that using alternative technological processes to sustain instruction by the tutors of the CoE in the study was not misplaced and efforts must be made to ensure that it thrives side-by-side with the in-person instruction irrespective of the environmental circumstances prevailing.

Relatively, to ascertain or disabuse the facts in the issues stated by the CP and some members of the CT participants, a virtual visit by Zoom to some of the lecture theatres reaffirmed that although many of them were fitted with projectors and Wi-Fi networks, among others, some of them were broken down and lack the needed repairs, or those that are in use are not reliable especially the Wi-Fi connectivity. From this researcher's perspective, these occurrences somewhat explain why some of the CT participants chose to use their gadgets before, during, and after instruction, despite the inadequate computers, projectors, and internet accessibility issues that arose during the COVID-19 pandemic. This is a clear case of technology acceptance and adaptation (TAA) as professed by TAM and IDT models used in this study.

It was concluded that Zoom Video Conferencing, LMS, Google Meet, Google Classroom, YouTube videos, and WhatsApp technological tools were the main online tools available to tutors to ensure the sustenance of instruction during the COVID-19 pandemic.

On-the-Job Training on How to Utilise Specific Instructional Technology

The discourse here indicates that some of the colleges in the study have incorporated "on-the-job technology utilisation into instruction" workshops as a vital component of their professional development programmes. On the other hand, their sister colleges in the investigation have yet to expose their tutors to this all-important segment of instructional delivery in Social Studies education. Their inability is partly attributable to the lack of technological infrastructure to support this process. It was therefore declared that this important aspect of the teacher training venture would be implemented as and when their college is equipped with the required technological facilities to improve teaching and learning. In doing so, tutors' technological expertise could be enhanced, in their view.

However, Davis (1989) posited that the adoption of an innovation is mediated by knowledge, persuasion, and the decision to reject or use the identified innovative technology. Thus, manipulating the technology involved in instruction helps the teacher stay abreast of the required capacity to facilitate its utilisation with little or no stress. In response to the discussion, Jaipal-Jamani et al. (2018) pointed out in their study on "workshops for capacity building" that taking on technology leadership

roles as workshop facilitators effectively builds faculty capacity for technology-enhanced instruction. Faculty noted that being invited to serve as a workshop leader enabled them to assume a role they may not have thought they could undertake. Hence, Rogers's submission that the knowledge about how to utilise the recognised innovation and the likelihood of being influenced by the expediency of the concept is most probable to encourage the potential user to accept it is tenable to "on-the-job training" that is geared towards capacity building of tutors in technology utilisation in instruction. This situation made them take risks and expand their knowledge of technology and pedagogy.

Jaipal-Jamani et al. (2018) asserted that regular workshops for tutors to get them abreast with modern trends in knowledge dissemination was very vital since it was revealed by one of the participants that workshops organised for them from time to time helped them to overcome some of the challenges associated with the manipulation of tools like computer and projectors in their instructional delivery since some of them were born before computer. This also supports the view articulated earlier by Rogers. Without a doubt, Jaipal-Jamani et al. (2018) postulate that a workshop for tutors on incorporating technology into instruction is vital to this study. Harleem et al. (2022) also emphasised that technologies can provide online in-service training. According to them, there is evidence that instructors require better incentives. Unfortunately, Harleem et al. further stated that instructors can use technology to educate, but some lack the motivation. Although teachers use videos to teach, they are not always as effective as when they are standing in front of the classroom.

This suggests that, despite technology's contribution to bridging the gap created by school closures, in-person instruction remains preferable, given teachers' experience integrating technology into instruction and the hope of achieving the desired benefits. However, there has always been the case where education transcends the boundaries of the classroom, ever-changing conditions, the level of computerisation, and far-reaching situations, call for remarkable adjustment, aid, as well as a commitment to digital instruction, a permanent component of lesson delivery in the 21st century, where COVID-19 and other emergencies necessitate social distancing of all forms.

Also, SJCT-1 and 2, BCT-1 and 2, and SACT-1 and 2 participants reported having "on-the-job" training on instructional technology. Social Studies tutors have reported having one form of on-the-job training. Stark et al.'s (2010) study on how educational institutions support faculty in designing and developing web-based classes, for instance, indicated that some institutions offer only technical training. In contrast, others

provide technical and pedagogical training to faculty, attesting to the significance of on-the-job training in instructional technology for Social Studies tutors in the current knowledge landscape at the colleges of education in the study area, particularly during the COVID-19 pandemic. From the perspective of Harleem et al. (2022), these technologies have a powerful impact on the educational system and on acceptance, as indicated by Davis's (1989) TAM. They also indicated that the COVID-19 pandemic has further institutionalised the use of digital technologies in education, particularly for information transmission in teaching environments.

The views on "on-the-job training of tutors on educational technology" suggest updating tutors' knowledge to remain abreast of changes in information dissemination in college education. Lion and Stark et al.'s (2010) perspective on this matter stimulates the submissions made by the SJCT-2, ACT-2, and BCT-2 when they admit that members of the faculty may be allowed to be mentored in an instance where they do not have the necessary knowledge and skills to live up to desired standard in terms of capacity to deliver a technologically-ladened instruction with all the confidence and vigour it required. This contention was appropriate, as mere knowledge of technology does not translate into practical application in the instructional environment.

Contributing to the discourse, Mishra and Koehler (2008) argue that knowing how to use technology does not necessarily mean knowing how to use it effectively in teaching. On that basis, Davis (1989) and Silva (2015), in an illustration of the TAM, stated that the external variables, people's perceived usefulness of the technology they intend to use, perception of ease of use, and their attitude toward usage, could determine the decision of that individual to use the technology in question eventually. CoE teachers should acquire the knowledge, attitudes, and skills to effectively integrate information and communication technologies into their teaching. Davis's TAM perspective anticipates what technology can offer in the dissemination of educational information.

This presupposes that tutors at the colleges of education should endeavour to obtain the requisite technological knowledge that can appropriately impact their teaching and learning, as earlier endorsed by Rogers (2003), where tutors who were early adopters demonstrated their readiness to use technology in instruction with a high-grade technological tool during the COVID-19 pandemic period. The late adopters and laggards, such as the ACTs and AFCTs, demonstrated that they were not ready and subsequently adopted low-grade instructional technology to engage some of their students in distance asynchronous instruction. In

general, the participants' interview responses aligned with the authors' views.

The participants' responses confirm the views of Huang et al. (2020), who argue that consciously tailored, specific training programmes in online instructional technology in Social Studies education are essential for effective instructional delivery and cannot be overlooked if higher productivity is to be achieved.

Motives for The Utilisation of Instructional Technology

It was observed from submissions by the CP and participants in BCT-1, SACT-1, and SJCT-1 that the benefits of using instructional technology, including sustaining and enhancing academic work during the pandemic, were among the key motives for its adoption. Eady and Lockyer (2013) postulate that teacher educators and researchers signal the likelihood of technology to improve the motivation and engagement of learners, cater to different learning styles, and improve learning outcomes as among the motives of applying instructional technology at a given session, which offers further insight into the earlier submission by the participants of this study. Indeed, Granic and Marangunic (2019) stated that studies confirm that the TAM model has evolved into the standard theoretical framework for understanding predictors of users' technology-use goals. This presupposes that TAM, as used in instruction, is intentionally designed to achieve a specific end, as demonstrated by participants (BCT-2, SACT-2, and SJCT-2) in the study through an instructional process.

The need to keep pace with society and prepare students for their roles in it was one of the motives behind the integration of technology in education, as purported by Eady and Lockyer (2013). It is equally no coincidence that Yalcin et al. (2011) aver that pre-service teachers always model and imitate the lecturers. In their view, more opportunities for teacher-trainees may be created as they witness the benefits of integrating technology into teaching. Therefore, the perceived usefulness of TAM, as shown by Eady and Lockyer (2013) and Yalcin et al. (2011), directly impacts users' attitudes toward employing a given technology, particularly in terms of perceived usefulness and perceived ease of use in instructional processes. In effect, both hypothesised philosophies are directly influenced by external variables, such as system design characteristics and users' self-efficacy in using the technology (Davis, 1989) in the instructional process.

Therefore, the use of technologies by Social Studies teacher educators in their lessons makes it worthwhile, advantageous, educative, and effective for teacher-trainees to replicate their tutors' online educational technology in their future instruction at the basic level. This

indicates that TAM has become one of the most reliable models for investigating user technology acceptance and usage behaviour (Granic & Marangunic, 2019). Additionally, Richey and Klein's (2005) submission, instructional resources support teachers' valuable educational practices that meet students' needs. This assertion by Richey and Klein also confirms the participants' responses, who noted that their choice of instructional technology was partly dependent on their students' needs at the time. Eady and Lockyer (2013) further confirm that tutors use instructional technology to stimulate students to work individually or in groups, engage learners in activities that are not possible in the classroom, and allow students to work at their own pace as a review or extension activity. TAM, in this instance, becomes relevant when tutors, during their online tutorials with students during the COVID-19 pandemic, found that the perceived ease of use of a system could promote perceived interaction not only between them and their students but also with the entire communication system in use.

In this regard, Davis's (1989) TAM posits that when users are introduced to a new technology, several factors influence their decisions about how and when to use it. Davis's TAM provides guidance on what typically necessitates the use of technology in instruction. It is noted that computer self-efficacy (Cheung & Vogel, 2013), learner experience (Huang et al., 2020), technical support (Cheung & Vogel, 2013), perceived convenience (Yu-vying & Hsiao-hui, 2012), subjective norm (Lapinski et al., 2005), and cultural factors (Sang et al., 2010), motivates a teacher's TA in instruction. These views, expressed by the authors, affirm Davis's (1989) external variables. Consequently, the diverse suggestions from participants in the investigation of motivation for technology use in instruction align with the authors' inputs.

So far, participants' responses, which discuss the theoretical and conceptual models, indicate that each tutor utilises technology for a specific purpose, regardless of the lesson topic. Their submissions further demonstrate that the COVID-19 pandemic accelerated the adoption of instructional technology to bridge the temporary gap created by school closures and social distancing protocols.

It is pretty noticeable from the discourse that although varying factors motivate tutors' usage of technology in instruction at a given period, a good number of the tutors desire to sustain academic work during the COVID-19 pandemic to attain optimum productivity in their lessons, even in the face of unreliable internet facilities, signifying their motives behind technology utilisation in their instruction.

However, handset incompatibility with certain applications, such as those for Android and Apple devices, limited internet access, and intermittent power failures are among the challenges students may face when using computer-related technologies in instruction. Notwithstanding these potential challenges in some colleges, tutors exhibited greater motivation to deliver their lessons using modern technological tools, partly due to the high level of student interest during such instructional hours. As tutors realise the ease in the use of LMS, Zoom, and WhatsApp technologies in knowledge transmission in instruction, they feel they are useful irrespective of their initial rejection of the innovations in the presence of Granic and Marangunic (2019) stated that studies confirm that the TAM model has evolved to become the standard ground theory in understanding prognosticators of user goals toward the usage of technology.

This presupposes that TAM, as used in instruction, is intentionally intended to achieve a given outcome. During the COVID-19 pandemic, partly due to technological challenges, they decided to devise ways to access the technologies, given their usefulness as indicated by TAM, and they feel it is more beneficial to their course. This was in affirmation of Eady and Lockyer's (2013) findings, which reiterated that teachers use digital resources for various purposes, including as a stimulus package for group or whole-class discussion and to engage students in activities that are impossible in the classroom. Students working at their own pace as a review or extension activity was also indicated by Eady and Lockyer as one of the rationales for tutors' application of instructional technology. This stance, put forward by Eady and Lockyer, suggests that during the COVID-19 pandemic, several technological options were available to tutors at the CoE to explore in instructional delivery. Hence, the larger sample size of 35 participants in this study supports the authors' findings on this issue.

In sum, tutors' use of diverse online technological tools and equipment to engage their students in instruction ensured that academic work was not disrupted despite the COVID-19 scare. This suggests that technological innovation in instructional delivery is a worthwhile intervention and will play a meaningful role in academia in the years to come.

Students' Response to Technology Utilisation in Instruction

The CT participants' responses indicate that students' use of instructional technology was encouraging. The study found that, during the COVID-19 pandemic, Social Studies-trained trainee-teachers characterised the technology-based teaching and learning as approved, as evidenced by the responses of the CT participants. This was buttressed

by Zobeidi et al. (2023), who argued that the COVID-19 pandemic increased tutors' utilisation of online instructional technology, as students realised that it was a viable way to sustain instruction. Indeed, the pandemic was at its peak during this investigation. Consequently, tutors resorted to distance instruction. This view was supported by Zobeidi et al.'s (2023) contention that online learning systems have become a practical means of delivering educational content, particularly in developing countries, since the start of the COVID-19 pandemic.

The responses from the CP and CT participants clearly demonstrate that students' involvement in Social Studies lessons incorporating educational technology is consistently commendable. Interestingly, TAM, from Silva's (2015) perspective, posits that behavioural intention to use a technology considerably precedes actual use.

It is pretty revealing that technology's influence on a tutor's instruction emanates from the enhanced benefits and support they receive before utilising the new technology. Therefore, support for technology users is a critical factor in ensuring successful instructional use.

CONCLUSION AND RECOMMENDATION

Grounded on the findings, the following conclusions were drawn:

Generally, instructional activities did not halt during the pandemic, as many tutors believed that online instructional technology tools helped sustain academic work. Additionally, it was not only tutors' use of online technology that sustained academic work during the pandemic, but also the extent to which these tools were consistently integrated into the instructional process. Tutors' ability to adapt to online instructional technologies enabled them to continue their academic work during the pandemic. It could also be inferred that the regular use of online instructional tools was crucial for sustaining academic work.

The study strongly recommends that the GTEC and GES, in collaboration with the colleges' administrators, prioritise technological innovations and motivate and engage tutors at the CoE in capacity-building on the use of digital tools in pedagogy.

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