Learning Amidst COVID-19: Pre-service Teachers' Perceptions, Experiences, and Challenges with Online Teaching and Learning in Ghanaian University

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Abstract

Considering the rapid spread of the COVID-19 pandemic, most universities migrated to online mode of teaching and learning in a spontaneous manner without adequate preparation and guidance for the key stakeholders in the institutions. The change in mode of teaching has implications for pre-service teachers because of the unique nature of teacher education that includes both theory and practicum. The purpose of this study was to examine pre-service teachers' perceptions, experiences, and challenges with online teaching and learning. To achieve this purpose, a quantitative descriptive survey design was employed whereby 311 pre-service teachers were sampled and surveyed through questionnaire. The results of the data analysis indicated that the online mode had a positive impact on pre-service teachers' academic performance and assisted them to set their own learning schedules. The results also revealed that the online mode was more convenient, boosted confidence, and suited the learning styles of pre-service teachers. The findings revealed that pre-service teachers got immediate feedback from online assessments. Despite these findings, pre-service teachers indicated that the online mode was more expensive and limited their interaction with instructors. Further, pre-service teachers indicated their intentions to use the online mode of teaching and learning in the future, and it is recommended that the online mode be formalized in the university in the post-COVID-19 era.

Keywords: Online teaching and learning; online assessment; pre-service teachers; feedback; COVID-19; Ghana

Background

COVID-19's unparalleled health crisis has impacted practically every element of life. For instance, the education sector has been hit by a lot of

setbacks because of the sudden occurrence of COVID-19: brief school closure in over 180 nations since March 2020, exposing the vulnerability of education institutions around the world. This disturbance in schooling, along with the predicted slowing down of growth globally because of the economic slump, has a major impact on the most vulnerable kids who come from low-income families (UNESCO, 2020).

In reaction to the virus's spread, Ghana's government imposed a lockdown on March 15, 2020, that closed all schools, colleges, and universities, as well as all other educational institutions. This forced the education institutions especially at the tertiary level to adopt other means of completing the academic year. With the boost in online teaching and learning, the education system was thus changed significantly because of the unavoidable shutdown of schools and colleges for an extended length duration (Dawadi et al., 2020). As a result of unavoidable shutdowns due to COVID-19, many universities and colleges around the world including the University of Ghana have shifted to online learning.

Virtual learning increasingly plays a fundamental role in the educational system and learning is no longer constrained to traditional classrooms. With its introduction in institutions throughout the world in recent years, universities have found that making a successful transition between the traditional method of teaching and learning and online learning has now become an increasingly important difficult feat following the COVID-19 pandemic. Several colleges have implemented a "blended learning" technique that combines traditional face-to-face teaching and learning with online teaching and learning technologies to provide students with adequate learning experience. This transition has evolved to be a popular method since it gives students better versatility and access to a variety of teaching resources to help them learn (Wong & Fong, 2014). Thus, the pandemic has made remote learning obligatory, prompting schools and colleges to quickly embrace unprecedented tactics in their efforts to make online learning practicable, and learner-friendly.

The struggle to migrate fast to online learning environments has had an impact on universities, professors, and students at all levels. With the push to grant additional online learning options to students growing, it is critical to evaluate learners' views and experiences with this change from traditional face-to-face delivery to online delivery. Gaining insight into the motivation and attitudes of learners toward adopting technology may manipulate their level of participation during online learning (Ong & Lai, 2006). Basioudis et al. (2012) stated that students' views of the Learning Management System and its online resources can affect their degree of involvement. The attitudes of learners toward online learning and distance education are one of the variables influencing this transformation. Understanding their views and inclination can

aid universities and academic institutions in creating and implementing suitable online learning models and formats to meet the students' needs. Many scholars (Peytcheva-Forsyth et al., 2018; Rhema & Miliszewska, 2014) have emphasized the need for educational institutions to analyze and document students' attitudes and experiences towards online learning. The learners' attitudes and perceptions about online learning, according to Dhiman et al. (2014) are a major influence on students' learning outcomes. Students' positive views toward online learning are crucial to their preparedness and integration in online learning (Peytcheva-Forsyth et al., 2018). However, very little attention has been paid to Ghana's pre-service teachers' attitudes and experiences towards online learning and assessment. For instance, Warschauer (2007) advocated for more research into students' experiences and attitudes regarding the practice of online teaching and learning, since this will aid stakeholders in education in adjusting the educational system to improve student's participation and achievement in online teaching and learning. Considering this, the purpose of the study is to examine pre-service teachers' perception, experiences and challenges with online teaching, learning, and assessment. Specifically, this study addressed the research question: what are the experiences of pre-service teachers towards online teaching, learning, and assessment?

Literature review

Perception and experiences of students on online learning

According to a study conducted by Daniel (2020), both students and teachers have different perspectives on the usage of technology devices as a learning tool. With the different interactions and problems posed by technological innovation in educational settings, Kalyanasundaram and Madhavi (2019) stated that understanding how learners perceive e-learning has become a requirement for society. This perspective could be based on the fact that they have never interacted with these modern subjects due to a lack of accessibility or availability (Almaiah et al., 2020). The significance, difficulties, and perspectives of e-learning on distance education were discussed by Ajadi et al. (2008), who came to the conclusion that the survival of tertiary education in the twenty-first century will be dependent on the deployment and implementation of various technological tools. Also, Ngampornchai and Adams (2016) investigated North Eastern Thailand's students' experience with technology by using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Despite the fact that most students had a basic understanding of mobile devices as a result of their active social media usage, they had minimal understanding of e-learning technical tools

With an emphasis on developing nations like Vietnam, Pham et al. (2019) investigated the relationships between e-learning attributes: services, quality, contentment, and trustworthiness of students. The finding was that the quality of an e-learning service has a direct impact on students' conviction in their ability to learn online. Keller and Cernerud (2020) used multiple regression analysis to assess the perspectives of e-learners in a 2020 survey. Students' computer skills, attitudes toward new technology learning techniques, and the benefits and drawbacks of e-learning were all assessed. The approach and style of implementing e-learning technologies in schools were considered to be critical. Almarabeh (2020) used the technology recognition model to assess students' perceptions of e-learning. The findings suggest that students are not only qualified, but also willing to accept the e-learning method. According to Kalyanasundaram and Madhavi's (2019), students who are interested in online learning are also confident with online learning, teaching, and assessments.. Further, according to El-Seoud et al. (2014), the usage of e-learning interactive tools aids in the maintenance and motivation of students' learning processes.

Challenges of Online Teaching and Learning

Owing to the COVID-19 pandemic, majority of educational institutions all over the continent temporarily restricted their operational techniques. This was to prevent the virus from spreading any further (Kim, 2020). The term "online education" refers to the process of learning via the internet. It has both advantages and disadvantages. Online lessons save money on travel and other expenses. As a result, teachers and students have been abreast with the needed technical competencies necessary to participate in the electronic classes and the use of computers (Kim, 2020). Due to the spreading character of COVID-19, personal interactions between teachers and students have been severely affected. It has enhanced the role of information and communication technology (ICT), creating new obstacles and challenges for students such as amiable isolation, network hitches, and other environmental factors. During the pandemic, the pre-service teachers viewed online learning as a means of disseminating more freedom to contact with lecturers and interact with their educational texts and notes at their leisure and in an adjustable phase and space, as stated by (Khan et al., 2020).

Teacher-students relationships were thus changed as a result of online education, as teachers were unable to provide additional attention and care to learners who require it or who are physically exhausted. Additionally, the students considered that online classes were insufficient for them. The requirement for professors to provide recordings, power point presentations, and electronic notes for the students has increased their workload in online teaching. To work, teachers will need more than just mobile data; they will

also need enough bandwidth with strong connection. Teachers and students in online programs were physically exhausted and missed the classroom experience (Hindocha, 2020). Students who come from remote communities had limited or no connectivity access, making it tough for them to show up for their online classes. In some cases, they may not be able to join classes for the required time because of these connectivity issues. Spending long periods of time in front of a screen or on a mobile phone was equally stressful for students. The lack of real classroom conversation and detachment from the university library are the two most significant disadvantages of online lectures (Farooqui, 2020). Both teachers and students have witnessed a huge shock as an aftereffect of online education, which has had a repercussion on the teacher's productivity and student's education. Teachers' largest problem was quickly changing the educational texts to an automated form, since some were not skilled in this area and it was difficult to let the learners stay away from other socialization applications during online classes. The socioeconomic backgrounds of the students varied in diverse ways, making the ability to access the internet and other technologies unequal for them. Some had adequate access while others were not so privileged (Blog, 2020). Students desired online learning to keep their educational pursuit amidst the pandemic, according to a poll on online learning performed by students (Shetty, 2020). They also faced other hurdles, such as a lack of socialization, technology limitations, and vision problems, to name a few. When the classes resumed, 79 percent of students were no longer interested in online education classes because of the technical hitches they encountered while learning; the masses of students looked forward to a mixed paradigm approach to learning in attendance to the COVID-19 epidemic (Shetty, 2020).

An additional study enforced interpretative phenomenological analysis (IPA) to further understand the issues that university lecturers encounter when lecturing online and reaching students at home. They divided barriers into four categories:

1. Barriers in the home and other social environments, such as a lack of essential amenities, family disruption when teaching is ongoing and when assessments are being conducted.
2. Institutional help rubs, such as a lack of training, a lack of precision and navigation, and an inadequate allocation of funds for acquiring advanced gadgets and technologies
3. Technical issues encountered by teachers, such as a lack of technical setups, a lack of concern, and insufficient budget for purchasing advanced technologies.
4. Teachers' peculiar issues, such as bad behaviors, a lack of enthusiasm for teaching, and a deficit of technological competence, create hindrances to online learning and evaluation (Joshi & Vinay, 2020).

When compared to traditional teaching methods, the students believe that online courses are discomposed.

Educators do not accept that online classes may possibly be a substitute for traditional (face-to-face classes). As said by Kulal and Nayak (2020), it has been difficult for teachers especially those who teach practical lessons to teach due to inadequate facilities and the absence of interpersonal link with the students. Isolation procedures have resulted in children and teachers being confined to their homes as a result of the pandemic. Due of the pandemic, it is tedious for teachers and students deliver and study in an isolated atmosphere. Male students were highly displeased with the present online learning, while female students were deeply displeased with their immediate household setting, which harmed their education (Chandra, 2020).

Experiences and benefits of online learning and teaching

Pre-service teachers experience in the digital evolution forms an integral part of the worldwide efforts in migrating to the digital space for teaching and learning. Students' exposure to the technological use for teaching and learning is critical for preparing preservice teachers to embrace the digital transition or integration for teaching and learning. The covid-19 pandemic has widely affected most of the activities which involve human contact especially teaching and learning in areas where e-learning has not been fully integrated into the education system, which led to the closure of schools (Dhawan, 2020). Thus, a number of universities and schools have had to rapidly adapt to online teaching to create learning environments and prepare future teachers (Flores & Gago, 2020). This abrupt transition requires both teacher educators and pre-service teachers to adapt to new models of teaching environments, and this process also results in several perceptions, challenges, and constraints that need to be overcome (Carrillo & Flores, 2020).

A number of studies have looked into the impact of e-learning, the factors that affect preservice teacher's professional growth, the inexperience of preservice teachers, the challenges associated with poor online teaching and learning, the inadequate or lack of resources and technical support, perceptions, and anxieties towards preparing preservice teachers for online teaching and learning (Judd et al., 2020; Huber & Helm, 2020; Zhang et al., 2020). Hill (2021) and Khurana (2016) claimed that the swift transition towards the deployment of online teaching and learning created chances for preservice teachers to get interacted with facilitators due to its ease in terms of time, place, the pace of learning, and cost. Garrison (2000) was of the conviction that preparation of preservice teachers towards online learning necessitates the preservice teachers to be adaptable and flexible to a range of instructional designs, as well as to improve preparation and delivery of

diversified teaching and learning methods. Ordinarily, preservice teachers are familiar with theories, pedagogies, and practical strategies by taking courses with instructors (Jin, 2022) liaised with the use of teaching and learning technologies to support the perennial deployment of the online teaching and learning approaches (Aparicio et al., 2016).

E-learning, whether asynchronous or synchronous, offers a pre-service teacher several benefits professionally: for example, it does not depend on being in the same physical location and can thus increase participation rates. In addition, it can be cost-effective because online learning reduces travel and other costs required to attend in-person classes and also may provide learning opportunities for adult students while also engaged in full-time or part-time jobs (Fedynich, 2014; Yilmaz, 2019). Online teaching and learning allow for effective interactions between students and faculty members with students getting to electronically interact with lecturers remotely for formative feedback to improve teaching and learning (Debrah et al., 2021; Danchikov et al., 2021; Bdair, 2021). Baskan et al. (2020) study revealed that online learning offers the opportunity of increasing preservice teachers' teaching competence or pedagogical skills and preparing them for effective online teaching and learning.

Anxiety in using online learning and teaching

Teaching anxiety is a considerable affective state that may have some adverse effects on the learning and teaching processes (Aydın, 2021). Anxiety in the online teaching environment among pre-service teachers is one of the factors that may negatively affect online teaching effectiveness and professional growth (Dolighan & Owen, 2021). Anxiety in using online teaching and learning in this sense refers to the dread and the apprehensions that come as a result of the skills and difficulties involved in handling online teaching and learning. it can be seen as a normal human emotion, it may cause failure, a decline in academic performance, inability to concentrate on lessons, avoidance of personal relationships and social surroundings, and being introverted (Kunt & Tüm, 2010). It is very important to prepare future teachers to handle online learning without denying them the prior experience and knowledge on how to engage and support all students in learning, designing the media, and maintaining an effective situation for students. According to the Kennedy and Archambault (2012), the digital space for teaching and learning increases pre-service teachers' knowledge of evolving online classroom management and new technologies to reach their students in interactive and engaging ways, as well as an appreciation of the ever-changing existence of technology and its effect on the education system as a whole. The feeling of dread towards the use and management of online teaching and learning comes as a result of inadequate technological support in training

colleges, lack of teaching experience, pre-service teachers and faculty members attitude towards technology integration for online teaching and learning, perceived ease of use, fear of making mistakes, inadequate preparation, unmet expectations and time management among others are among the contributing factors towards preservice teachers' anxiety (Gyamfi, 2017; Woldab, 2014; Almaiah et al., 2020; Safira, 2021). Safira (2021) thematic analysis disclosed that factors that contribute to preservice teachers' anxiety are both administrative and personal factors.

Pre-service teachers' future intentions on online teaching and learning

Pre-service teachers' willingness to pursue online teaching, learning, and assessment heavily depends on their perception, attitude, commitment, and experience. A good attitude and effective experience in the use of online teaching and learning, and assessment will promote acceptance among pre-service teachers. Today's pre-service teachers commonly use technological and educational applications routinely in their daily lives, the use of such applications for online teaching and learning purposes is more problematic (Sailer et al., 2021; Valtonen et al., 2011) which requires specialized software and skills to be accomplished. OECD (2015) maintained that the impetus of current policies to promote pre-service teachers use of the digital platform for online teaching and learning is grounded in (a) promoting online teaching and learning processes through digital media and (b) allowing students to explore fully in the 21st-century knowledge and experience by advancing their digital literacy and professional growth.

The desire of pre-service teachers to embrace and apply educational technology for online teaching and learning is defined as the amount to which they will be willing to accept and use educational technology for teaching and learning in the future (Joo et al., 2018) It is also thought that the desire to utilize digital teaching and learning is directly tied to the individual's acceptance of technology. In recent years, experts have proposed and tested a number of models to explain and predict the acceptance and implementation of technology integration among teachers (Wong, 2016). The Technology Acceptance Model (TAM), for instance, explains the elements that influence instructors' acceptance and implementation of technology (Scherer & Teo, 2019; Wong, 2016).

A recent scoping review of over 40 research using the Technology Acceptance Model as a conceptual framework found that instructors' intention to utilize Technology for teaching improves when educational technology is both simple to use and helpful (Scherer & Teo, 2019). Moreover, a larger degree of technology integration was linked to higher levels of behavioral intentions, according to the study conducted (Scherer & Teo, 2019).

Methods and materials

Research Design

A research design according to (Kothari & Crag, 2014; Creswell, 2013) can be defined as a plan, structure, and strategy for conducting research in order to identify the tools needed to address an issue and reduce variance. Its aim is to make sure that the evidence gathered guarantees that the questions are answered as clearly as practicable. Similarly, research design makes it easier to complete numerous research procedures, making research more efficient and yielding more knowledge with less work, time, and money spent (Kothari & Crag, 2014). This study adopted the quantitative research design because, it is an approach in which the investigator develops knowledge primarily via the use of positivist statements (Creswell, 2013), and the positivist paradigm encourages researchers to take a scientific and methodical approach to their work. Thus, the quantitative design was employed in this study since it allowed the researchers to conduct an objective analysis and acquire actual knowledge through measurement. Specifically, the researchers employed a survey design to collect data at a specific point in time with the goal of detailing the nature of online teaching, learning, and assessment. According to Glasow, 2005, the survey design is an effective means to collect data from a wide range of people and educational settings in a methodical manner.

Population and Sample

The study's population was undergraduate students of one of the teacher education universities in Ghana. Students (pre-service teachers) who had taken online courses mainly during the emergence of the pandemic formed the study's target population. This study adopted a multi-stage sampling procedure in arriving at a sample of 311 pre-service teachers for the study. In the first phase, the teacher education department was randomly selected from the list of departments in the University. In the second phase, the questionnaire was sent to all the students in the department, out of which a convenience sample of 311 students responded to the questionnaire.

Research Instrument

The data for this study was collected using structured questionnaires. A questionnaire, according to Siniscalco and Auriat (2005), is a survey tool used to collect data about individuals or a social unit such as a household or a school from individuals. The questionnaire was in two parts: the background or demographic section, and the section on students' experiences with online teaching, learning, and assessment. The questionnaire was created on the google forms and distributed via the mail and WhatsApp platforms of the sampled participants. The questionnaire was on a five-point Likert Scale-

based statements ranging from "Strongly Disagree" to "Strongly Agree". Prior to the administration of questionnaire, they were piloted on students from department other than the teacher education department.

Ethical Consideration

The goal of research ethics is to determine some standards and norms of conduct the researchers should adhere to (Connolly, 2003). The researcher followed the laid down ethical criteria when conducting this study in order to protect the subjects as well as themselves. Before the questionnaires were given out, all respondents were told that the information they provided would be kept private. Participants were also volunteered to participate willingly, and could withdraw from the study at anytime.

Results

Demographic Profile of Respondents

The objective of the demographic profile was to find out more about the respondents which would enable their responses to be put in the right perspective. Therefore, the results on the demographic profile covered their sex, age group, and level. The results are displaced in Table 1.

Table 1. Demographic Information of Sampled Respondents (N=311)

Variables	Categories	Frequency	Percentage %
Sex	Male	146	46.9
	Female	165	53.1
Age Group	Under 18	35	11.3
	18-22	161	51.8
	23-27	92	29.6
	28-32	18	5.8
	33 and above	5	1.6
Level	100	100	32.2
	200	48	15.4
	300	59	19
	400	104	33.4

Source: Field Survey, 2021

It was discovered from the results that majority of the respondents (53.1%) were females, and aged (51.8%) between 18 – 22 years. In terms of the level of education, 33 and 32 percent were in levels 400 and 100 respectively.

Pre-services teachers' experiences with Online Teaching, learning and Assessment

The study investigates the experiences of students that included the benefits of online teaching and assessment during the COVID-19 lockdown,

challenges with the online teaching and learning experiences, and intentions of using online learning and teaching in the future. The results for this section of the study are presented in Table 2.

Table 2. Pre-service teachers' experiences with online teaching, learning, and assessment

Benefits of Using Online Teaching and Assessment	SA%	A%	N%	D%	SD%	Mean	SD
Items							
Online teaching and learning help me to set my own schedule	26.4	42.1	19.6	10.0	1.9	3.80	0.99
Online teaching and learning is more affordable than the traditional method of teaching and learning	26.4	26.7	21.2	17.0	8.7	3.44	1.27
Online learning is more convenient than the traditional method	32.5	29.9	20.6	12.9	4.2	3.73	1.16
I acquired new technical skills through the use of online teaching and learning	32.8	40.5	18.3	5.1	3.2	3.94	1.00
Online learning platforms provided were easily accessible	24.1	40.8	24.1	9.3	1.7	3.76	0.97
Online teaching and learning suits my learning style	26.7	35.7	23.2	10.0	4.4	3.70	1.10
Learning online had a positive impact on my academic performance	27.3	41.2	20.9	7.1	3.5	3.81	1.02
Taking online classes boosted my confidence to participate	28.3	33.8	24.4	10.3	3.2	3.72	1.08
I felt that the quality of class discussion via online teaching and learning was high compared to face to face	28.3	29.9	22.8	8.4	10.6	3.58	1.23
Perceptions of students towards Online Assessment							
Online assessment created an effective platform to rate student's academic performance	34.7	38.9	17	7.1	2.3	3.96	1.00
Online assessment is more reliable than face-to-face assessment	30.5	30.9	22.5	10.9	5.1	3.71	1.16
Online assessment is flexible	28.0	48.9	16.1	5.5	1.6	3.96	0.89
I got immediate feedback from online assessment	35.7	53.4	8.7	2.3	0.0	4.11	0.94
I am less anxious during online assessment as compared to face-to-face assessment	32.8	45.3	14.5	4.5	2.9	4.00	0.95
Online assessment boosted my academic performance	33.8	39.5	19.0	5.1	2.6	3.96	0.98
Future Intentions of Students on Online Teaching and Assessment							
If I had the opportunity to take another course online, I would gladly do so	29.3	36.7	22.8	7.7	3.5	3.80	1.05
I would prefer if all future assessments would be done online	35.4	32.8	22.2	5.5	4.2	3.89	1.07
Future assessment should be a blend of online and face-to-face	40.8	35.0	17.7	4.5	1.9	4.07	0.97

Challenges Student Face when Using Online Teaching and Assessment							
I easily get distracted learning online as compared to face- to- face classes.	33.1	37.6	18.6	6.8	3.9	2.10	1.06
Online teaching and learning reduced my rate of interaction with the instructor.	31.5	39.2	21.5	5.8	1.9	2.07	0.96
The time allocated for online assessment is relatively short.	32.5	44.7	17.4	4.5	1.0	0.87	1.96

Source: Field Survey, 2021

Table 2 reveals that the acquisition of new technical skills through the use of online teaching and assessment; positive impact of online learning on academic performance; and online teaching and learning assist students to set their own schedule had high appraisals. Similarly, the appraisal of accessibility of online learning platforms, "online learning is more convenient than the traditional method", "online classes boosted my confidence to participate", and online teaching and learning suits my learning style" were both scored highly and evenly. On the contrary, 27 percent of the respondents indicated that online teaching and learning is not more affordable than the traditional method of teaching and learning. This item had the lowest mean score in that category which is 3.44., with a standard deviation of 1.27.

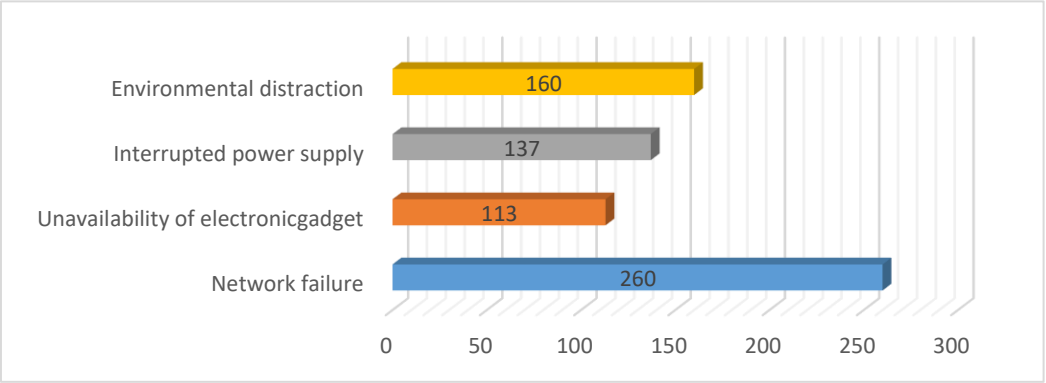
In terms of respondents' experiences with online assessments, majority of the respondents indicated positive experiences as revealed by their responses to most of the items. For instance, about 74 % of the respondents indicated that "Online assessment created an effective platform to rate student's academic performance". Similarly, about 89% of the respondents revealed that they "got immediate feedback from online assessment". Further, 78% of the respondents stated that they are "less anxious during online assessment as compared to face-to-face assessment".

For future intentions of students towards online teaching and assessment, greater percentage of the respondents expressed positive attitude. For instance, the item "future assessment should be a blend of online and face to face", had the highest mean value of 4.07 with 0.97 standard deviation. It is an indication that students have good intentions towards future prospective on online teaching and assessment.

With respect to challenges with online teaching, learning, and assessment, it was found that 71 % of the respondents believed that they were easily distracted during online learning as compared to face to face. Similarly, majority of the respondents (71%) agreed that "online teaching and learning reduced their rate of interaction with their instructors". Majority of the respondents also complained by the time allocated for online teaching and learning. Specifically, 78 percent of the respondets indicated that "the time allocated for online assessment is relatively short".

Furthermore, respondents were asked to identify the technical challenges they faced during online teaching and learning and assessment and the results from their responses are shown Figure 1.

Figure 1. Technical Challenges during Online Teaching and Learning

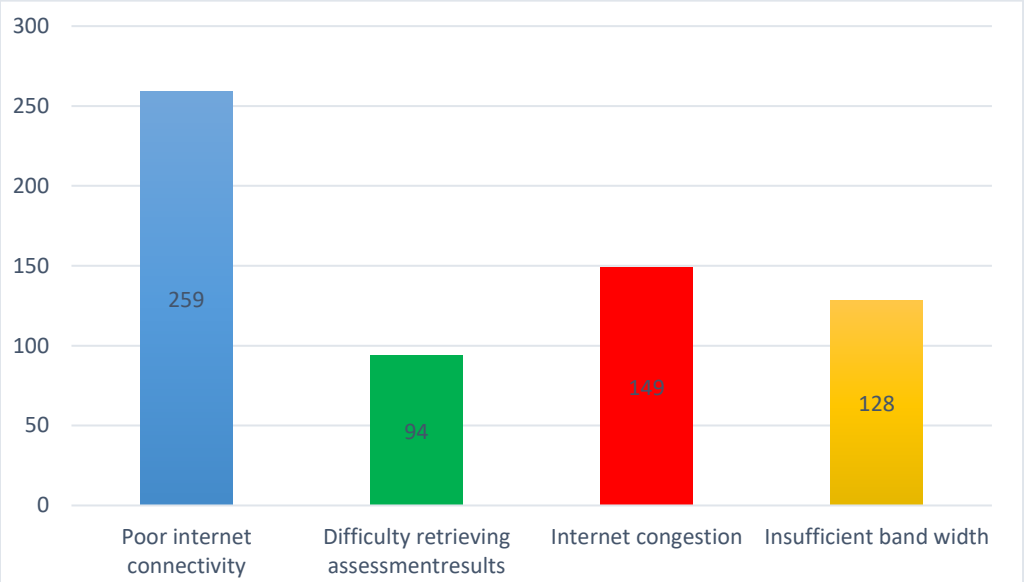


It came to light that students encountered varied level of technical challenges with regards to online teaching and learning. These challenges range from environmental distraction, interrupted power supply, unavailability of electronic gadget and network failure. Out of the total number of 311 respondents, 260 indicated that network failure was their major challenge during online teaching and learning. The second-highest challenge was environmental distraction with 160 respondents indicating that.

Again, 137 respondents identified interrupted power supply as a technical challenge. Because students were taking online classes through electronic means, 113 of them indicated that unavailability of electronic gadget was also a challenge.

In line with the challenges, respondents were also asked to identify the challenges with regards to online assessment and their responses are display in Figure 2.

Figure 2. Challenges during Online Assessment



From Figure 2, 259 respondents indicated poor internet connectivity as a major challenge during online assessment. This was followed by internet congestion, insufficient bandwidth, and difficulty retrieving assessments results.

Discussion, conclusions, and recommendations

The present study analyses students' attitude and experience with online teaching and assessment during Covid-19 lockdown period. According to the findings, online studying technology enhances knowledge/ understanding access, resulting in students developing a good attitude about it. This end is primarily based totally on the utility, self-efficacy, comfort of use, and student conduct in terms of online learning and assessment. This study affirmed the results of online learning, such as the ability to learn from any location, which is not available with traditional face-to-face learning. Furthermore, the study shows that students consider online learning and assessment to be equivalent to face-to-face learning, illustrating the similar experience of being educated as done through physical classroom teaching.

Unlike previous studies, however, this study found that online learning has grown in popularity in recent years, with students preferring to use online learning tools to engage with one another and with instructors. For instance, in previous studies (Totaro et al., 2005), teachers believed that e-learning takes time, can cause student monitoring issues, and can cause them to pay less attention in traditional instruction. These distinct insights could be linked to participants' inexperience with the e-learning medium, as well as their varying

technological knowledge and skills, highlighting the necessity for formal training and workshops on various technology approaches and platforms to boost e-learning activities

This study revealed that majority of students indicated that they benefited from receiving rapid feedback that inspired them and helped them perform well on the exam. These features are the most significant advantages of computer-based assessments over paper-based tests. The most significant physical distinctions between computer and paper test administration are perceived interactivity and display area size.

In the current study, it was discovered that a larger proportion of respondents agreed that online learning and assessment was useful for enhancing and developing the coaching and studying process, indicating that students accept that online tutoring is beneficial in upgrading and developing the instructing and studying procedure. On the contrary, previous findings by Poon et al. (2004) found that students from universities had difficulties with the online learning as a teaching device, citing a variety of reasons including problems with technology and technology tools, difficulty in interconnecting and debating with learners, insufficiency of requisite internet comparability, and individual learning preferences.

Several studies (Qureshi et al., 2012; Khan & Nawaz, 2013; Mohammadyari & Singh, 2015) found that learners' acquisition and approval of online learning was swayed by a variety of individual (e.g. keenness to implement internet learning), social (e.g. personal and coach effect), and organizational (e.g. scientific provisions, monetary, and framework) elements within an e-learning environment. In line with these findings, Nguyen et al. (2020) found that the most significant barriers to online learning are grounded on different shareholders' viewpoints on framework, machinery, administration, implementation, and instructive factors.

Further research found that in order to acquire users' confidence and ameliorate their approval of internet learning, e-learning solutions must match their needs (Rehman et al., 2021). Communication between the teacher and the student is critical for successful learning outcomes. Another major drawback of online education is students' inability to communicate adequately with instructors face-to-face. Teachers are unable to check in with pupils on their grasp of lessons in a tangible way. As a result, they are unable to alter their teaching activities and online discussions because they do not know what their pupils require. Learners can use online exams to help them achieve their concluding scores and learning purposes (Collings et al., 2018). Due to a lack of familiarity with the new procedures, online assessments during the epidemic era proved to be another problem. Students were unable to participate in real-time problem-solving activities or obtain teacher feedback.

Formative and summative assessments, on the other hand, are conducted in both synchronous and asynchronous modes.

Sufficient and up-to-date resources play an important role in students' online learning (Azevedo & Marques, 2017), and their effective propagation is critical for success (Akram & Yang, 2021).

Restricted internet connectivity, on the other hand, has arisen as a serious barrier that stops students from learning effectively. Other research has looked into the similar issues that instructors encounter, such as insufficient financing (Nagashima, 2014), poor ICT integration (Tosuntaş et al., 2019), time constraints and cyberspace connectedness. Tertiary institutions need to be provided with the necessary cutting-edge technology infrastructure to help students study faster (Wang et al., 2018). Also, lack of abilities and a lack of utility for practical examination (Liebenberg & Pieterse, 2018) was cited as barrier to online teaching and learning.

Conclusion

In the past, online learning and evaluation were underutilized, particularly in underdeveloped nations such as Ghana. The present COVID-19 pandemic, however, has compelled the whole world to move from the traditional face-to-face mode of teaching and learning to the online mode. This research provides a realistic understanding of online teaching and assessment methods and obstacles encountered by students from one of the teacher education universities in Ghana, especially during the COVID-19 outbreak. It can be concluded from this study that, students had positive experiences with the online teaching, learning, and assessment, and are likely or willing to use the online mode of teaching and learning in the future although there were challenges with the internet connectivity and infrastructure.

Recommendations

According to the findings, learners' happiness with online learning is influenced by learning course flexibility. As a result, course coordinators should create flexible online learning programs or approaches that address a wide range of student needs. Learners should be given the option of choosing from a variety of online learning courses or methods for them to select the one that best suits their learning style and needs.

For effective online learning, the quality of online learning courses is equally critical. The technology that is utilized to conduct courses is closely related to this. As a result, both the curriculum and the technology should be designed to be simple for students to understand. The perceived ease, with which students can use technology, as well as the overall quality of the course, will have an impact on their satisfaction and performance.

According to the findings, instructors should use interactive communication-based tools and activities to enhance student interest and engagement in order to foster online learning.

In addition, the university should establish an ultra-modern IT support unit for instructors and students to give technical assistance and also train them and also give them higher education commission should develop a approach to make internet access for educational motives more accessible and reliable.

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References:

1. Ajadi, T.O., Salawu, I. O. & Adeoye, F. A. (2008). E-Learning and distance education in Nigeria. *The Turkish Online Journal of Educational Technology*, *7*(4), 61–70.
2. Akram, H., & Yang, Y. (2021). A critical analysis of the weak implementation causes on educational policies in Pakistan. *International Journal of Humanities and Innovation (IJHI)*, *4*(1), 25-28. https://doi.org/10.33750/ijhi.v4i1.104
3. Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and information technologies*, *25*(6), 5261-5280. https://doi.org/10.1007/s10639-020-10219-y
4. Almarabeh, T. (2020). Students' perceptions of e-learning at the University of Jordan. *International Journalof Emerging Technologies in Learning, 9*(3) 31–35. http://dx.doi.org/10.3991/ijet.v9i3.3347
5. Aparicio, M., Bacao, F., & Oliveira, T. (2016). An e-learning theoretical framework. *Educational Technology & Society 19*(1) 292-307. https://www.jstor.org/stable/pdf/jeductechsoci.19.1.292.pdf
6. Aydın, S. (2021). A systematic review of research on teaching anxiety. *International Online Journal of Education and Teaching (IOJET), 8*(2). 730-761. https://files.eric.ed.gov/fulltext/EJ1294321.pdf

7. Azevedo, J., & Marques, M. M. (2017). MOOC success factors: Proposal of an analysis framework. https://hdl.handle.net/10216/110462
8. Basioudis, I. G., De Lange, P. Suwardy, T. & Wells, P. (2012). Accounting students' perceptions of a Learning Management System: An international comparison. *Accounting Research Journal, 25*(2), 72-86. https://doi.org/10.1108/10309611211287279
9. Baskan, P., Atay, D., & Mede, E. (2020). Boosting preservice teachers' competence and online teaching readiness through e-practicum during the COVID-19 outbreak. *International Journal of TESOL Studies, 2*(2), 112-124. https://doi.org/10.46451/ijts.2020.09.09
10. Bdair, I. A. (2021). Nursing students' and faculty members' perspectives about online learning during COVID-19 pandemic: A qualitative study. *Teaching and Learning in Nursing, 16*(3), 220-226. https://doi.org/10.1016/j.teln.2021.02.008
11. Blog, (2020). Challenges faced by teachers and students during COVID-19 Lockdown. *Amc Group of Education, Education Sciences, 11*(7), 5-10.
12. Carrillo, C., & Flores, M. A. (2020). COVID-19 and teacher education: a literature review of online teaching and learning practices. *European Journal of Teacher Education*, *43*(4), 466-487. https://doi.org/10.1080/02619768.2020.1821184
13. Chandra, Y. (2020). Online education during COVID-19: Perception of academic stress and emotional intelligence coping strategies among college students. *Asian Education and Development. Studies*., 10(2), 229–238. https://doi.org/10.1108/AEDS-05-2020-0097
14. Collings, D. A., Gerrard, J. A., & Garrill. A. (2018). Shaking up biology our experiences teaching cell biology and biochemistry to a first-year undergraduate class through the Canterbury (New Zealand) earthquakes. *Journal of Biological Education, 53*(3), 236–49. https://doi.org/10.1080/00219266.2018.1472134
15. Connolly, P. (2003). Ethical principles for researching vulnerable groups. *Ofm/dfm*. https://cain.ulst.ac.uk/issues/victims/docs/connolly03.pdf
16. Creswell, J.W. (2013). *Dual inquiry and research design: Choosing among five approaches*. Sage publications.
17. Danchikov, E. A., Prodanova, N. A., Kovalenko, Y. N., & Bondarenko, T. G. (2021). The potential of online learning in modern conditions and its use at different levels of education. *Linguistics and Culture Review*, *5*(S1), 578-586. https://doi.org/10.21744/lingcure.v5nS1.1442

18. Daniel, S. J. (2020). Education and the COVID-19 pandemic. *Prospects, 49*, 91–96. https://doi.org/10.1007/s11125-020-09464-3
19. Dawadi, S., Simkhada, P., & Giri, R. (2020). *Impact of COVID-19 on the education sector in Nepal - Challenges and coping strategies.* https://doi.org/10.31124/advance.12344336.v1
20. Debrah, A., Yeyie, P., Gyimah, E., Halm, G. G., Sarfo, F. O., Mensah, T., ... &Vlachopoulos, D. (2021). Online instructional experiences in an unchartered field-The challenges of student-teachers of a Ghanaian College of Education. *Journal of Digital Learning in Teacher Education*, *37*(2), 99-110. https://doi.org/10.1080/21532974.2021.1892553
21. Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, *49*(1), 5-22. https://doi.org/10.1177%2F0047239520934018
22. Dhiman, K., Birbal, S & Bhim, C. M (2014). Attitude of university students towards e-learning in West Bengal. *American Journal of Educational Research*, *2*(8), 669–673. https://doi.org/10.12691/education-2-8-16
23. Dolighan, T., & Owen, M. (2021). Teacher efficacy for online teaching during the COVID-19 pandemic. *Brock Education Journal*, *30*(1), 95-116 .https://doi.org/10.26522/brocked.v30i1.851
24. El-Seoud, M. S. A., Islam A.T.F., Eddin. T., Seddiek. N., El-Khouly M. M. & Nosseir, A. (2014). E-Learning and students' motivation: A research study on the effect of e-learning on higher education. *International Journal of Emerging Technologies in Learning. 9*(4), 20 - 26
25. Farooqui, S. (2020). *Education in the time of COVID-19: How institutions and students are coping*. *Business standard*. https://www.business-standard.com/article/education/education-in-the-time-of-covid-19-how-institutions-andstudents-are-coping-120043001575_1.html
26. Fedynich, L. V. (2014). Teaching beyond the classroom walls: The pros and cons of cyber learning. *Journal of Instructional Pedagogies*, 13(1), 1 – 7 https://www.aabri.com/manuscripts/131701.pdf.
27. Flores, M., & Gago, M. (2020). Teacher education in times of COVID-19 pandemic in Portugal: National, institutional and pedagogical responses. *Journal of Education for Teaching*, *46*(4), 507-516. https://doi.org/10.1080/02607476.2020.1799709
28. Glasow, P.A. (2005). *Fundamentals of survey research methodology*. Fort Huachuca, AZ: MITRE Washington C3 Centre.
29. Gyamfi, S. A. (2017). Pre-service teachersâ attitude towards information and communication technology usage: A Ghanaian

survey. *International Journal of Education and Development using ICT, 13*(1), 52- 69. https://www.learntechlib.org/p/180214/

30. Hill, J. B. (2021). Pre-service teacher experiences during COVID 19: Exploring the uncertainties between clinical practice and distance learning. *Journal of Practical Studies in Education, 2*(2), 1-13. https://doi.org/10.46809/jpse.v2i2.18
31. Hindocha, J. (2020). Teachers' students miss physical connect during online classes state problems of connectivity Ex-Haustion. *Hindustan Times*. https://www.hindustantimes.com/pune-news/teachers-students-miss-physicalconnectduring-online-classes-state-problems-of-connectivity-exhaustion/storyR2SnDK4ZlyTpMEDzhRpb0N.html
32. Huber, S. G., & Helm, C. (2020). COVID-19 and schooling: evaluation, assessment and accountability in times of crises reacting quickly to explore key issues for policy, practice and research with the school barometer. *Educational Assessment, Evaluation and Accountability*, *32*(2), 237-270. https://doi.org/10.1007/s11092-020-09322-y
33. Jin, M. (2022). Preservice teachers' online teaching experiences during COVID-19. *Early Childhood Education Journal*, *51*, 371 – 381 https://doi.org/10.1007/s10643-022-01316-3
34. Joo, Y. J., Park, S., & Lim, E. (2018). Factors influencing preservice teachers' intention to use technology: TPACK, teacher self-efficacy, and technology acceptance model. *Journal of Educational Technology & Society, 21*(3), 48-59. http://www.jstor.org/stable/26458506
35. Joshi, A., & Vinay, M. (2020). Impact of corona virus pandemic on the Indian education sector: Perspectives of teachers on online teaching and assessments. *Interactive Technology and Smart Education*. *18* (2), 205-226. https://doi.org/10.1108/ITSE-06-2020-0087
36. Judd, J., B. A. Rember, T. Pellegrini, B. Ludlow, and J. Meisner (2020). This is not teaching: *The Effects of COVID-19 on Teachers*. https://www.socialpublishersfoundation.org/knowledge_base/this-is-not-teaching-the-effects-of-covid-19-on-teachers/
37. Kalyanasundaram, P. & Madhavi, C. (2019). Students' perception on e-learning: A study of online certificate courses. *International Journal of Psychosocial Rehabilitation*, *23*(1), 1. https://doi.org/10.3389/feduc.2021.705013
38. Keller, C. & Cernerud, L. (2020). Students' perceptions of e-learning in university education. *Journal of Educational Media*, 27, 1-2. Retrieved from https://www.sinestesia.pustaka.my.id/journal/article/view/24
39. Kennedy, K., & Archambault, L. (2012). Offering preservice teachers field experiences in K-12 online learning: A national survey of teacher

education programs. *Journal of Teacher Education*, *63*(3), 185-200. https://doi.org/10.1177%2F0022487111433651
40. Khan, A. S., & Nawaz, A. (2013). Role of contextual factors in using e-Learning systems for higher education in developing countries. *Journal of Educational. Research and Stud*ies *1*(4), 27-34. http://www.peakjournals.org/sub-journals-JERS.html
41. Khan, M., Vivek, V., Nabi, M., Khojah, M., Tahir, M. (2020). Students' perception towards e-learning during COVID-pandemic in India: An empirical study. *Sustainability*, *13*(1), 57. https://doi.org/10.3390/su13010057
42. Khurana, C. (2016). *Exploring the role of multimedia in enhancing social presence in an asynchronous online course* (Doctoral dissertation, Rutgers University-Graduate School-New Brunswick). https://doi.org/doi:10.7282/T3N018Q3
43. Kim, J. (2020). Learning and teaching online during Covid-19: Experiences of student teachers in an early childhood education practicum. *International Journal. Early Child*. *52*, 145–158. https://doi.org/10.1007/s13158-020-00272-6
44. Kothari, C.R. & Carg, G. (2014). *Research Methodology: Methods and Techniques*. New Delhi: *New Age International*.
45. Kulal, A., & Nayak, A. (2020). A study on perception of teachers and students toward online classes in Dakshina Kannada and Udupi District. *Asian Association of* . *Open University. Journal*., *15*, 285–296. https://doi.org/10.1108/AAOUJ-07-2020-0047
46. Kunt, N., & Tüm, D. Ö. (2010). Non-native student teachers' feelings of foreign language anxiety. *Procedia-Social and Behavioral Sciences*, *2*(2), 4672-4676. https://doi.org/10.1016/j.sbspro.2010.03.748
47. Liebenberg, J., & Pieterse, V. (2018). Investigating the feasibility of automatic assessment of programming tasks. *Journal of Information Technology Education*: *Innovations in Practice*, *17*, 201–223. https://doi.org/10.28945/4150
48. Mohammadyari, S., & Singh, H. (2015). Understanding the effect of e-learning on individual performance: The role of digital literacy. *Computers & Education*, *82*, 11-25. https://doi.org/10.1016/j.compedu.2014.10.025
49. Nagashima, T. (2014). What makes open education thrive? Examination of factors contributing the success of open education initiatives. INNOQUAL–*International Journal for Innovation and Quality and in Learning*, *2*(3), 10–21.
50. Ngampornchai, A. & Adams, J. (2016). Students' acceptance and readiness for e-learning in northeastern Thailand. *International*

Journal of Educational Technology in Higher Education 13;34, 1-13 https://doi.org/10.1186/s41239-016-0034-x

51. Nguyen, Q. L. H. T. T., Nguyen, P. T., Huynh, V. D. B., & Nguyen, L. T. (2020). Application Chang's extent analysis method for ranking barriers in the e-learning model based on multi-stakeholder decision making. *Universal Journal of Educational Research*, *8*(5), 1759-1766. https://doi.org/10.13189/ujer.2020.080512
52. OECD (2015). *Students, Computers and Learning: Making the Connection*. Paris: OECD Publishing. https://read.oecd.org/10.1787/9789264239555-en?format=pdf
53. Ong, C. S, & Lai, J. Y. (2006). Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Computers in Human Behavior*, *22*(5), 816-829. https://doi.org/10.1016/j.chb.2004.03.006
54. Peytcheva-Forsyth, R., Yovkova, B., & Aleksieva, L. (2018). *Factors affecting students' attitudes towards online learning - The case of Sofia University*. AIP Conference Proceedings. *2048(1)*, 020025-1– 020025-8. https://doi.org/10.1063/1.5082043
55. Pham, L., Limbu, Y. B., Bui, T.K., Nguyen, H. T. & Pham, H. T. (2019). Does e-learning service quality influence e-learning student satisfaction and loyalty? Evidence from Vietnam. *International Journal of Educational Technology in Higher Education, 16*, 7. https://doi.org/10.1186/s41239-019-0136-3
56. Poon, W. C., Low, K. L. T., & Yong, D. G. F. (2004). A study of Web-based learning (WBL) environment in Malaysia. *International Journal of Educational Management*. https://doi.org/10.1108/09513540410554031
57. Qureshi, I. A., Ilyas, K., Yasmin, R., & Whitty, M. (2012). Challenges of implementing e-learning in a Pakistani university. *Knowledge Management & E-Learning: An International Journal*, *4*(3), 310-324. https://doi.org/10.34105/j.kmel.2012.04.025
58. Rehman, M. A., Soroya, S. H., Abbas, Z., Mirza, F., & Mahmood, K. (2021). Understanding the challenges of e-learning during the global pandemic emergency: the students' perspective. *Quality Assurance in Education*. 29(2/3), 259-276 https://doi.org/10.1108/QAE-02-2021-0025
59. Rhema, A., & Miliszewska, I. (2014). Analysis of student attitudes towards e-learning: The case of engineering students in Libya. *Issues in Informing Science and Information Technology*, 11, 69–190. https://doi.org/10.28945/1987
60. Safira, N. (2021). Pre–Service teachers' teaching anxiety during online teaching practicum. https://dspace.uii.ac.id/handle/123456789/31789

61. Sailer, M., Murböck, J., & Fischer, F. (2021). Digital learning in schools: What does it take beyond digital technology? *Teaching and Teacher Education*, 103, 103346. https://doi.org/10.1016/j.tate.2021.103346
62. Scherer, R., & Teo, T. (2019). Unpacking teachers' intentions to integrate technology: A meta-analysis. *Educational Research Review*, *27*, 90-109. https://doi.org/10.1016/j.edurev.2019.03.001
63. Shetty, S. (2020). Academic crisis during COVID19: Online classes, a panacea for imminent doctors. *Indian Journal Otolaryngology Head and Neck Surg*, *82*, 299–300. https://doi.org/10.1007/s12070-020-02224-x
64. Siniscalco, M. T., & Auriat, N. (2005). Questionnaire design: Quantitative research methods in educational planning. *International Institute for Educational Planning*, 1-85.
65. Tosuntaş, Ş. B., Çubukçu, Z., & İnci, T. (2019). A holistic view to barriers to technology integration in education. *Turkish Online Journal of Qualitative Inquiry*, *10*(4), 439–461. https://doi.org/10.17569/tojqi.613969
66. Totaro, M. W., Tanner, J. R., Noser, T., Fitzgerald, J. F., & Birch, R. (2005). Faculty Perceptions Of Distance Education Courses: A Survey. *Journal of College Teaching & Learning (TLC)*, *2*(7). https://doi.org/10.19030/tlc.v2i7.1841
67. UNESCO. (2020). *COVID-19: Socio-economic impact in Ghana: Impact on Ghana's education* (BriefingNote No. 3). Retrieved from https://www.unicef.org/ghana/sites/unicef.org.ghana/files/202005/No3_%20UN%20Ghana%20COVID-19%20Briefing%20Note_2020_05_11_FINAL%20v2.pdf
68. Valtonen, T., Pontinen, S., Kukkonen, J., Dillon, P., Väisänen, P., & Hacklin, S. (2011). Confronting the technological pedagogical knowledge of Finnish Net Generation student teachers. *Technology, Pedagogy and Education*, *20*(1), 3-18. https://doi.org/10.1080/1475939X.2010.534867
69. Wang, Y., Liu, X., & Zhang, Z. (2018). An overview of eLearning in China: History, challenges and opportunities. *Research in Comparative and International Education*, *13*(1), 195–210. https://doi.org/10.1177/1745499918763421
70. Warschauer, M. (2007). The paradoxical future of digital learning. *Learning Inquiry*, *1*(1), 41-49. https://doi.org/10.1007/s11519-007-0001-5
71. Woldab, Z. E. (2014). E-Learning technology in pre-service teachers training-lessons for Ethiopia. *Journal of Educational and Social*

Research, *4*(1), 159-166 https://www.mcser.org/journal/index.php/jesr/article/view/1832

72. Wong, G. K. (2016). The behavioral intentions of Hong Kong primary teachers in adopting educational technology. *Educational Technology Research and Development*, *64*(2), 313-338. https://doi.org/10.1007/s11423-016-9426-9
73. Wong, L., & Fong, M. (2014). Student attitudes to traditional and online methods of delivery. *Journal of Information Technology Education: Research, 13,* 1-13. Retrieved from http://www.jite.org/documents/Vol13/JITEv13ResearchP001-013Wong0515
74. Yilmaz, A., B. (2019). Distance and face-to-face students' perceptions towards distance education: A comparative metaphorical study. *Turkish Online Journal of Distance Education*, *20*(1), 191-20. https://doi.org/10.17718/tojde.522705
75. Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020). Suspending classes without stopping learning: China's education emergency management policy in the COVID-19 outbreak. *Journal of Risk and Financial Management*, *13*(3), 55. https://doi.org/10.3390/jrfm13030055