



Special Issue  
Research Article

## Ensuring Future Resilience beyond ICT and Online Teaching and Learning of Social Studies in Ghanaian Senior High Schools: Lessons from COVID-19 Pandemic

John Zengulaaru<sup>1\*</sup> , Ernest Nyamekye<sup>2</sup> 

<sup>1</sup>Department of Business and Social Sciences Education, University of Cape Coast, Ghana

<sup>2</sup>Department of Arts Education, University of Cape Coast, Ghana

Email: johnzengulaaru@gmail.com

**Received:** 31 March 2022; **Revised:** 27 June 2022; **Accepted:** 28 June 2022

**Abstract:** The emergence of COVID-19 has posed unprecedented challenges to every sphere of social life, including education. To mitigate the educational challenges, students and teachers were urged to adjust to online teaching and learning. This spurred a slew of studies into ICT and online teaching and learning. However, studies had given little attention to resilient mechanisms beyond ICT and online teaching and learning, particularly, in Social Studies. This study, therefore, purported to elicit the challenges encountered by students and teachers in the teaching and learning of Social Studies during the COVID-19 school closures. It also sought to identify holistic resilient approaches to withstand future unforeseen contingencies. An explanatory sequential mixed method design was employed in this study. Overall, 300 form three students of senior high school and 15 Social Studies teachers participated in this study. Quantitative data were analyzed using SPSS Version 20. Thematic analysis was used to analyse the qualitative data. Some of the challenges identified by this study in the teaching and learning of Social Studies include lack of technical support, data cost, unstable or no Internet connection, absence of television or radio, no or poor electricity connection, inadequate textbook ownership and absence of self-learning textbooks. The resilient mechanisms suggested by teachers and students towards future pandemics include the development of online learning infrastructure, provision of technical support for students and teachers, provision of ICT and online learning equipment for economically disadvantaged students, provision of solar-powered or dry cell ICT or online teaching and learning equipment, expansion of the school infrastructure and provision of adequate self-learning and informative textbooks. It was concluded that, with the aforementioned resilient mechanisms, Social Studies education will not be truncated in case of future pandemics. The study recommended curriculum reform in order to design textbooks that are informative enough to allow learners to learn easily. This study suggested that further studies be conducted to include all major stakeholders in education so as to unravel all other resilient strategies.

**Keywords:** Social Studies, online, teaching, learning, resilience, COVID-19, students, teachers

# 1. Introduction

## 1.1 *The background*

The unusual lockdown and school closures resulting from the COVID-19 pandemic have offered an entirely diverse status quo (Huber & Helm, 2020). It has produced exceptional challenges that have led to new normalcy in virtually, every sphere of social life, with education being one of the most extensively and profoundly impacted fields (Dimopoulos et al., 2021). Its emergence has resulted in a disastrous truncation of education, including the teaching and learning of social studies (Mensah & Frimpong, 2020; Lilian et al., 2019; Di Biase, 2019). In light of the challenges created by this disastrous pandemic, the adoption of online teaching and learning became a necessity in all educational settings, including the teaching and learning of social studies (see Ali, 2018; Henaku, 2020; Bariham et al., 2021; Adarkwah, 2021; Zengulaaru et al., 2022).

Students and teachers have been urged to adjust to online teaching and learning, which increased the use of various ICT tools for teaching and learning (Eickelmann & Gerick, 2020). Rather than being a game-changer, the pandemic was only a halt to previously unplanned developments (Tesar, 2020). National efforts to leverage technology in favour of remote learning, distance education, and online teaching and learning of educational content, including Social Studies, have become a must as a wake-up call to the COVID-19 pandemic. As a response, governments and educational institutions all over the world crop up with a wave of creative legislation to keep teaching and learning going in order to contain the epidemic. With rapid reaction by school systems, home-schooling and online teaching and learning environments commenced to spring up (Dimopoulos et al., 2021). Consequently, governments all over the world have made online teaching and learning and content delivery via other media, such as television and radio stations, a necessity for effective education for all.

Online teaching and learning, whether synchronous or asynchronous, necessitates the use of technological equipment and platforms. Smartboards, the Internet, Microsoft Office, PowerPoint, social media, television, video, radio, and other similar devices are some examples (Bariham et al., 2021). These said, electronic learning includes specialized teaching activities and information transfer that are mediated by electronic and digital platforms made possible by the Internet (Gulbahar, 2012). Thus, e-learning is a subcategory of remote education (Urduan & Weggen, 2000). Different pedagogical strategies are used in online teaching and learning. Most of these pedagogical strategies are constructivist and group-oriented approaches (Toven-Lindsey et al., 2015).

Despite the emergent need for online means of education all over the world, reports show discrepancies in terms of online teaching and learning accessibility and technology. Many students, notably those from rural and low-income homes, were denied access to educational opportunities provided by the government, corporate groups, and private persons as a means of keeping education moving along (Bariham et al., 2021). Amongst the compounding challenges were the lack of ICT facilities and Internet connections, lack of electricity and finances for maintenance, insufficient computer laboratories, lack of computer competency, and lack of knowledge and abilities for teachers to integrate ICT into the teaching and learning process (Nyamekye et al., 2021; Fidelis & Onyango, 2021; Adarkwah, 2021), with Social Studies teachers, not an omission.

## 1.2 *The problem*

As we move towards the aftermath of the coronavirus period, with no way of knowing whether or not the new normal of online teaching and learning will become a perpetual component of formal education, education systems must be better prepared for any crisis, because any reduction in educational possibilities will result in a reduction in societal growth. It is obvious that COVID-19 has shown the flaws in over-reliance on ICT and online teaching and learning, as the primary response to an epidemic. With the support of ICT tools, teaching and learning, chiefly Social Studies, can take place anywhere and anytime (Cradler & Bridgforth, 2002). However, its efficacy is conditional (Adarkwa, 2021). For instance, it has been revealed that students from developing countries perform worse in online teaching and learning and are more likely to drop out as compared to their counterparts in developed countries (Kizilcec & Halawa, 2015).

Having realized some challenges such as lack of online teaching infrastructure, as teacher inexperience, barriers at home and an information gap, among others (Murgatrottd, 2020), predominantly in developing countries like Ghana, it is momentous to take resilient measures now to safeguard that education, principally Social Studies education, is not truncated and that learners are imbued with the necessary knowledge through Social Studies education, to help solve the

myriad challenges that plague us. Though there have been copious studies on online means of ensuring the continuity of education in the face of the pandemic (Zengulaaru et al., 2022; Adarkwah, 2021; Bariham et al., 2021), they are mainly concentrated on technology-mediated methods of teaching as well as online teaching and learning with little attention given to resilient measures to deal with online teaching and learning, particularly Social Studies learning. Hence, there is an urgent need to divulge resilient strategies against any possible emergency like COVID-19 which can torment the delivery of Social Studies. This study, therefore, sought to answer the following research questions on the basis of the above realizations:

1. What challenges were encountered by teachers and students in Social Studies teaching and learning during the COVID-19 school closures?
2. What resilience mechanisms could be adopted to overcome the challenges associated with ICT and online teaching and learning of Social Studies?

## **2. Literature review**

### ***2.1 The significance of incorporating ICT and online teaching and learning into Social Studies education***

Incorporating ICT into Social Studies teaching and learning makes classes more engaging, diversified and well-presented, as well as allows the instructor to better govern instructional time. Incorporating ICT into the classroom also helps students understand what they have been taught, makes teachings clearer, and boosts student concentration in class (Mensah & Osman, 2022).

In addition, virtual field tours, for example, provide a low-cost way of exposing students to places and people all around the world. They are equally beneficial when they come before actual field visits. The virtual tour provided by video, YouTube, Facebook, and other social media platforms can expose Social Studies students to scenes and sounds linked with historical, political, social, economic, geographical, and religious venues that they have never visited in person (Bariham, 2020). Thus, online teaching and learning facilitate authentic learning in Social Studies.

The significant expansion and development of telecommunications sector over the years have resulted in online services, social media, webpages, software, E-mail, and worldwide information systems that can be utilised to promote online teaching and learning. Besides, social media apps can increase interaction among people of diverse races, cultures, and beliefs and have a favourable effect on students' learning and open-mindedness (Global Education Monitoring [GEM] Report, 2019) as cited in Bariham (2020). The Internet, for example, provides a platform for millions of individuals to create and share information, and it may be utilised to facilitate online teaching and learning. According to a national survey done by the United States in 2006, more than 90% of schools had Internet connectivity to enable online teaching and learning. However, the situation in Africa, particularly Ghana, is the polar opposite, yet there is still hope for the future.

Multimedia is another key platform that is used to promote online teaching and learning in Social Studies. Multimedia, which combines text, graphics, sounds, and pictures to present information, can be utilised by Social Studies teachers to supplement students' online teaching and learning. Thus, radio, video, and television sounds, visuals, and audiovisual symbols help students achieve a deeper grasp and appreciation for subjects, build higher-order thinking skills, and enhance cooperative learning among Social Studies students (Bariham, 2020). It is worth noting that a range of learning styles are used in effective teaching. Thus, video lessons embedded in PowerPoint slides, for example, motivate students to learn, encourage active engagement in learning and promote the development of higher-order thinking skills such as analysis, synthesis, and assessment (Mai & Ken, 2003). Online teaching and learning can help learners develop 21st-century abilities, such as self-regulated learning, critical thinking, and sophisticated problem-solving.

To this end, online teaching and learning are regarded as having a major impact on academic attainment among students. It is shown to be a useful tool for learning and tracking the teaching and learning process. According to research, once online teaching and learning systems are correctly deployed, learners' satisfaction levels rise dramatically. As a result of the use of ICT, the educational system has undergone a significant revolution, with a paradigm shift from the teacher to the learner (Hong et al., 2021).

The efficient use of ICT demands the transmission and utilization of a wide range of information, with a particular focus on communication (Carnoy, 2005). Information and communication technology are crucial at all levels of the educational system, particularly in Social Studies instruction. ICT advancements not only bring about revolutionary change, but also have a direct impact on scientific and technological advancement, making learning more current, appealing, and efficient (Haji et al., 2017). This has the potential to enlighten Social Studies students, allowing them to get the necessary knowledge to become active, responsible, and concerned citizens.

However, technology in education, particularly in Social Studies, should not be considered as a supernumerary for face-to-face learning, but rather as a means of increasing some of the reimbursements presented (Haddad & Draxler, 2002). No tuition fees, the opportunity for individuals to choose their own learning speed regardless of regional disparity, and, finally, the development of digital skills in both teachers and students are just a few of the benefits (Ismailova & Ergshew, 2019). Amongst the benefits are information sharing among students and the use of various types of e-learning (Ramya & Clement, 2020). These have the potential to promote coordinated and cooperative learning, fostering in Social Studies students, a culture of collaboration that is critical to the development of any jurisdiction. Student-centered teaching, communication, and coordination among students as well as between teachers and students, educators' acquisition of working skills, students' intellectual curiosity, preparing students for future life, improving students' access to online teaching materials, and empowering the use of a variety of digital resources for learning purposes are among the benefits of ICT in education (Sarkar, 2012; Mikre, 2011).

Predominantly, students can use modern technologies and the Internet to learn Social Studies and investigate self-reliantly. These enhance and revolutionize the educational process, making it more resourceful (Novković-Cvetković, 2017). The proper application of ICT to Social Studies education enhances learning, allows for higher levels of thinking, and allows for the creation of new knowledge. However, there is a dilemma when attempting to link ICT to rudimentary computer literacy. That is, Social Studies teachers and students require a high-quality, meaningful, and culturally appropriate curriculum. Teachers of Social Studies must be prepared to use digital tools and resources to assist students in their learning. To connect ICT with the Social Studies curriculum, Social Studies teachers must plan and organize ICT-based classes ahead of time.

There has been a model shift in the way people work, learn, and teach as a result of the increased use of modern technology in the classroom, which is characterized by an explosion of new knowledge compared to previous information and communication technology (ICT), which was only used to plan and prepare the instructional process. According to Ward and Parr (2010), this is an incentive for individuals to accept and use technology in the classroom. However, as a result of the breakout of COVID-19, our viewpoints have shifted, making it necessary to be prepared to face the hazards that come with it. In recent years, there has been a paradigm shift in the way teachers are taught and the teaching process is arranged. This can be considered the driving force behind professional development program reconstruction (Kostovi-Vranje et al., 2016). Given the current global pandemic, the COVID-19 crisis, and its associated challenges in the education sector, accepting and promoting computer-based work and learning, as well as the constant use of computers to prepare and implement educational processes, principally in Social Studies education, are all critical components of incorporating ICT into the Social Studies classroom. This necessitates the exploration of new pathways that have the potential to alleviate the issues faced by education during the peak of the COVID-19 pandemic.

## ***2.2 Challenges encountered in integrating ICT and online learning into the teaching and learning of Social Studies***

It is vital to take cognizance of the fact that employing new technology to teach and learn demands the construction of Internet-connected classroom learning spaces (Aboagye, 2021). It also incorporates the use of audio-visual or recorded materials to revolution students, mainly Social Studies students, into active participants, as one of the discipline's key goals. However, as they rambled from in-person to remote teaching and learning, teachers and students, notably Social Studies teachers and students in senior high schools, encountered several issues. When virtual education became a reality, many teachers had to make considerable changes to their work schedules and teaching methods (Palloff & Pratt, 2013). Several wealthy countries have sufficient digital infrastructure, which proved to be a useful tool for boosting distance and online teaching and learning during the COVID-19 epidemic. Hitherto, the scenario differs in developing countries, notably African countries, due to a lack of ICT infrastructure, resulting in a high failure rate

in giving online tuition (Tanye, 2017; Egielewa et al., 2022). These circumstances need a coordinated effort to remain resilient in the event of future pandemics or disasters, allowing everyone to engage in education, particularly Social Studies education, regardless of their circumstances.

In Ghana, for example, there is a significant gap in teachers' and students' preparation for online teaching and learning, particularly among Social Studies teachers and students, compounding the challenges faced during the school closure as a result of the COVID-19 pandemic and education delivery. Several researchers have mentioned that teachers lack the necessary skills, knowledge, beliefs, time availability, and engagement to use ICT (Nyamekye et al., 2021; Agyei & Voogt, 2011). Moreover, students' lack of technological competence and data cost requirements (Henaku, 2020), as well as teachers' deficiency of technical support (Aboagye, 2021), are some of the many challenges associated with ICT integration into Social Studies education, particularly during the peak of COVID-19, which resulted in school closures. Lack of Internet access, ICT policy, equipment such as computers, and improper materials all contribute to inadequate ICT integration into school curricula (Gyampoh et al., 2020; Zengulaaru et al., 2022). Notwithstanding these discrepancies, Social Studies teachers must change their face-to-face classroom activities to ICT and online teaching and learning environment in order to be more resilient to future pandemics. Therefore, in order to improve their ICT abilities and work with digital technology, teachers should be taught to develop pedagogical techniques (Cabero-Almenara & Llorente-Cejudo, 2020).

### ***2.3 Recognizing the impact of COVID-19 on online education and educational development opportunities in Social Studies***

The distressing impact of the COVID-19 pandemic on schooling cannot be overshadowed, as it had a huge bearing on education and learning, chiefly Social Studies education (Owusu-Fordjour et al., 2020; Wajdi et al., 2020; UNESCO, 2020). This demands an educational system that is expanded beyond the existing crises. It should also indicate potential future growth opportunities (Jandri, 2020). Our contemporary condition needs a revolution and a novel pledge to research, and reproduction.

As a result, introducing ICT into Social Studies teaching and learning is no longer a recommendation or a path to innovative teaching. It is now a legal necessity as well as a primacy (Milanović & Cveković, 2021). This inevitability, on the other hand, does not rule out other options for dealing with our current impediments. The present requirement has its own set of challenges (Fidelis & Onyango, 2021). Therefore, dealing with the current situation, as well as future unforeseeable contingencies, will require realistic and proactive efforts to lessen the detrimental effects of future disasters. This means that, in the teaching and learning of Social Studies, teachers' digital competence is dependent on their ability to adopt alternative teaching methods in addition to traditional teaching and learning methods, as well as learners' ability to use such facilities, taking into account availability and access (Milanović & Cveković, 2021).

According to research (Buabeng-Andoh, 2019), students' pedagogical use of ICT is inadequate, with discrepancies in technology utilization between urban, semi-urban, and rural students. This reflects the difference in the usage of ICT and electronic learning in schools during the outbreak of the COVID-19 virus, particularly in Social Studies education. The outcome of COVID-19 is an excellent reason to renew and develop Social Studies teaching and learning in the senior high school environment by considering other alternatives capable of alleviating the challenges that plague the global educational system through the adoption of ICT and online teaching and learning. This will have a tremendous impact on education, mainly in the field of Social Studies.

As a wake-up call, there is a need to identify meaningful learning opportunities and experiences for students to adapt to new ways of home-schooling via electronic teaching and learning and beyond so that in times of emergency, online teaching and learning will not be the only means of addressing challenges in the delivery of education. This will aid in some ways in resolving educational disparities that go beyond income or global inequality (Dimopoulos et al., 2021). As a result of the closure of schools due to COVID-19, most educational systems turned to electronic information and communication technology, such as smartphones, computers, the Internet, radio, and televisions. A vast number of children, however, had minimal or no access to technology. Even in homes where smartphones are present, children were not permitted to use them (Bell et al., 2020; Buchbinder, 2020).

## ***2.4 Mitigation strategies used in teaching and learning during the COVID-19 school closure as well as the challenges associated with them***

It is palpable that the COVID-19 school closures impacted a larger percentage of students, accounting for approximately 87 percent of the world's student population as of 2020 (UNESCO, 2020). The impact was greatest in developing countries, with educational institutions closing as a result (Haleem et al., 2020). In order to reach students who were most in danger during the pandemic's peak, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) reportedly implemented distant learning strategies. In addition, digital learning management systems, large open online course platforms, and self-directed learning content were also necessary (UNESCO, 2020). In developing countries, teachers, students, and families were met with unreliable and poor Internet connectivity, as well as a plague of insufficient teaching and learning resources and digital technology, making life difficult for teachers, students, and families (Mustafa, 2020). Radio, television, and the Internet were used to deliver lessons in several developing countries, including Ghana. The poor, on the other hand, were marginalized because they did not have access to education from their homes due to a lack of radio, television, and other technologies, as well as electricity, which stemmed from economic and geographical disparities (Mustafa, 2020; Tiruneh, 2020). Rural schools lack the necessary digital infrastructure to deliver remote education, whereas advantaged pupils, particularly those in private schools, were able to take advantage of stronger digital infrastructure and adopt online teaching and learning (Di Pietro et al., 2020). This is because, in most nations, private schools are more effective than public schools. Consequently, students' access to digital technologies and educational materials varies. Accordingly, students felt stressed, depressed, and anxious (Woday et al., 2020). In affluent countries, unlike in developing countries, remote learning was the solution to the pandemic's educational concerns. Due to severe parental illiteracy and a lack of required information and communication infrastructure, such as the Internet, radio, and television, to support distance learning, the stories in most developing nations are dissimilar (Zhang, 2020).

Most private schools in urban areas were ostensibly better positioned to teach their students from a distance by using Google Classroom, e-mail, social networking, and other methods to upload assignments, books, and reading materials. Public school teachers and students had little or no Internet connection, whereas private schools were able to deliver learning materials directly to parents via social media platforms (Tzifopoulos, 2020). Students from low-income families with low educational levels and youngsters with little ambition to learn suffer the most since they lack assistance in their learning process, lack access to the Internet and digital appliances, and their family members have a high rate of digital illiteracy (Tzifopoulos, 2020). These studies revealed how existing inequities among students aggravated school closures.

Technology, the Internet, and educational materials are unavailable to students in both rural and urban locations. Due to a lack of funding, expertise, ICT infrastructure, and educational resources, instructors, students, families, and governments found it difficult to transition from face-to-face classrooms to online teaching and learning (Basilaia & Kvavadze, 2020; Sahu, 2020). One of the compounding challenges was the transition from face-to-face to online classes, which had a substantial impact on assessments and evaluations, pushing teachers, especially Social Studies teachers, to adjust their assessment methods to fit the online mode. It was also difficult to keep track of how pupils took online classes and exams without cheating (Basilaia & Kvavadze, 2020).

Another complicating element was that both teachers and students found it difficult to analyse and evaluate students' performance in online teaching and learning (Osman, 2020). There was also an inability to conduct laboratory exams, practical testing, and performance tests online. It was challenging for students who did not have access to the Internet to complete assessments and evaluations (Sahu, 2020). Even in countries with dependable ICT infrastructure and Internet connectivity, the rapid transition to online teaching and learning has proved tough for students, instructors, and parents (UNESCO, 2020; Sun et al., 2020). This was owing to the fact that in order to successfully deliver online teaching and learning, students, parents, and teachers all require training, which is particularly scarce in underdeveloped countries. As a result, countries are being asked to develop a variety of policies to ensure educational continuity via distance learning. This helps identify and control the bottleneck of online teaching and learning issues.

## ***2.5 Moving beyond ICT and online learning in Social Studies teaching and learning***

Due to the COVID-19 crisis, school closures were felt strongly in low- and middle-income countries like Ghana.

This is because, in underdeveloped nations like Ghana, textbooks, notably Social Studies textbooks, are the primary teaching and learning instruments utilized in the delivery of education. Unfortunately, due to the restricted number of copies distributed by governments over time, not every student, if not the great majority, had their own copy of a Social Studies textbook. Therefore, students in low- and middle-income countries such as Ghana went without ICT or Social Studies textbooks throughout the school closure. This, of course, had an impact on the study of Social Studies, which is critical for development in any jurisdiction due to the citizenship education it provides to students. Thus, there are numerous issues. Other countries, such as Uganda and Afghanistan, issued study materials to fill the shortfall. Teachers used phone calls, WhatsApp messages, and radio broadcasts to inform parents about where their children's textbooks were kept at home as a supplement to their efforts (Dimopoulos et al., 2021). This is a good example of why ICT and online learning should not be the main means of addressing educational difficulties, particularly in Social Studies education, that arise as a result of disasters. So, in order to be resilient to disasters, ICT integration and online learning must be supplemented.

Indeed, the development of COVID-19 has re-echoed and reiterated UNESCO's repeated warnings regarding textbook shortages. It is claimed that adequate textbook manufacturing is required to distribute them to everyone who does not already have them to make learning accessible to all, particularly in low- and middle-income countries and during emergencies. This is to prevent learners from being unable to learn in an emergency. As a result, during the COVID-19 crisis, textbooks should be written in such a way that they can be self-study rather than just offering enough so that students can learn with little or no difficulty in the future, as advised by the World Bank (2020) (Dimopoulos et al., 2021). This implies that efforts must be made to ensure that students, particularly Social Studies students, receive assistance even while they are at home learning in an emergency. This is because, in many cases, out-of-school tutors consisting of parents, caretakers, and siblings aid and encourage students with homework and exam preparation. As a result, extra efforts must be made to bring everyone on board and keep them up to date with the new normality created by the outbreak of COVID-19 in order to avoid cutting short the delivery of quality education, particularly Social Studies education, despite any challenges that may arise as a result of the emergency. Given the fact that learning poverty persists in low- and middle-income countries (World Bank, 2019), immediate action is required to ensure that excellent Social Studies education is not jeopardized. These stem from the fact that some parents with low reading levels do not currently have the time or ability to assist their children in learning at home (Mishra et al., 2020). This is why caregiver training must be improved to assist children in using textbooks and other school-provided learning resources (Dimopoulos et al., 2021).

During the COVID-19 crisis, civil society organizations and non-governmental organizations (NGOs) in several countries developed a number of programs to provide help at the family and community level (Barnett et al., 2018; Chaudhury & Niaz, 2020; Kimithi, 2020). This is why, according to Kemisso and Carvalho (2020), caregivers should be aware of the importance of practicing reading even if they are unable to read and set up study rooms in as many houses as possible. However, Starkey (2020) shows how to identify people in need of textbooks and other teaching and learning materials and how to offer them. To develop organizational capacities in non-familiar communal groups, teachers must be trained and guided. They must also be taught how to organize densely populated but dispersed communities with specific skills to aid in the mitigation of future calamities (Dimopoulos et al., 2021). This will enable us to resist future crises in terms of delivering Social Studies education without sacrificing its quality.

### **3. Methodology**

#### **3.1 *Research design***

This study adopted an explanatory sequential mixed-method research design to unravel the challenges encountered by teachers and students in the teaching and learning of Social Studies during the COVID-19 school closures and resilient mechanisms that can be adopted to alleviate the problems associated with online teaching and learning in times of emergencies. To Creswell (2015), explanatory sequential mixed-method intends to explain quantitative results with qualitative data.

### **3.2 Sampling methods**

The study used a multistage sampling method. Six senior high schools, three from each municipality and district, were purposefully selected for the study in the Sunyani West Municipal Assembly in the Bono region and the Afadzato South District in the Volta region of Ghana. This was because the study's goal was to ensure that social studies teaching and learning in Ghanaian senior high schools was resilient beyond ICT and online teaching and learning. As a result, primary and junior high schools, as well as postsecondary institutions, were excluded from the target population. Furthermore, the two separate study areas were chosen to allow for the generalization of the results.

The study included all Social Studies teachers who were present at the time of data collection in the six senior high schools chosen on purpose. In total, 15 teachers took part in the research. Purposive sampling was also utilized to select senior high school form three students because they were in senior high school form one at the time of school closures. As a result, individual students had a better probability of providing correct responses that were relevant to the study's goals. A total of 300 students from six senior high schools were randomly selected, 50 each from each of the six selected schools to respond to the questionnaires that were self-developed by the researchers. A snowball sampling was used to pick four students from each of the six selected schools, totaling 24 student respondents, in response to the in-depth interview questions. Also, parents and/or caregivers of students who took part in the in-depth interview were asked to engage in the study in order to get insight into the student participants' comments through phone calls.

### **3.3 Data collection instruments**

Self-developed questionnaires and interview guides were used for data collection. The questionnaires were made up of both open-ended and close-ended questions. The validity and reliability of the self-developed questionnaires were ensured by first administering two questionnaires for teachers and ten questionnaires for students in each of the selected schools as a pilot study so as to identify the problems they might face in understanding the concepts that were used in the questionnaires after which such difficulties were rectified. Besides, the questionnaires were sent to colleague researchers for scrutiny before the actual data collection was done.

### **3.4 Data collection procedure**

The data was collected using self-developed in-depth interview questions and questionnaires on both research questions. Thus, after requiring each of the teacher respondents to complete questionnaires, in-depth interviews were conducted to gain insight into their responses to the questionnaires. Again, 24 students participated in responding to the in-depth interview questions after 300 students had responded to the questionnaires. This was done after administering questionnaires to students at each of the schools in order to gain a more in-depth understanding and insight into their responses to the questionnaires, ensuring that respondents provided a comprehensive viewpoint on the study's issue.

### **3.5 Data processing and analysis**

To eliminate inaccuracies in the data, the primary data was first organized and edited. The quantitative data was then coded with numerical values and analysed using the Statistical Package for the Social Sciences (SPSS) version 20. The data was analysed using descriptive statistics, particularly, percentages derived from the acquired information. The in-depth interviews were analysed using interpretative focused coding and were transcribed and organised into themes. By comparing the data to similar studies on ICT and online teaching and learning, inferences and conclusions were drawn.

## **4. Results and discussions**

The results and discussions of the findings of this study are presented according to the study's research questions in the following sections.



#### 4.1 Research question 1: What challenges were encountered by teachers and students in Social Studies teaching and learning during the COVID-19 school closures?

The rationale for this research question was geared toward unearthing the difficulties encountered by senior high school teachers and students in the teaching and learning of Social Studies during the COVID-19 school closures. The quantitative data presented in Table 1 indicated that, majority of both students (ST) and teachers (T), respectively, were in agreement that some of the challenges they encountered in the teaching and learning of Social Studies during the COVID-19 school closures were lack of technical support (ST = 74% and T = 89%), data cost (ST = 82% and T = 100%), families inability to write nor understand concepts to assist their wards at home in participating in online teaching and learning (ST = 71% and T = 62%), unstable or no Internet connection (ST = 81% and T = 94%), absence of television/radio (ST = 61% and T = 59%), no or poor electricity connection (ST = 88% and T = 71%), inadequate ownership of textbooks (ST = 69% and T = 63%), most textbooks not self-learning (ST = 86% and T = 82%), unconducive environment (ST = 73% and T = 87%) and difficulty in assessing students' performance (ST = 87% and T = 93%). These results reflect the outcome of the in-depth interview responses from students, teachers, and parents. Responses from questionnaires' close-ended and open-ended questions and in-depth interviews were presented sequentially while comparing the results with previous research findings. This was done to get insight into the responses to the questionnaires.

**Table 1.** Difficulties encountered in the teaching and learning of Social Studies during the COVID-19 school closure

Challenges encountered	Res	N	Agree (%)
No electronic tuition was done in my school	ST	300	92%
	T	15	89%
Family could neither read, write nor understand	ST	300	71%
	T	15	62%
Lack of ICT/online teaching and learning infrastructure	ST	300	97%
	T	15	90%
Expensive ICT/online teaching and learning equipment	ST	300	93%
	T	15	96%
Lack of technical support	ST	300	74%
	T	15	89%
Data was costly	ST	300	82%
	T	15	100%
Unstable/no Internet connection	ST	300	81%
	T	15	94%
Absence of television/radio	ST	300	61%
	T	15	59%
No/poor electricity connection	ST	300	88%
	T	15	71%
Inadequate ownership of textbooks	ST	300	69%
	T	15	63%
Most textbooks are not self-learning	ST	300	86%
	T	15	82%
Unconducive environment	ST	300	73%
	T	15	87%
Difficulty in assessing students' performance	ST	300	87%
	T	15	93%

Source: Field Survey (2022)

Where T = Social Studies Teachers, ST = Students, Res = Respondents' category, N = Total number of respondents.

As already indicated, the findings in Table 1 are consistent with the issues that many sections of the world, particularly developing countries, face when it comes to education. The study emphasized the barriers to educational advancement, particularly in Social Studies education, in the study areas, which are representative of what occurs in many sections of the country and worldwide. The investigation discovered that none of the schools engaged in the study organized electronic Social Studies teaching and learning for their students during the COVID-19 school closures. This is represented by 92% and 89% of student and teacher respondents respectively in Table 1. Individual Social Studies teachers in some of the selected schools, however, organized their personnel resources to conduct Zoom and WhatsApp classes for their students. This is most likely because the Ghana Education Service (GES) is the ultimate decision-making body for second-cycle institutions, with decisions that affect all senior high schools. As a result, it is likely that the Ghana Education Service did not release funds or resources for individual schools to conduct electronic learning during the COVID-19 school closures. This is one of the reasons why, unlike many other disciplines, Social Studies was not taught online or electronically by individual schools during the school closures.

It also boiled down to a lack of adequate online teaching and learning equipment, lack of technical support, cost of data, financial difficulties, poor or no Internet connectivity, and other factors that made it difficult for various schools to conduct online teaching and learning using their individual schools' resources, as shown in Table 1. Those who took part in Zoom or WhatsApp lessons faced challenges due to high data costs and poor Internet connectivity. Unfortunately, some students who had textbooks were unable to receive support from their families in grasping particular concepts because their family members could not read or comprehend the concepts. These figures are backed up by interview responses, in sections 4.1.1 and 4.1.2 which show that during the COVID-19 school closures, both students and teachers faced a slew of challenges in the teaching and learning of Social Studies subject, despite the availability of Online teaching and learning programs to help mitigate the impact of the pandemic on education as indicated in the succeeding sections.

#### **4.1.1 Challenges encountered by students in the teaching and learning of Social Studies during the COVID-19 school closure**

According to the responses of some interviewees:

*My school did not offer online or electronic tuition during the school closures caused by the COVID-19 pandemic. As a result, I depended solely on my Social Studies textbook, which was given to me before the school closure. Because neither of my parents could read, I was in Form One at the time and had limited understanding. Concepts that I did not comprehend, I simply had to let go. Student, 2022.*

*I had only ever attended the Zoom class if my parents and siblings could afford to purchase me data. On some occasions, I had to miss sessions because they couldn't afford data. Student, 2022*

These remarks support the claim that parents carried the burden of educational duty during the period when only online education was accessible. Parents were required not only to provide appropriate digital resources to their children, but also to support and encourage them in using the resources appropriately for educational purposes, as well as to protect them from online threats and other forms of abuse (Nygreen, 2019). However, many people believe that everyone uses digital resources in the same way (Dimopoulos et al., 2021). In this regard, students and parents or caregivers should be given guidance and assistance in difficult times so as to assist their wards to fully participate in online teaching and learning if the need be. Besides, schools should be given the requisite assistance to provide online teaching and learning for their students such that they will not be disadvantaged. Benevolent teachers who live within communities should also make themselves available to provide the necessary assistance to students who will need them. In addition, a student added:

*I had to rely on my elder brother, who had graduated from senior high school, to help me understand ideas that were difficult for me to grasp. I occasionally contacted him for support, even though he does not live with us. However, acquiring enough airtime to call him for help could be difficult at times. Unfortunately, because my parents never attended school, they were unable to assist me. Student, 2022*

The foregoing arguments demonstrate that illiterate parents are unable to help their children with their education at home (Mishra et al., 2020). It is not surprising, then, that Dimopoulos et al. (2021) advocated for caregivers to receive training so that they can support their wards in using textbooks and other school-provided learning resources. This is supported by Kemisso and Carvalho (2020), who believe that caregivers should be aware of the importance of reading practice. These findings also imply that in times of emergency, procedures should be put in place to ensure that students are given direction even when they are at home learning Social Studies. According to one respondent,

*I heard about the WhatsApp class, but I didn't have a smartphone with which to participate in. My phone lacked the necessary attributes and functions to use WhatsApp. For me, anything online in Social Studies was out of the question. Student, 2022*

This is in keeping with the findings that a lack of ICT tools impedes online learning (Adarkwah, 2021), specifically online Social Studies learning. The impoverished face these issues due to a lack of availability. Because they lacked access to education outside of their homes due to a lack of radio, television, and other technology, as well as electricity, the poor were sidelined (Mustafa, 2020; Tiruneh, 2020). In addition are the severe parental illiteracy and a lack of critical information and communication infrastructure, such as the Internet to promote distant learning (Zhang, 2020) of Social Studies subject. The following respondents re-iterate this:

*Because the telecommunication networks in our area were so inconsistent, I found it difficult to enroll in any online or electronic classes. Student, 2022*

*It was really costly to enroll in a Zoom class. The amount of data used was excessive. My brother used to purchase me data, but he eventually stopped, citing financial constraints as an excuse. Student, 2022*

These respondents provide justifications for developing a strategy to scale educational technology during pandemics, such as establishing zero-rating educational resources on the Internet, universal service funds, connecting schools and communities to the Internet, preparing online teaching and learning resources, utilizing free online teaching and learning resources, practicing mobile learning, practicing radio and television teaching, and expanding ICT infrastructure (Sahu, 2020). Furthermore, each learning difficulty and opportunity in the teaching and learning of Social Studies for students, teachers and families must be highlighted. These will aid in identifying and controlling the bottleneck in online Social Studies teaching and learning.

Given that most educational systems resorted to electronic information and communication technology, which included smartphones, computers, the Internet, radios, and televisions as a result of COVID-19, it was still surprising to learn that some parents refused to give their children their phones to access electronic learning for various reasons. As one of the respondents put it:

*My parents refused to give me a smart phone so that I could engage in any Zoom discussion or WhatsApp group because they believed I would use it for other purposes. As a result, I was unable to participate in any Zoom or WhatsApp Social Studies sessions. Student, 2022*

This is in line with the findings of Bell et al. (2020) and Buchbinder (2020), who found that even in homes having smartphones, the children do not have access to them. It is possible that this is due to family circumstances. This is because research shows that students from low-income households with poor educational levels suffer the most since they lack assistance in their learning process, lack Internet connection, and use of digital appliances, and their family members have a high rate of digital illiteracy (Tzifopoulos, 2020). It also emphasizes that families can take positive action if they understand how their children should work to meet school demands in online tuition in order to continue the learning process without interruptions by utilizing ICT to allow students to participate in the teaching and learning process in virtual learning environments (Dimopoulos et al., 2021). In contrast, if the parents do not understand how their children should work in order to respond to creative demands, even if they support the school's goals in order to keep the learning process going without interruption, the family will act negatively. These findings demonstrate that in order to develop a resilient educational policy in the face of future tragedies, adequate policy formulation embracing all

of these components is essential. It is against this backdrop that it is proposed that school teachers, in partnership with education officials, increase parental and student knowledge in order to ensure that children are secured at home during school closures while also attempting to learn and read as much as possible (Crawford et al., 2020).

It is important to emphasize that online teaching and learning during school closures were also hampered by social and geographical factors. The following is how one respondent expressed her experience:

*It was difficult for me to live in one of the country's slum neighbourhoods since the noise was often terrible, especially during the lockdown when practically everyone was at home. There was a lot of noise here and there. I couldn't study since I couldn't find any peace of mind. That bothered me a great deal. Student, 2022*

It is imperative to remember that successful online education courses with the ability to properly instruct students are built on the practical options available to students at home. As a result, school knowledge, which encompasses procedures, judgments, facts, and practices, is required to help bind the school and the community together in times of fast societal change, such as COVID-19 and future unforeseeable contingencies. These have the ability to deal with future disasters in some form (Dimopoulos et al., 2021).

It is encouraging to see that not only WhatsApp or Zoom, but also radio and television were used for online learning. As respondents elaborated, the media, on the other hand, was not without its difficulties. As expressed by some respondents:

*I had heard there were some lessons on the Joy Learning Channel, but I had never had the chance to participate in. This was due to the fact that we live in a peri-urban location without access to power. They have recently begun installing electric poles along the road, although they are still a considerable away from our home. Since there was no light, I could not watch anything on television. We also do not have a laptop to allow me to connect to the Internet and watch television, nor do I have a smart phone after my phone was stolen. Student, 2022.*

*I had to pay visits to friends in order to watch, but due to distance, I couldn't do so on a regular basis. Getting a steady telecommunication network could be difficult at times. Student, 2022*

These assertions confirmed what transpired in developing countries where classes were offered by radio, television, and Internet platforms, and where the underprivileged families and students lacked access to resources and were unable to learn at home due to a lack of radio, television, and other equipment (Sahu, 2020). The lack of ICT infrastructure resulted in a high failure rate when it came to conducting online teaching and learning (Tanye, 2017; Chirwa, 2018; Egielewa et al., 2022). It is also nerve-racking to see that rising online learning start-up costs, escalating ICT equipment costs, insufficient infrastructure, a lack of ICT skills, and lack of access to a reliable Internet connection and electricity are just a few of the roadblocks (Sinha & Bagarukayo, 2019; Queiros & de Villiers, 2016; Srichanyachon, 2014; Bean et al., 2019), combined with an institutional inability to sponsor online learning due to the cost (Bean et al., 2019; El Turk & Cherney, 2016). Students also stated the following worries about participating in radio and television lessons:

*As a young lady, I had to go to the market most of the time for food supplies and then cook for the family, either alone or with my mother in the kitchen. Consequently, I had missed the majority of the lessons, despite my desire to participate from beginning to conclusion. Student, 2022.*

*We were sometimes forced to attend Zoom classes, but due to a large number of students, anytime I raised my hand to offer a question or participate in the lesson, the teacher did not see me, so I just sat there and observed, was unable to contribute or ask a question. Student, 2022*

These proclamations are the reasons why there should be continuing support for distance learning policies, assigning reading and assignments for home study, teaching academic subjects via radio or television, assigning teachers to do remote follow-up with students, and developing advanced education strategies (UNICEF, 2020). During the COVID-19 school closures, not only students but also teachers faced obstacles in terms of Social Studies teaching and

learning.

#### **4.1.2 Problems encountered by teachers in the teaching of Social Studies during the COVID-19 school closure**

Several obstacles faced by teachers were recognized in the study, including the following:

*Imagine having a Zoom class for at least 2 hours a day using only your personal resources, with no help from your school or any other source(s). It was expensive, bearing such a cost was not easy. Teacher, 2022.*

*During our Zoom sessions, the Internet or network connectivity was occasionally weak for me and my students. There were times when I had to hold on for a long time to ensure that the network remained stable. There were also times when students' Internet connections were inadequate. As a result of the network truncation, they missed some of the concepts I presented to them. It was quite difficult. Teacher, 2022*

The above assertions correspond with findings that, access to the Internet, lack of ICT policy, lack of infrastructure such as computers, and improper materials are all factors that contribute to the poor integration of ICT into school curricula (Gyampoh et al., 2020). This reflects the difference in the usage of ICT and electronic learning in schools during the outbreak of the COVID-19 pandemic, particularly in Social Studies education. Even in countries with dependable ICT infrastructure and Internet connectivity, the rapid transition to online teaching and learning has proved tough for students, teachers, and parents (UNESCO, 2020; Sun et al., 2020). Some parents also asserted that:

*Purchasing data for the Zoom classes was extremely costly. Because I couldn't afford many of the classes or sessions, my children had to forego them. Parent, 2022.*

*Because my business had suffered due to COVID-19, I couldn't afford a smart phone or a laptop for my ward to engage in online education at the time. We were just waiting for school to resume because his "yam" phone couldn't connect to the Internet. Parent, 2022.*

The above declarations are a wake-up call to identify meaningful opportunities and experiences that will enable them to keep up with new ways of home-schooling via electronic teaching and learning and beyond so that in times of emergencies, online or electronic teaching and learning of Social Studies will not be the only means of mitigating challenges in education delivery. As a result, digital learning management systems, large open online course platforms, and self-directed learning content are all necessary (UNESCO, 2020). According to Mustafa (2020), unreliable and poor Internet connectivity, along with a plague of inadequate teaching and learning materials and digital technology, make life difficult for teachers, students, and families in developing nations.

Thus, the move from face-to-face to online teaching and learning was one of the most difficult challenges, as it had a substantial impact on assessments and evaluations, compelling teachers, particularly Social Studies teachers, to alter their assessment methods to accommodate the online mode. It was also difficult to keep track of how students took online classes and exams without cheating (Basilaia & Kvavadze, 2020). This is because, in underdeveloped nations like Ghana, textbooks, notably Social Studies textbooks, are the primary teaching and learning instruments utilized in the delivery of education. Unfortunately, due to the restricted number of copies distributed by governments over time, not every student, if not the great majority, had their own copy of a Social Studies textbook. As a result, pupils in low- and middle-income countries such as Ghana went without ICT or Social Studies textbooks throughout the school closures. This, of course, had an impact on the study of Social Studies, which is critical for development in any jurisdiction due to the citizenship education it provides to students. As a result, there are numerous issues. This is a good example of why online teaching and learning should not be the sole means of addressing educational difficulties, particularly in Social Studies education, that arises as a result of disasters. As a result, in order to be resilient to disasters, ICT integration and online teaching and learning must be supplemented.

#### **4.2 Research question 2: What resilience mechanisms could be adopted to overcome the challenges associated with ICT and online teaching and learning of Social Studies?**

The purpose of this research question was to identify resilient mechanisms that can be adopted to salvage the

challenges associated with online teaching and learning in times of emergency. The quantitative data presented in Table 2 indicate that majority of both students (ST) and teachers (T), respectively, were in agreement that some of the resilient mechanisms that can be adopted to salvage the challenges associated with online teaching and learning of social studies in times of emergencies without jeopardizing Social Studies teaching and learning include: development of online infrastructure (ST = 83% and T = 90%), provision of technical support for students and teachers (ST = 98% and T = 99%), economically disadvantaged students should be provided with ICT and online teaching and learning equipment (ST = 97% and T = 99%), production of solar powered or dry cell ICT and online teaching and learning equipment (ST = 99% and T = 99%), provision of self-learning or instructive textbooks (ST = 99% and T = 99%), textbooks should be dramatized and converted into films and games (ST = 86% and T = 79%), blended teacher education (ST = 94% and T = 87%), provision of adult education (ST = 58% and T = 69%), expansion of school infrastructure (ST = 85% and T = 91%), subsidized or free Internet connections (ST = 99% and T = 99%) and online teaching and learning should be done on regional basis (ST = 71% and T = 78%). These results replicate the upshot of the in-depth interview responses from students, teachers, and parents. Responses from questionnaires' close-ended and open-ended questions and in-depth interviews were presented chronologically while comparing the results with preceding research findings. This was done to get insight into the responses to the questionnaires.

Thus, blended learning, school infrastructure expansion, provision of self-learning or instructive textbooks, provision of solar-powered or dry cell electronic equipment, and technical support, among other things, were identified as some of the mechanisms required to ensure resilience to future emergencies without jeopardizing Social Studies teaching and learning. These were backed up by the comments from interviewees as presented in the subsequent section.

**Table 2.** Suggested resilient mechanisms to salvage the challenges associated with ICT/online teaching and learning of social studies in times of emergencies

Resilient mechanisms	Res	N	Agree (%)
Development of virtual/online infrastructure	ST	300	83%
	T	15	90%
Provision of technical support for students and teachers	ST	300	98%
	T	15	99%
Economically disadvantaged students should be provided with ICT/online teaching and learning equipment	ST	300	97%
	T	15	99%
Provision of solar powered/dry cell ICT/online teaching and learning equipment	ST	300	99%
	T	15	99%
Provision of self-learning or instructive textbooks	ST	300	99%
	T	15	99%
Textbooks should be dramatized/converted into films/games	ST	300	86%
	T	15	79%
Blended teacher education	ST	300	94%
	T	15	87%
Provision of adult education	ST	300	58%
	T	15	69%
Expansion of school infrastructure	ST	300	85%
	T	15	91%
Subsidized/free Internet connections	ST	300	99%
	T	15	99%
Online teaching and learning should be done on regional basis	ST	300	71%
	T	15	78%

Source: Field Survey (2022)

Where T = Social Studies Teachers, ST = Students, Res = Respondents' category, N = Total number of respondents.

#### **4.2.1 Resilience mechanisms beyond ICT and online teaching and learning suggested by students and teachers that can be used in times of emergency to overcome the problems associated with ICT and online teaching and learning of Social Studies**

Given that some areas are still struggling to provide all students with ICT equipment and Internet access, as indicated in Table 1, it is unlikely that every student will have a laptop or tablet in their hands by the time of the next crisis. This is why the World Bank (2020) calls for increased support for parents, teachers, and students, including socioemotional support, in its guidance note on COVID-19 response, which covers the phases of coping, managing continuity, and improving and accelerating education. This is in line with the idea that the government should help strengthen future resilience by supplying renewable energy equipment as indicated by the interviewee as follows:

*The government should begin producing solar-powered laptops, mobile phones, radios, and televisions to be donated to students who cannot afford them as well as students who live in areas without electricity. Teacher, 2022.*

Other propositions are as follows:

*Parents should be encouraged to buy smart phones or computers for their children so that they can participate in online Social Studies teaching and learning. The government and charitable groups should also reveal procedures for identifying and providing for needy students who do not have access to these items. Student, 2022.*

*Instead of waiting for another upheaval, we should equip our teachers and students now, coupled with training, so that they are prepared. These will make teaching and learning Social Studies in times of disaster much easier. Teacher, 2022.*

The above suggestions highlight the need for governments and education providers to continue to promote educational information construction, consider equipping teachers and students with standardized home-based teaching and learning equipment, conduct online teacher training, and support academic research into online education to assist students with online teaching and learning difficulties (Huang et al., 2020). However, it was discovered that, while providing students with the necessary resources is important, it is also important to chastise students for using those resources for their intended purposes, while also ensuring the urgent need to build educational infrastructure. The following are statements made by respondents:

*Students should be told that phones and other ICT devices should only be used for academic purposes. This is because some students may not utilize their phones for the intended purposes, which is why their parents may refuse to buy or allow them to use phones. This can be accomplished by restricting the use of certain devices for academic purposes alone. Teacher, 2022.*

As a result, it is critical to subsidize or make online accessibility free, as seen below:

*We are all striving to improve our educational system. To guarantee that education delivery is not hampered, free data bundles, Wi-Fi, or Internet connectivity should be available to everybody, allowing no one to be left behind, and educational websites should be available for simple access to instructional content. Student, 2022.*

*There is a pressing need to expand school infrastructure or facilities such as classrooms, dormitories, dining halls, and libraries, to name a few, in order to relieve pressure on their use in times of pandemics like COVID-19... When we must practice social distancing, such facilities will be able to accommodate or contain us. Student, 2022.*

The foregoing statements support the assertion that governments should scale up the use of educational technologies and build ICT infrastructures (Chick et al., 2020). It is critical to provide students with free access to

educational websites and applications. This is in keeping with the recognition that online teaching and learning, particularly, Social Studies content from non-profit publishers and private organizations, is critical (Wajdi et al., 2020). Not all, but improving the accessibility of educational resources on mobile phones, particularly Social Studies resources, with parents keeping a check on their children and avoiding harmful habits in mobile learning, is critical. This can be accomplished by utilizing universal service money to expand Internet access for students, teachers, and society at large. As a result, governments should establish education financing policies and strategies to achieve this (Al-Samarrai et al., 2020) and use radio and television teaching methods, especially if students do not have access to other technologies at home. Install ICT infrastructure and instructional technology in rural and difficult-to-reach locations to educate students (Tiruneh, 2020). Students' progress and educational accomplishments can be aided by using computer-generated Social Studies classes. Aside from this, there have been calls for necessary educational reform in the area of Social Studies teacher education, as shown below:

*Incorporating the delivery of classes, utilizing ICT and online devices, as well as providing in-service training for already employed Social Studies instructors, we should also modify the way we train our teachers. This will allow Social Studies teachers to become accustomed to them rather than seeing them as something new to which they will struggle to adjust. As a result, teacher training should be proactive, anticipating future threats or situations so that they are not caught off guard. Teacher, 2022.*

These are in line with the idea that teachers should be trained in developing pedagogical approaches so that they can improve the ICT abilities and work with digital technology (Cabero-Almenara & Llorente-Cejudo, 2020). The existing mandate, on the other hand, has its own set of issues (Fidelis & Onyango, 2021). As a result, dealing with the current situation, as well as future unforeseeable contingencies, will require realistic and proactive efforts to lessen the detrimental effects of future disasters. This means that in the teaching and learning of Social Studies, teachers' digital competence is dependent on their ability to adopt alternative teaching methods in addition to traditional teaching and learning methods, as well as learners' ability to use such facilities, taking into account availability and access (Milanović & Cveković, 2021). This necessitates a philosophical and conceptual rethinking of the nature of teaching and learning, as well as the roles and relationships between teachers, students, and teaching materials (Jandric et al., 2018). In line with this, Zhu (2020) suggested that teacher education must be made up of face-to-face and blended teacher education to provide future teachers with learning opportunities at all levels. In addition, self-learning Social Studies textbooks should be developed to help students study more easily, as shown below:

*Textbooks in Social Studies should be written in plain words so that students may read and understand them easily. There should be a change in the way we create Social Studies textbooks so that they are instructional enough that the learner feels as if he or she is having a face-to-face conversation with the teacher. Textbooks should also be produced in sufficient quantities. Teacher, 2022.*

*There is a need to turn the curriculum into games so that students can learn while playing. This, I believe, will encourage students to learn. Teacher, 2022.*

These findings support the assertion that adequate textbook manufacturing is required in order to distribute them to everyone who has not yet received them in order to make learning accessible to all, particularly in low- and middle-income countries and in emergencies. This is to prevent students from being unable to learn in an emergency. According to the World Bank (2020), textbooks should be designed so that students may self-study them rather than just supplying enough information so that they can learn with little or no difficulty in the future. As a result, new Social Studies textbooks should have short units that can be completed independently, be structured and language-leveled to reflect students' varying language abilities, and have easy activities that may be completed by two or three children in class or at home (Smart, 2019). These will ensure that the teaching and learning of Social Studies are not truncated and that its goals and objectives are met for the growth of Ghana and the world.



## 5. Conclusion

This study adopted an explanatory sequential mixed method design in investigating the challenges encountered by students and teachers in the teaching and learning of Social Studies during the COVID-19 school closures. It also investigated the resilient mechanisms that are capable of withstanding future pandemics such as COVID-19 such that, Social Studies education will not be truncated, considering its importance in national development and societal problem-solving. A convergent parallel mixed method was used in collecting data. It was revealed that the qualitative data was a replica of the quantitative data which was intended to gain more insight into the responses to the questionnaires.

The study identified challenges that were encountered by students and teachers in the teaching and learning of Social Studies. Thus, both the quantitative data and qualitative data discovered that none of the schools that took part in the study organized ICT and online Social Studies teaching and learning for their students during the school closures. However, individual Social Studies teachers, on the other hand, volunteered to use their personal resources to organize Zoom and WhatsApp classes for them. The investigation also indicated as part of the challenges that, unfortunately, not every student in this study was allowed to engage in online teaching and learning such as Zoom, WhatsApp, radio, or television modules, even though, like many other countries, Ghana as a state as well as corporate groups provided online tuition to students via radio and television. These were caused by economic and geographical inequities, such as a lack of online teaching and learning devices such as radios, televisions, and phones, as well as the high cost of data bundles and a poor or non-existent energy connection.

The study also identified some future resilient strategies, that are capable of withstanding future calamities like the COVID-19 pandemic, irrespective of economic or geographic location which encompasses the development of virtual infrastructure, technical support, and online teaching and learning devices that are either solar or dry cell-powered to allow those in remote areas access to Social Studies education regardless of the unavailability of electricity. In addition, the study suggested a need to develop instructive or self-learning Social Studies textbooks to help students learn more easily, reform teacher education, the dramatization of Social Studies textbooks, expansion of school infrastructure to accommodate students even if social distancing is required, and regional organization of online teaching and learning. It can, therefore, be concluded on the basis of the foregoing that, with the appropriate resilient mechanisms beyond ICT and online teaching and learning, Social Studies education will not be truncated in the case of a future pandemic, irrespective of economic and geographic disparities and therefore, no learner will be disadvantaged.

## 6. Recommendations

On the basis of the preceding findings, the study recommends the following:

Thus, in order to avoid truncation in education, the government of Ghana and the Ghana Education Service should make funds available in times of pandemic to cover the cost of online teaching and learning, not just for Social Studies but for all subjects, in order to educate our citizens to be responsible and contribute their fair share to national development.

Besides, governments, charitable organizations, non-governmental organizations, and civil society organizations should adopt strategies for identifying needy students and providing them with ICT and other online teaching and learning devices so that they are equipped and have a chance to withstand any emergency that may arise so that they are not left out of educational opportunities.

Furthermore, curriculum reform is required to design textbooks that are informative enough to allow learners to learn easily and without trouble. Parents must also be informed about the importance of electronic learning in order to provide their children with the required support.

## 7. Limitations and suggestions for further research

Although this study employed an explanatory sequential mixed method design in eliciting data on the challenges encountered by students and teachers in the teaching and learning of Social Studies during the COVID-19 school closures as well as resilient mechanisms beyond online teaching and learning that are capable of withstanding future

pandemics such as COVID-19, the study focused on Social Studies teachers and students to the neglect of other major stakeholders such as the ministry of education as well as the metropolitan, municipal and district education officers. It also did not include educational providers encompassing non-governmental and civil society organizations who are instrumental in educational provisions to elicit some of the resilient strategies that could be developed to withstand future unforeseen pandemics like the COVID-19.

Accordingly, this study suggests that further studies be conducted to include all major stakeholders in education as indicated in the preceding paragraph so as to unravel all other resilient strategies that hitherto had not been identified to be fully equipped and resilient towards future calamities such as COVID-19 in order to alleviate the possibility of truncating Social Studies education due to its instrumental role in national development and integration.

## Conflict of interest

Authors state no conflict of interest.

## References

- Aboagye, E. (2021). Transitioning from face-to-face to online instruction in the COVID-19 era: Challenges of tutors at colleges of education in Ghana. *Social Education Research*, 2(1), 9-19. <https://doi.org/10.37256/ser.212021545>
- Adarkwah, M. A. (2021). "I'm not against online teaching, but what about us?": ICT in Ghana post COVID-19. *Education and Information Technologies*, 26(2), 1665-1685. <https://doi.org/10.1007/s10639-020-10331-z>
- Agyei, D. D., & Voogt, J. (2011). ICT use in the teaching of mathematics: Implications for professional development of pre-service teachers in Ghana. *Education and Information Technologies*, 16(4), 423-439. <https://doi.org/10.1007/s10639-010-9141-9>
- Ali, W. (2018). Influence of evolving technology in emerging online lives of the digital native university students. *Asia Pacific Journal of Contemporary Education and Communication Technology*, 4(2), 141-155. <https://doi.org/10.25275/apjcectv4i2edu15>
- Al-Samarrai, S., Gangwar, M., & Gala, P. (2020). The impact of the COVID-19 pandemic on education financing. *Economic Impact of COVID-19*. World Bank, Washington, DC. <https://doi.org/10.1596/33739>
- Bariham, I. (2020). *Senior high schools preparedness for integration of computer based instruction in teaching and learning of social studies in Northern Region, Ghana*. Kenyatta University Institutional Repository. <http://ir-library.ku.ac.ke/handle/123456789/21300>
- Bariham, I., Ondigi, S. R., & Kiio, M. (2021). Preparedness of Ghanaian senior high school instructors for application of online learning in Social Studies instruction amid the COVID-19 pandemic. *Social Education Research*, 2(1), 52-64. <https://doi.org/10.37256/ser.212021554>
- Barnett, S., van Dijk, J., Swaray, A., Amara, T., & Young, P. (2018). Redesigning an education project for child friendly radio: A multisectoral collaboration to promote children's health, education, and human rights after a humanitarian crisis in Sierra Leone. *BMJ*, 363, k4667. <https://doi.org/10.1136/bmj.k4667>
- Basilaia, G., & Kvavadze, D. (2020). Transition to online education in schools during a SARS-CoV-2 coronavirus (COVID-19) pandemic in Georgia. *Pedagogical Research*, 5(4), em0060. <https://doi.org/10.29333/pr/7937>
- Bean, M. V., Aldredge, T., Chow, K., Fowler, L., Guaracha, A., McGinnis, T., Parker, L., & Saez-Kleriga, G. (2019). *Effective practices for online tutoring*. Sacramento: Academic Senate for California Community Colleges. <https://files.eric.ed.gov/fulltext/ED601995.pdf>
- Bell, S., Cardoso, M., Giraldo, J. P., El Makkouk, N., Nasir, B., Mizunoya, S., & Dreesen, T. (2020). *Can broadcast media foster equitable learning amid the COVID-19 pandemic?* UNICEF Connect. Evidence for Action. <https://blogs.unicef.org/evidence-for-action/can-broadcast-media-foster-equitable-learning-amid-the-covid-19-pandemic/>
- Buabeng-Andoh, C. (2019). Factors that influence teachers' pedagogical use of ICT in secondary schools: A case of Ghana. *Contemporary Educational Technology*, 10(3), 272-288. <https://doi.org/10.30935/cet.590099>
- Buchbinder, N. (2020). *Digital capacities and distance education in times of coronavirus: Insights from Latin America*. World Education Blog. Paris: UNESCO. <https://world-education-blog.org/2020/05/12/digital-capacities-and-distance-education-in-times-of-coronavirus-insights-from-latin-america/>
- Cabero-Almenara, J., & Llorente-Cejudo, C. (2020). COVID-19: Radical transformation of digitization in university

- institutions. *Campus Virtuales*, 9(2), 25-34. <https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/covidwho-972916>
- Carnoy, M. (2005). *ICT in education: Possibilities and challenges*. Universitat Oberta de Catalunya. <http://www.uoc.edu/inaugural04/eng/carnoy1004.pdf>
- Chaudhary, C., & Niaz, A. (2020, May 22). *Stop. Pause. Reflect. Rethinking teacher engagement during lockdown*. UKFIET: The Education and Development Forum. <https://www.ukfet.org/2020/stop-pause-reflect-rethinking-teacher-engagement-during-lockdown/>
- Chick, R. C., Clifton, G. T., Peace, K. M., Propper, B. W., Hale, D. F., Alseidi, A. A., & Vreeland, T. J. (2020). Using technology to maintain the education of residents during the COVID-19 pandemic. *Journal of Surgical Education*, 77(4), 729-732. <https://doi.org/10.1016/j.jsurg.2020.03.018>
- Chirwa, M. (2018). Access and use of Internet in teaching and learning at two selected teachers' colleges in Tanzania. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 14(2), 4-16. <https://files.eric.ed.gov/fulltext/EJ1190014.pdf>
- Cradler, J., & Bridgforth, E. (2002). *Recent research on the effects of technology on teaching and learning*. <http://www.wested.org/techpolicy/research.html>
- Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., Magni, P. A., & Lam, S. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy response. *Journal of Applied Learning and Teaching*, 3, 9-28. <https://doi.org/10.37074/jalt.2020.3.1.7>
- Creswell, J. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (5th ed.). Boston: Pearson Education.
- Di Biase, R. (2019). Moving beyond the teacher-centred/learner-centred dichotomy: Implementing a structured model of active learning in the Maldives. *Compare: A Journal of Comparative and International Education*, 49(4), 565-583. <https://doi.org/10.1080/03057925.2018.1435261>
- Di Pietro, G., Biagi, F., Costa, P., Karpiński, Z., & Mazza, J. (2020). *The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets*. Luxembourg: Publications Office of the European Union.
- Dimopoulos, K., Koutsampelas, C., & Tsatsaroni, A. (2021). Home schooling through online teaching in the era of COVID-19: Exploring the role of home-related factors that deepen educational inequalities across European societies. *European Educational Research Journal*, 20(4), 479-497. <https://doi.org/10.1177/14749041211023331>
- Egielewa, P., Idogho, P. O., Iyalomhe, F. O., & Cirella, G. T. (2022). COVID-19 and digitized education: Analysis of online learning in Nigerian higher education. *E-Learning and Digital Media*, 19(1), 19-35. <https://doi.org/10.1177/20427530211022808>
- Eickelmann, B., & Gerick, J. (2020). Lernen Mit Digitalen Medien: Zielsetzungen in Zeiten Von Corona Und Unter Besonderer Berücksichtigung Von Sozialen Ungleichheiten [Learning with Digital Media: Objectives in Times of Corona and under Special Consideration of Social Inequities]. *Die Deutsche Schule*, 16(1), 153-162. <https://doi.org/10.31244/9783830992318.09>
- El Turk, S., & Cherney, I. D. (2016). Perceived online education barriers of administrators and faculty at a U.S. university in Lebanon. *Creighton Journal of Interdisciplinary Leadership*, 2(1), 15-31.
- Fidelis, F., & Onyango, D. O. (2021). Availability of ICT facilities and teachers' competence in the use of ICT among public secondary schools in Ngara district, Tanzania. *East African Journal of Education and Social Sciences (EAJESS)*, 2(2), 34-40. <https://doi.org/10.46606/eajess2021v02i02.0073>
- Global Education Monitoring Report. (2019). *Migration, displacement and education: Building bridges, not walls*. France: UNESCO.
- Gulbahar, Y. (2012). *E-ogrenme*. Ankara: Pegem Akademi Yayınevi. <https://depo.pegem.net/9786054282098.pdf>
- Gyampoh, A. O., Ayitey, H. K., Fosu-Ayarkwah, C., Ntow, S. A., Akossah, J., Gavor, M., & Vlachopoulos, D. (2020). Tutor perception on personal and institutional preparedness for online teaching-learning during the COVID-19 crisis: The case of Ghanaian Colleges of Education. *African Educational Research Journal*, 8(3), 511-518. <https://doi.org/10.30918/AERJ.83.20.088>
- Haddad, W., & Draxler, A. (2002). The Dynamics of Technology for Education. *Technologies for Education: Potentials, Parameters and Prospects*. UNESCO and AED, Paris and Washington.
- Haji, S. A., Moluayonge, G. E., & Park, I. (2017). Teachers' use of information and communications technology in education: Cameroon secondary schools perspectives. *Turkish Online Journal of Educational Technology-TOJET*, 16(3), 147-153.
- Haleem, A., Javaid, M., & Vaishya, R. (2020). Effects of COVID-19 pandemic in daily life. *Current Medicine Research and Practice*, 10(2), 78-79. <https://doi.org/10.1016/j.cmrp.2020.03.011>

- Henaku, E. A. (2020). COVID-19: Online learning experience of college students: The case of Ghana. *International Journal of Multidisciplinary Sciences and Advanced Technology*, 1(2), 54-62. <https://www.researchgate.net/deref/http%3A%2F%2Fwww.ijmsat.com%2F>
- Hong, F. Y., Chiu, S. I., Huang, D. H., & Chiu, S. L. (2021). Correlations among classroom emotional climate, social self-efficacy, and psychological health of university students in Taiwan. *Education and Urban Society*, 53(4), 446-468. <https://doi.org/10.1177/0013124520931458>
- Huang, R. H., Liu, D. J., Tlili, A., Yang, J. F., & Wang, H. H. (2020). *Handbook on facilitating flexible learning during educational disruption: The Chinese experience in maintaining undisrupted learning in COVID-19 outbreak*. Beijing: Smart Learning Institute of Beijing Normal University. <https://iite.unesco.org/wp-content/uploads/2020/03/Handbook-on-Facilitating-Flexible-Learning-in-COVID-19-Outbreak-SLIBNU-V1.2-20200315.pdf>
- 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>
- Ismailova, Z., & Ergashev, B. (2019). New information and communication technologies in education system. *E3S Web of Conferences*, 135, 04077. <https://doi.org/10.1051/e3sconf/201913504077>
- Jandri, K. (2020). *Statička analiza nosive konstrukcije reklamnih stupova [Static analysis of the load bearing structure of advertising pillars]*. University of Rijeka. <https://repository.riteh.uniri.hr/islandora/object/riteh:2066>
- Jandrić, P., Knox, J., Besley, T., Ryberg, T., Suoranta, J., & Hayes, S. (2018). Postdigital science and education. *Educational Philosophy and Theory*, 50(10), 893-899. <https://doi.org/10.1080/00131857.2018.1454000>
- Kemisso, A., & Carvalho, S. (2020, April 20). *The pandemic reinforces age-old urban rural divides in access to education in Ethiopia*. REACH. Cambridge, MA: Harvard Graduate School of Education. <https://reach.gse.harvard.edu/covid19-resources/blog/the-pandemic-reinforces-age-old-urban-rural-dividesin-access-to-education-in-ethiopia>
- Kimithi, D. (2020, June 3). *A view from Nairobi, Kenya: Deborah Kimathi on school closures and the pandemic*. International Education News. <https://internationalednews.com/2020/06/03/a-view-from-nairobi-kenya-deborahkimithi-on-school-closures-and-the-pandemic/>
- Kizilcec, R. F., & Halawa, S. (2015, March). *Attrition and achievement gaps in online learning*. Proceedings of the second (2015) ACM conference on learning @ scale. pp. 57-66. <https://doi.org/10.1145/2724660.2724680>
- Lilian, G. K., Paul, O. A., Ciumuari, G. J., & Juliet, M. N. (2019). Social studies curriculum and cooperation among preschool learners in Nairobi County, Kenya: Addressing effectiveness of instructional methods. *American Journal of Social Sciences and Humanities*, 4(1), 86-97. <https://ideas.repec.org/a/onl/ajoss/v4y2019i1p86-97id123.html>
- Mensah, R. O., & Frimpong, A. (2020). Factors affecting students' attitude towards the learning of Social Studies in the Accra Metropolis of Ghana: A mixed method analysis. *Journal of Educational and Psychological Research*, 2(1), 33-42. <https://ssrn.com/abstract=3623891>
- Mensah, E. G., & Osman, S. (2022). Senior high schools teachers' perception of integrating ICT into Social Studies lessons in the New Juaben Municipality. *Social Education Research*, 3(1), 112-132. <https://doi.org/10.37256/ser.3120221053>
- Mikre, F. (2011). The roles of information communication technologies in education: Review article with emphasis to the computer and internet. *Ethiopian Journal of Education and Sciences*, 6(2), 109-126. <http://dx.doi.org/10.6007/IJARPED/v3-i2/919>
- Milanović, A., & Cveković, B. N. (2021). ICT in teaching-once a choice, now a necessity. *Facta Universitatis, Series: Teaching, Learning and Teacher Education*, 147-156. <https://doi.org/10.22190/FUTLTE2002147M>
- Mishra, S., Brossard, M., Reuge, N., & Mizunoya, S. (2020). *How involved are parents in their children's learning? MICS6 data reveal critical insights*. UNICEF Connect. [https://blogs.unicef.org/evidenceforaction/parentalinvolvementchildrenslearning/?fbclid=IwAR1vFAOBIqxR3F19\\_\\_2T\\_11yZz85tQWu8rWWWvoXGrM\\_tgqkknMxm1vl0](https://blogs.unicef.org/evidenceforaction/parentalinvolvementchildrenslearning/?fbclid=IwAR1vFAOBIqxR3F19__2T_11yZz85tQWu8rWWWvoXGrM_tgqkknMxm1vl0)
- Murgatroid, S. (2020, March). COVID-19 and online learning. *Strategic foresight for Educational Leaders*. <https://doi.org/10.13140/RG.2.2.31132.85120>
- Mustafa, N. (2020). Impact of the 2019-20 coronavirus pandemic on education. *International Journal of Health Preferences Research*, 1-12. <https://doi.org/10.13140/RG.2.2.27946.98245>
- Novković-Cvetković, B. (2017). Innovative designs in teaching work for the improvement of processes. *Godišnjak Pedagoškog fakulteta u Vranju*, 8(1), 177-190. <https://doi.org/10.5937/gufv1701177N>
- Nyamekye, E., Baffour-Koduah, D., & Asare, E. (2021). Basic school Ghanaian language teachers' perspectives on the integration of ICTs in teaching and learning. *African Journal of Teacher Education*, 10(1), 242-264. <https://doi.org/10.1080/20080394.2021.1911111>

org/10.21083/ajote.v10i1.6587

- Nygreen, K. (2019). Neoliberal reform and family engagement in schools: An intersectional gender analysis. *Policy Futures in Education, 17*(2), 205-221. <https://doi.org/10.1177/1478210318788416>
- Osman, M. E. (2020). Global impact of COVID-19 on education systems: The emergency remote teaching at Sultan Qaboos University. *Journal of Education for Teaching, 46*(4), 463-471. <https://doi.org/10.1080/02607476.2020.1802583>
- Owusu-Fordjour, C., Koomson, C. K., & Hanson, D. (2020). The impact of COVID-19 on learning-the perspective of the Ghanaian student. *European Journal of Education Studies, 7*(3), 88-101. <http://dx.doi.org/10.5281/zenodo.3753586>
- Palloff, R. M., & Pratt, K. (2013). *Lessons from the virtual classroom: The realities of online teaching*. 2nd ed. U.S.: John Wiley & Sons.
- Queiros, D., & de Villiers, M. (2016). Online learning in a South African higher education institution: Determining the right connections for the student. *International Review of Research in Open and Distributed Learning (IRRODL), 17*(5), 165-185.
- Ramya, D., & Clement, R. S. A. (2020). Integration of Information Communication and Technology (ICT) tools in English Language Teaching (ELT) from teacher's perspective. *International Journal of Applied Engineering Research, 15*(2), 108-110.
- Sahu, P. K. (2020). Closure of universities due to coronavirus disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. *Cureus, 12*(4), e7541. <https://doi.org/10.7759/cureus.7541>
- Sarkar, S. (2012). The role of information and communication technology (ICT) in higher education for the 21st century. *The Science Probe, 1*(1), 30-40.
- Sinha, E., & Bagarukayo, K. (2019). Online education in emerging knowledge economies: Exploring factors of motivation, de-motivation and potential facilitators; and studying the effects of demographic variables. *International Journal of Education and Development using Information and Communication Technology, 15*(2), 5-30.
- Smart, A. (2019). Refining primary social studies textbooks for behavior change in Bangladesh. In A. Smart, M. Sinclair, A. Benavot, J. Bernard, C. Chabbott, S. G. Russell, & J. Williams (Eds.), *Educating for the social, the emotional and the sustainable: Diverse perspectives from over 60 contributors addressing global and national challenges* (pp. 512-531). London: NISSEM Global Briefs, NISSEM. <https://nisse.m.org/globalbriefs>
- Srichanyachon, N. (2014). The barriers and needs of online learners. *Turkish Online Journal of Distance Education, 15*(3), 50-59. <https://doi.org/10.17718/tojde.08799>
- Starkey, K. (2020, May 29). *Turning our education crisis into opportunity: Lessons from high-performing nonprofits*. Forbes. <https://www.forbes.com/sites/kimjonker/2020/05/29/turning-our-education-crisis-into-opportunity-lessons-fromhighperformingnonprofits/#1b3696995874>
- Sun, L., Tang, Y., & Zuo, W. (2020). Coronavirus pushes education online. *Nature Materials, 19*(6), 687-687. <https://doi.org/10.1038/s41563-020-0678-8>
- Tanye, H. A. (2017). Quality elearning in distance learning: Benefits and implications for national elearning policy in Ghana. *International Journal of Multicultural and Multireligious Understanding, 4*(3), 1-11. <https://doi.org/10.18415/ijmmu.v4i3.73>
- Tesar, M. (2020). Towards a post-COVID-19 'new normality?': Physical and social distancing, the move to online and higher education. *Policy Futures in Education, 18*(5), 556-559. <https://doi.org/10.1177/1478210320935671>
- Tiruneh, D. T. (2020, April 21). *COVID-19 school closures may further widen the inequality gaps between the advantaged and the disadvantaged in Ethiopia*. UKFIET. The Education and Development Forum. <https://www.ukfiet.org/2020/covid-19-school-closures-may-further-widen-the-inequality-gaps-between-the-advantaged-and-the-disadvantaged-in-ethiopia/>
- Toven-Lindsey, B., Rhoads, R. A., & Lozano, J. B. (2015). Virtually unlimited classrooms: Pedagogical practices in massive open online courses. *The Internet and Higher Education, 24*, 1-12. <https://doi.org/10.1016/j.iheduc.2014.07.001>
- Tzifopoulos, M. (2020). In the shadow of Coronavirus: Distance education and digital literacy skills in Greece. *International Journal of Social Science and Technology, 5*(2), 1-14.
- UNICEF. (2020, August 24). *What will a return to school during COVID-19 look like? What parents need to know about school reopening in the age of coronavirus*. UNICEF for every child. <https://www.unicef.org/coronavirus/what-will-return-school-during-covid-19-pandemic-look>
- United Nations Educational, Scientific and Cultural Organization. (2020, March 26). *UNESCO rallies international organizations, civil society and private sector partners in a broad coalition to ensure #LearningNeverStops*. United

- Nations Educational, Scientific and Cultural Organization. <https://www.unesco.org/en/articles/unesco-rallies-international-organizations-civil-society-and-private-sector-partners-broad>
- Urdan, T. A., & Weggen, C. C. (2000). *Corporate elearning: Exploring a new frontier*. <http://papers.cumincad.org/data/works/att/2c7d.content.pdf>
- Wajdi, M. B. N., Kuswandi, I., Al Faruq, U., Zulfijra, Z., Khairudin, K., & Khoiriyah, K. (2020). Education policy overcome coronavirus, a study of Indonesians. *EDUTECH: Journal of Education and Technology*, 3(2), 96-106.
- Ward, L., & Parr, J. M. (2010). Revisiting and reframing use: Implications for the integration of ICT. *Computers & Education*, 54(1), 113-122. <https://doi.org/10.1016/j.compedu.2009.07.011>
- Woday, A., Mihret, S., Biset, G., & Alemayehu, M. (2020, June). *Psychological impacts of COVID-19 among college students in Dessie town, Amhara region, Ethiopia; Cross-sectional study*. Women's Health during the COVID-19 Lockdown. <https://doi.org/10.21203/rs.3.rs-38100/v1>
- World Bank. (2019). *Ending learning poverty: What will it take?* Washington, DC: World Bank.
- World Bank. (2020). *The COVID-19 pandemic: Shocks to education and policy responses*. Washington, DC: worldbank.
- Zengulaaru, J., Nyamekye, E., Baffour-Koduah, D., Ntim, G., Kuttin, G., & Kusi-Wireko, K. (2022). Adjusting to technology-mediated instruction in the midst of the COVID-19 pandemic in Ghana: Exploring the experiences of senior high school teachers and students of social studies. *International Journal of Innovative Science and Research Technology*, 7(4), 805-817. <https://doi.org/10.5281/zenodo.6539241>
- Zhang, X. (2020, March). Thoughts on large-scale long-distance web-based teaching in colleges and universities under novel coronavirus pneumonia epidemic: a case of Chengdu University. *Proceedings of the 4th International Conference on Culture, Education and Economic Development of Modern Society (ICCESE 2020)* (pp. 1222-1225). Atlantis Press.
- Zhu, X. (2020). Building up national online teacher education system. *Research in Education Development*, 40(2), 3. <https://doi.org/10.14121/j.cnki.1008-3855.2020.02.002>