

AMERICAN UNIVERSITY OF BEIRUT

POST-COVID-19 EVALUATION OF ONLINE LEARNING
POLICIES AND PRACTICES IN GHANAIAN TERTIARY
EDUCATION

by
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ABSTRACT OF THE PROJECT OF

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The educational system in Ghana has long faced numerous challenges, including infrastructure shortages. At the tertiary level, many Ghanaians are unable to access their preferred institutions and programmes due to limited lecture halls and accommodation facilities. Despite the severe impact of COVID-19 worldwide, especially in developing countries, it also introduced alternative solutions to some of these issues. In Ghana, online learning, which emerged as a response to the pandemic, helped mitigate some difficulties facing the education system. With the shift to online education, students in schools with inadequate furniture and overcrowded classrooms can now access learning materials and participate in classes from the comfort of their homes. In light of the foregoing, this study aims to examine Ghana's online learning policy framework to assess its effectiveness in addressing some of the country's systemic challenges in the post-COVID-19 era. Using a qualitative policy review approach, the study analyzed five policy-related documents and five scholarly articles through thematic analysis guided by the innovation diffusion theory. The findings indicate an evolving national framework with moderate success. Early policies, such as the 2003 ICT for Accelerated Development, established broad ICT objectives; however, they lacked specific implementation plans. Recent initiatives, such as the distance education policy audit and the e-learning policy by the Ghana Tertiary Education Commission and Sunyani Technical University, respectively, demonstrate significant progress in the country's efforts to expand access to tertiary education. Nevertheless, progress is hampered by funding shortages and a noticeable urban bias. Comparative analysis reveals that Ghana falls short of international benchmarks, such as Kenya's 20% increase in distance enrolment or Singapore's 95% adoption rate of learning platforms. To effectively bridge these gaps, particularly in rural areas, the study recommends strategic measures: decentralizing policy implementation, significantly expanding hybrid learning formats, and subsidizing internet data to support students. Ultimately, this work contributes to the global dialogue on digital education in developing contexts, offering policymakers and educators in Ghana practical strategies for building an inclusive, technology-driven tertiary sector.

Keywords: COVID-19, Ghana, ICT, Online learning, Policy, Tertiary education

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CHAPTER 1

INTRODUCTION

Background Information

Tertiary education is undoubtedly a pillar of national development, as it plays a pivotal role in equipping the population with the knowledge and skills needed for socio-economic acceleration (Atiku & Kwasi, 2022). Given this, governments around the globe commit a significant portion of their country's resources to transforming tertiary educational institutions into state-of-the-art facilities. However, in Ghana, despite the government's efforts to improve educational facilities, the educational sector is still confronted with a range of issues that impede students' academic performance and the country's progress in making education accessible for all citizens (Baah, 2023). Notable among these challenges is the issue of the infrastructural deficit (Osai et al., 2021).

Over the past few years, public tertiary institutions have witnessed an exponential increase in student enrolment. This is partly associated with the government's Free Senior High School policy, which was rolled out in 2017 (Bonsu et al., 2025). Unfortunately, the significant increase in student enrollment in the country's public tertiary institutions has not been accompanied by a corresponding expansion of educational facilities (Agbador, 2023; Osei-Owusu, 2021). This issue of infrastructural deficit bothered the University Teachers Association of Ghana (UTAG) so much that in 2023, they registered their displeasure with the government. In their concern, they urged the government to give clearance for the recruitment of additional teaching staff to close the gap of one lecturer to the over 200 students, as opposed to the Ghana Tertiary Education Commission

(GTEC) recommendations for competency-based practical learning, maximum of 20 students per teacher and General-Theory-Lecture Classes, a maximum of 40 students per teacher (Nartey, 2023).

The COVID-19 pandemic exposed these issues, disrupting campus-based learning and necessitating a shift to digital platforms. Ghana's response, which included radio-based instruction and virtual tools (Ministry of Education, 2020), highlighted both the potential and gaps in online learning adoption. The country has a proposed comprehensive framework to supplement traditional instruction, particularly at the tertiary level, with distance and e-learning (Nartey, 2023). While several African countries have employed digital strategies to expand access to higher education, Ghana's progress has been limited by ongoing implementation challenges. Kenya has experienced a rapid adoption of mobile learning and mobile-enabled tertiary education initiatives that enhance access and participation (Masika et al., 2015; Muuro et al., 2014), and Nigeria's National Open University has become a key platform for broadening access through open and distance learning (Iwok & Salau, 2024).

In contrast, Ghana's ambitions articulated in policy instruments such as the ICT for Accelerated Development (ICT4AD) policy of 2003 have often surpassed actual implementation, with recent analyses highlighting gaps between design and reality, weak coordination, and infrastructure deficiencies (Kubuga et al., 2021). This study, therefore, examines Ghana's post-pandemic online learning policies to investigate how digital initiatives can be enhanced to better address ongoing infrastructural and access issues in tertiary education.

Problem Statement

Many scholars worldwide have become increasingly interested in how online learning affects education systems and their components, including schools, universities, teachers, and students, due to the extraordinary circumstances created by the COVID-19 pandemic (Iyer, Aziz, & Ojcius, 2020). Online education has generally been viewed as a supplement or alternative to traditional education. Nonetheless, during the COVID-19 pandemic, this type of education emerged as a vital component for sustaining university and school operations globally. Online learning offers several benefits, including affordability, access to the latest advancements, flexibility in selecting necessary instructional resources, accessibility from any location at any time, and universality (Hamid et al., 2020).

In response to the COVID-19 pandemic, governments, universities, and educational institutions worldwide implemented several measures to continue teaching and learning activities, primarily online, to prevent disruptions to the academic calendar and to assist in halting the spread of the virus (Ali, 2020). The abrupt shift was unexpected and fraught with difficulties because most educational institutions worldwide were either unprepared for or did not anticipate moving all programs and courses online (Murgatroid, 2020; Zhang et al., 2020). The implementation of remote learning and online learning was necessary to continue educational activities despite these obstacles. Like other colleges worldwide, Ghanaian institutions have instituted online learning for all their courses and halted all in-person instruction. During nationwide lockdowns and school closures, this was done to ensure that students could continue their education and that their learning was not negatively affected.

Everyone suffered greatly because of this abrupt shift to the internet, which made it difficult for them to adjust and required them to master new features quickly. The veracity of the evaluation was questioned by many. Exam proctoring technologies, such as Respondus Monitor, and exam integrity solutions, like LockDown Browser, were mandated by several universities. It is essential to note that to mitigate technical issues associated with online teaching and learning, the Ghanaian government has made substantial investments in communication and IT infrastructure to ensure a reliable internet connection (Walker, 2025). According to Walker (2025), in May 2024, the Ghanaian government established the Next-Gen Infrastructure Company (NGIC) in partnership with Ascend Digital, K-NET, Radisys, Nokia, Tech Mahindra, AT Ghana and Telecel Ghana to provide a reliable internet connection across the country. In light of this, the shift from traditional classroom environments to virtual ones that utilize relevant technological applications requires more in-depth study, considering the viewpoints of families, decision-makers, administrators, educators, and students.

In Ghana, online learning, a response to the pandemic, helped mask the challenges confronting our educational institutions. For instance, with the shift to online learning, discussions about infrastructural deficits, such as inadequate lecture halls and a shortage of hostel facilities, were seemingly put on hold. During this period, most Ghanaian students could access learning materials and participate in classes via online platforms from the comfort of their homes. This further corroborates the assertion made by Maheshwar and Kumar Sahoo (2024) that online learning can be a viable tool to mitigate infrastructural deficits in educational settings. In light of the foregoing, the current study is timely as it aims to evaluate the country's available policies on online learning and examine their effectiveness, taking into cognizance the post-pandemic experiences of

tertiary students as captured in empirical studies. More importantly, the study examined how existing policies can be leveraged to address the challenges in the country's public tertiary educational institutions.

Purpose of the Study

The purpose of the study is to undertake a comprehensive assessment of the effectiveness of existing policies (if any) of online learning in Ghana and ascertain their potential for addressing the educational challenges in the country's public tertiary academic institutions. By synthesizing information from empirical studies and policy documents, an analysis of the content, context, and stakeholder participation of the policy/study is carefully considered in proposing an online learning policy framework that improves educational access and quality.

Research Questions

Like many of her developing counterparts, Ghana's tertiary educational institutions are bedeviled by many challenges. Key among these challenges is the infrastructural deficit, which has become particularly topical in the post-COVID-19 era. As reiterated above, online learning, a means of ensuring the continuity of teaching and learning amid the pandemic's disruption of education, offered a temporary solution to some of these challenges, like accommodation crises. Thus, in the post-pandemic era, it is imperative to explore Ghana's existing policies about online learning and how they can be capitalized on to address these challenges. In effect, the current study is grounded in the following research questions:

1. What is/are Ghana's existing policy framework on online learning?

2. To what extent do Ghana's current online learning policies address the key challenges facing tertiary education?
3. How have tertiary students' experiences with online learning during the pandemic shaped their perception and attitude towards its continued use post-pandemic?
4. What are the formulated practical recommendations to enhance access to online learning for students in the country's tertiary educational institutions?

Rationale

On the 12th of March 2020, Ghana, a country in the Western part of Africa, recorded its first case of the novel coronavirus (Kenu et al., 2020). Through the Ministry of Health, Ghana's government instituted several measures to curtail the spread of the virus. However, these measures proved futile as the country's cases continue to rise. In response, the government was compelled to close all schools, from elementary to tertiary level. This, in part, was to strengthen further government efforts to contain the spread of the virus (Omari et al., 2023). Since nobody knew when things would return to normal, there were requests for the government to implement alternatives for continuous teaching and learning because the closure of schools occurred at a time when students, particularly those in their final year at the senior high schools, were preparing for their final exams (Pasawano & Quainoo, 2022).

Virtual education, online learning, featured prominently on the list of alternatives suggested by stakeholders for the government's consideration for continuous teaching and learning amid the COVID-19 crisis (Adarkwah, 2021). Virtual platforms such as Zoom, Skype, and Microsoft Teams were utilized in tandem with traditional platforms such as radio and television for remote learning (Demuyakor, 2021). While the move to online learning was intended to replace in-person delivery and offer temporary solutions,

it encountered issues such as network challenges and inadequate IT skills. These issues prompted the National Union of Ghana Students (NUGS), the largest student body in Ghana, to issue a petition calling on the government to rescind the decision to institute e-learning platforms for continuous teaching and learning during the pandemic (Anyorigya, 2020). The student body cited the unfamiliarity of e-learning platforms to most students and some faculty members as a challenge-ridden adventure that will not benefit most Ghanaian students.

Despite the students' concerns, the Ghanaian government implemented online learning anyway, as it was the only viable alternative for continuous teaching and learning amid the COVID-19 pandemic. Thus, in the post-pandemic era, there is a need to systematically explore the body of literature to ascertain how far the concerns underpinning the students' union objection to online learning have been improved/addressed by policymakers. Such a study will also reveal how policymakers are incorporating these concerns into the development of an effective online policy to address the challenges facing the country's tertiary educational system.

Significance of the study

The sudden yet much-needed transition to online learning at the peak of the novel coronavirus pandemic highlighted the potential to address longstanding challenges within Ghana's tertiary education system through digital education. For instance, the delay in providing feedback on students' assignments, a persistent issue in most public tertiary educational institutions due to large class sizes, was somewhat mitigated during the pandemic period. During this time, course instructors reportedly provided students with rapid and timely feedback on their assignments and tests. According to Kwapong (2023),

the use of Sakai, a learning management system (LMS), enabled course instructors to respond swiftly to students' assignments.

Online and remote learning, a measure instituted by the government to curb the spread of the virus, has helped expand access to education. Online learning platforms, it is said, allow learners access to reading materials despite their location, addressing the closure of schools. Agormedah et al. (2020) uncovered that students at higher education institutions who reside at locations distant from their campuses have a stronger preference for learning from home. According to these authors, such students find travelling to urban campuses daunting and challenging. It is worth noting that online learning has been described as a potential tool to expand educational access and improve its quality, especially in developing countries (Win & Hlaing, 2024).

The usefulness of online learning as an essential tool for the continuity of teaching and learning was further amplified during the peak of the COVID-19 pandemic. Classroom activities were migrated from physical facilities to virtual spaces. It is essential to underscore that many of the virtual tools utilized for virtual classes allow lecture recordings to be made easily. As noted by some authors, including Nkomo and Daniel (2021) lecture recordings are essential in modern-day education as they provide a seeming flashback for students. The authors added that students struggling with a particular topic can continuously listen to or watch the recorded session as often as needed until they are clear. However, it is worth emphasizing that these tools may be lacking in most educational facilities, particularly schools in developing countries like Ghana.

Having enumerated the merits of online learning and the role it could play in addressing some of the challenges characterizing Ghana's tertiary educational institutions, the significance of the current study includes:

1. Providing a thorough analysis of the pandemic's impact on education, particularly tertiary education. As noted by some international organizations, including UNESCO, the widespread closure of schools necessitated by the novel coronavirus caused a significant disruption to conventional teaching practices (i.e. face-to-face) and ultimately created substantial challenges for all stakeholders, especially educators, students, and families. Therefore, a comprehensive understanding of the extent of the impact will be essential for informed policy formulation and decision-making.
2. Analyzing the role of technology in driving remote education. As evidenced during the peak of the pandemic, the transition from face-to-face teaching practices to online learning was made possible by a diverse range of technological tools and platforms. Given this, the current study will provide a distinction between emergency remote learning and online learning, emphasizing how technology can be utilized to drive interactive virtual learning environments.
3. Evaluating the post-pandemic online learning experiences of students in tertiary educational institutions in Ghana. In Ghana, the shift to online learning faced strong resistance from the student union, NUGS, which cited the lack of a proper framework for online learning in the country as one of its primary reasons for the objection. The current study will be relevant in shaping the country's digital education by proposing strategic frameworks for integrating online learning into higher education, thereby enhancing the quality and accessibility of education.

Hence, the need for a post-COVID-19 evaluation of online learning among tertiary students in Ghana arises from the desire to assess the effectiveness, equity, students'

experiences, infrastructure readiness, and policy gaps, to improve future online learning delivery.

CHAPTER 2

LITERATURE REVIEW

Theoretical Framework

This study adopted the Innovation Diffusion Theory (Rogers, 2003). According to certain academic studies that have used it, like Venkatesh et al. (2003) and Dhawan (2020), it is one of the most widely utilized theories for researching IT adoption and comprehending how breakthroughs in IT propagate both domestically and internationally. Since e-learning focuses on the innovative use of IT, the theory is a good fit to direct the analysis of the current study. The Innovation Diffusion Theory can be applied in Ghana's higher education by aligning innovation with user needs, utilizing effective communication channels, supporting gradual adoption stages, leveraging opinion leaders, and addressing infrastructural and policy gaps. This ensures that digital education tools and other innovations move from being experimental to becoming mainstream in universities and colleges.

According to Rogers (2003), the success of IT innovation is primarily determined by four factors. The social structure, the innovation's qualities, the adopters' traits, and the communication channels are the factors that determine whether an innovation is successful. These channels of communication are how people learn about the invention and assess its value. Both interpersonal communication and the media serve as primary means of communication. Relative benefit, compatibility, complexity, trialability, and observability are the five characteristics of innovation that are thought to be user-perceived (Koc and Celik, 2015). By embracing an innovation, a user might see the advantages of the current technology to a greater extent, which is known as relative

advantage. Compatibility, as defined by Tornatzky and Klein (1982), is a measure of how well an invention fits into the current social and technological landscape. This quality aligns with the present study, which evaluates online teaching and learning among higher education institutions in Ghana during the post-COVID-19 era. The theory suggests that innovation can integrate or coexist with existing values, experiences, and the needs of potential adopters, thereby increasing its prospects for diffusion and adoption.

Complexity is the third attribute that users notice in this idea. According to Tornatzky and Klein (1982), complexity quantifies the difficulty of comprehending, applying, or using an invention. This means that end consumers are more likely to embrace innovations that are simpler and quicker. Trialability is defined by Tornatzky and Klein (1982) as an innovation's capacity to be tested with little financial outlay and without complete commitment. The dual contention is that people are more likely to accept an invention that has greater trialability. Observability, or how easily potential adopters can see the advantages of an invention, is the sixth user-perceived characteristic of innovation. One may argue that innovations are only embraced when they are seen to have positive outcomes. Because e-learning helps students in times of need when they are unable to attend in-person classes, its promotion and implementation in the wake of COVID-19 benefits not only the students but also the educators and the country.

One may argue that the four primary factors that determine IT performance are essential for Ghanaian higher education institutions to adopt online teaching and learning successfully in the post-COVID-19 era. The institution's administration should therefore make significant investments in IT programs and infrastructure. This supports the views of academics like Avien et al. (2020) who contend that investing in education enhances an individual's ability to work and adapt to a new life, as education teaches people the

right way to live. This implies that spending money on IT involves equipping instructors, students, and IT staff with technical expertise to implement the most effective e-learning initiatives.

The Innovation Diffusion Model (IDM) developed by Rogers offers essential insights into how people embrace new technology, but its focus on personal views may minimize the impact of more extensive institutional limitations. Adoption rates are primarily determined by innovation's five characteristics: relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003). Diffusion is said to occur organically once people believe an idea is beneficial and controllable. However, structural hurdles as well as individual perspectives influence the adoption of innovations like online learning in Ghanaian higher education. For example, many post-secondary institutions continue to struggle with inconsistent internet access, particularly in rural locations where expensive data plans and inadequate network infrastructure limit the use of digital learning tools by instructors and students. Similarly, the extent to which online learning can be implemented successfully, regardless of its perceived value, is limited by institutional resources, such as a lack of technical support staff, inadequate ICT infrastructure, and insufficient investment in learning management systems.

Furthermore, the dissemination process is also impacted by governmental limitations. Although the Ghana Tertiary Education Commission (GTEC) and the Ministry of Education have promoted digital innovation, long-term adoption has been hindered by the lack of comprehensive regulations governing online assessment, accreditation requirements, and student support services. This reveals a weakness in IDM, which frequently minimizes the influence of institutional capability and policy contexts on adoption above and beyond the level of personal preference. This means that the

Innovation Diffusion Model must be modified for use in Ghanaian higher education. A more contextually aware method would combine IDM with structural viewpoints, including institutional capacity frameworks or theories of the digital divide, to capture the combined impact of systemic impediments and individual views. The adoption of online learning is still inconsistent among institutions, even when lecturers and students recognize its relative benefits throughout and after COVID-19, requires this hybrid perspective.

Closing the Digital Divide

The COVID-19 pandemic has sparked a discussion about the digital divide in education and other domains. According to Adarkwah (2021), the digital divide is categorized under several social strata, such as "poverty, status, caste, class, and inequity," and it incorporates a wide range of factors. Some are particularly noteworthy, such as "language literacy, computer skills, availability of instruction or social support and access to technology hardware and broadband," according to Adekanmbi et al. (2021).

Researchers such as Santally et al. (2021) suggest low-cost services, such as "community communication centers, radio, television, to cater for rural communities and cut on costs, massive open online courses, or the use of social media as learning platforms, as well as community learning centers and libraries, and print media," that are modeled by UNESCO to close the digital divide. According to Osman and Keevy (2021), "once it is in place, the mechanism provides access to online modules designed for distance learners at a lower cost, or to free online courses on the web," governments should support the efforts to digitize education. Osman and Keevy's (2021) opinions align with Correia's (2020), who advocates for the use of free tools and resources in conjunction with various

assessment methods to close the digital divide. De Los Santos and Rosser (2021) also suggest that curriculum alignment, technology investment, and partnerships can help bridge the digital divide.

It's interesting to note that while numerous studies have addressed the digital divide, few have examined solutions. The current research is essential for identifying and synthesizing the potential produced by the COVID-19 outbreak and for developing an ICT integration plan that can reduce the digital divide in education.

The Scope of Online Learning

Online learning, the practice of delivering educational instruction or content via the Internet or multimedia platforms, has long been an integral component of the educational system in most countries across the globe (Maddison et al., 2017). Prior to the COVID-19 pandemic, online learning was more widely utilized and popular in a few developed countries like Australia, the United States, and the United Kingdom (Gharti, 2023). Due to the pandemic's disruption to the educational system, the management of educational institutions was compelled to resort to online education for the continuity of teaching and learning (Selvaraj et al., 2021). Thus, for most developing countries, online learning was a viable alternative and a necessary intervention tool in response to the pandemic's toll on education.

Fast forward to the present time, and the situation has improved significantly and is dramatically different from four years ago. A vast majority of educational institutions have returned to face-to-face teaching. Nonetheless, online learning has not been entirely relegated and is still prominent even in institutions where it was not formerly utilized until the inception of the novel coronavirus pandemic. Online education has grown significantly post-COVID-19, owing to institutional decisions to implement blended or

hybrid learning models concurrently with in-person instruction, as well as the utilization of digital technologies for the restructuring of courses (Aristovnik et al., 2023; Peimani & Kamalipour, 2021). Consequently, this has sparked a global discussion on integrating online learning, particularly in higher education. Proponents of this notion argue that, since online learning was the ‘game changer’ during the crisis, the post-pandemic period is an opportune moment to evaluate and rethink how education can be delivered to improve access and equity (Lockee, 2021).

For the effective global adoption and the purpose of this study, defining some key terms associated with online learning is essential. As reiterated above, the goal of government and educational authorities during the pandemic was to ensure the continuity of teaching and learning. Hence, little attention was given to the variety of overlapping terms introduced during the pandemic. Therefore, defining key terms associated with online learning will bring clarity and a deeper understanding of the concepts pivotal to this study.

The key term central to this study is online learning. This has been defined by Sunal and Wright (2012) as the use of electronic technologies connected to the internet to facilitate teaching and learning. It is essential to note that the definition of online learning places primary emphasis on the use of the internet (Culduz, 2024; Walker, 2025). Online learning is often used interchangeably with online education. However, there is a clear-cut distinction between the two terms. Unlike online learning, online education goes beyond the mere application of the internet for teaching and learning. Culduz (2024) defines online education as including skill-based training programmes as well as professional development programmes that take place on an internet interface or platforms.

Additionally, in Ghana, remote learning is often used interchangeably with online education. Remote learning, in its simplest terms, refers to the delivery of educational content outside the traditional classroom, typically relying on non-Internet-based media, such as radio and television. Based on this description, remote learning was more popular in Ghana before the novel coronavirus pandemic than online learning. Virtual learning, on the other hand, is described as the application or utilisation of digital environments, such as Google Classroom, for teaching and learning.

The novel coronavirus pandemic forced a mass transition to emergency remote learning, where the primary goal of the management of educational institutions was to get every student online as a matter of urgency (Nagy et al., 2021). As such, efficient e-learning platforms built based on substantial feedback from the end users, that is, teachers and students, were not given much thought (Hodges et al., 2020). This is evidenced by the similarities in research findings predating the pandemic and those carried out during the pandemic. In recent times, online learning can no longer be viewed as an option but a necessity (Dhawan, 2020). Therefore, it is essential for authorities and educators to thoroughly understand the challenges associated with online learning, as revealed by empirical studies, and to evaluate the results, ultimately developing more effective e-learning platforms.

Nature of Online Learning Platforms

Online teaching and learning platforms are integrated software solutions that enable e-learning. They provide channels for the transfer and acquisition of knowledge, abilities, and attitudes using technological instruments such as computers, smartphones, tablets, and internet connections (Tosheva, 2016). Online platforms were once little more

than static, software-based courses with single-source content and limited technical capabilities for collaboration. These days, online learning platforms are more dynamic and flexible, and they are accessible on a range of electronic devices with internet connections. These platforms enhance the dynamic and diverse character of learning information by enabling users to engage with content from multiple sources. The quality of the content and system interaction has an impact on students' opinions regarding their satisfaction with online learning platforms (Altunoglu, 2017; Baleghi et al., 2017; Chugh et al., 2017). According to Alahmadi and Alraddadi (2020), students may sometimes exhibit more enjoyment while utilizing social media platforms as opposed to learning management systems alone.

Features and Functions of Online Learning Platforms

Online learning platforms facilitate communication and information exchange between teachers and students by providing a means of exchanging learning materials and documents at any time and from any location. Online platforms provide both synchronous and asynchronous communication channels between educators and learners. They offer a range of instructional exercises that utilize text, graphics, audio, videos, and animation, in addition to opportunities for online tests and instant evaluation feedback. Additional benefits of online platforms include site visits, student accomplishment, permanent access to course materials, and course data. (Tosheva, 2016; Woodcock et al., 2015; Ouadoud et al., 2016).

Students' Use of Online Learning Platforms

To approach learning deeply and meaningfully, online learners focus on the leadership and structure of virtual learning environments (Anyorigya, 2020). Loyalty,

integrity, conscientiousness, communication, cooperation, creativity, learning motivation, persistence, independence, and intercultural competence are the factors that affect the development of competencies in distant learners studying in virtual environments, according to a study by Atakorah et al. (2023). According to Baah (2023), students who participate in online learning are less happy with working with peers to complete tasks online and more satisfied with their experiences obtaining course materials. In their study on students' opinions of learning platforms in distance education, Cachero-Gonzalez et al. (2019) found that 79% of students highly value the opportunities that online learning platforms provide for collaboration among students. According to Burgstahler (2020), students view online learning platforms as a way to enhance communication and cooperation between themselves and their professors. However, when it comes to using online platforms, Gomez et al. (2016) also found that students are more focused on the learning advantages than the collaborative aspects. According to a survey on online learning, students had a favorable opinion of communication, with 52% saying they felt at ease communicating with classmates and teachers online and 63% saying their questions were answered promptly. The students noted that one benefit of online learning is the ability to respond quickly. Sixty percent of the students said that virtual discussions were less intimate than in-person interactions, even though 73 % of them said that their ideas were valued online. About 54% of Ghanaian students reported that they began or continued online communication with their teachers and peers before or after in-person classes (Culduz, 2024).

Demuyakor's (2021) study on the analysis of Moodle platform use revealed that students had access to computers and internet connections in their homes, faculties, and other locations; thus, the fundamental premise of using the Moodle platform was met.

Similarly, 89% of students reported regularly accessing online course materials, and all students indicated having regular access to a computer to view resources whenever needed (Dhawan, 2020). According to Davidovitch and Dorot (2023), students who had better grades in their studies used the online learning platform more frequently, whereas students who received poorer grades used it less regularly. Students collaborated in structured groups to build their projects using the Moodle platform in addition to other communication and collaboration tools, including Facebook, Google Groups, and Yahoo Groups (Dodun et al., 2015). Each group was required to maintain confidentiality; students from other groups were not permitted to use the workspaces of different groups. The students had to perform the duties of both teacher and student in this fashion, which required the pupils to self-organize their work to complete their assignments. Despite working together to learn, students in this research were required to create and manage their own workspace on the e-learning platform independently (Dodun et al., 2015).

According to Adzobu (2014), logging into the system was simple because it was easy to remember the Ping Pong URL, username, and password. Adzobu (2014) goes on to say that the Ping Pong start page was straightforward to use and easy to understand because all of the components were clearly labelled with a few simple buttons. According to some students, once they grasp how e-learning platforms work, they become simple to utilize. According to Omer et al. (2015), students' adoption and usage of e-learning platforms are significantly influenced by their perception of the platform's utility and its user-friendly interface. Due to the timely delivery of lecture notes and easy access to all the material required to support the learning process, Ping Pong was inspiring, inventive, fulfilling, and beneficial. Because the platform taught new concepts, using Ping Pong was enjoyable (Adzobu, 2014). With e-learning systems, students benefit from flexibility and

autonomy from lecturers (Omer et al., 2015). With time and frequent use, Ghanaian students' online platform experiences get better. According to Omer et al. (2015), adopting e-learning initially proved challenging for students who had little to no prior experience with ICT. Through active participation in their education and interaction with the platform, the students were able to get over this challenge. According to Woodcock et al. (2015), students are more inclined to participate in online conversations when they are well-versed with the platform. This encourages engaging and significant dialogues in which students feel comfortable asking questions of the instructor, both privately and publicly.

Online Learning during the COVID-19 Pandemic

The outbreak of the novel coronavirus has placed significant pressure on educational institutions worldwide. This compelled the management of academic institutions to swiftly shift from conventional teaching and learning methods to alternatives relevant to mitigating the prevailing situation at the time (Alahmadi & Alraddadi, 2020). Online education emerged as a potent alternative to traditional teaching and learning during the pandemic. Learning management systems such as Blackboard, Sakai and Moodle, as well as video conferencing tools like Google Meet, Microsoft Teams, Zoom and Webex, were utilized for online teaching and learning (Hassan & Khan, 2020). While the primary goal was to curb the spread of the virus, online learning platforms also made learning materials more accessible, giving students the freedom to study at their convenience. One of the positive aspects of online learning during the pandemic was that learners inadvertently developed the skills and competencies needed to take responsibility for their education, as well as the ability to handle challenging circumstances. While not entirely novel, online learning was relatively unfamiliar to most

Ghanaian students compared to traditional classroom instruction in the country. Thus, the sudden but much-needed migration to e-learning platforms constituted a significant challenge to most Ghanaian students (Adarkwah, 2021).

The Ghanaian situation

In March 2020, the government of Ghana, upon assessing the steady rise in the country's COVID-19 cases, ordered the halt of all physical education-related activities. Subsequently, the Ministry of Education (MoE), in coordination with GTEC, urged all tertiary educational institutions to institute online learning platforms in response to the closure of schools. This period marks a turning point for the country in terms of digital learning. This is because, before the pandemic, digital learning in the country's tertiary education was in its infancy.

It is instructive to note that a carefully developed national online learning policy was not in place at a time when the government of Ghana, through the MoE, instructed tertiary educational institutions to adopt online learning solutions. The directive and the associated urgency further exposed the infrastructural inadequacies of most tertiary institutions, especially the public ones. Many tertiary institutions were hindered by inadequate server capacity and the lack of user-friendly learning management system (LMS) platforms. Additionally, the erratic power supply at the time was a significant obstruction to smooth online learning.

Another significant challenge for the rollout of online learning was the faculty teaching staff's lack of preparedness. A substantial number of the lecturers were said to have no prior knowledge of using virtual tools for instructional purposes (Kumi-Yeboah et al., 2023). For such lecturers, preparing engaging teaching materials was a daunting task. Further, managing a large virtual class size was equally stressful for these lecturers.

Similarly, students were also not prepared for fully implemented online learning, as a significant number of them had no prior knowledge or experience with online learning platforms. Further, the cost of digital learning devices and accessories like smartphones, tablets, laptops, and internet bundles was beyond their estimated budget (Owusu-Fordjour et al., 2020).

Altogether, these reasons prompted the National Union of Ghanaian Students to boycott the government's plan to migrate face-to-face teaching and learning to a virtual environment. The student body urged the government to establish a well-thought-out framework before undertaking such an initiative. They worried about the hasty implementation and its potential to benefit only a small number of Ghanaian students (Sarpong et al., 2021). However, since there was no viable alternative to ensure the continuity of teaching and learning amid school closures, students' concerns were not taken seriously. Subsequently, online learning replaced traditional face-to-face learning for the continuity of educational activities.

How Students' Gender and Previous Knowledge Influence Their Usage of Online Platforms during COVID-19

In terms of self-efficacy, motivation, attitude, and performance, Yu and Deng (2022) report that there are often no appreciable gender variations in online learning outcomes. Yu's 2021 study, which found no discernible gender differences in online engagement and learning results, supports this. Similarly, research by Korlat et al. (2021) found no difference in the competence views of men and women in online learning, suggesting that both sexes had the same perceived levels of ability in online learning. However, in a collaborative online learning environment, male students showed more positive attitudes and outperformed female students in terms of attentiveness and

confidence, according to research by Almasri (2022). However, research by Korlat et al. (2021) found that women were more engaged in online learning than men. According to the study by Alghamdi et al. (2020), women demonstrated greater self-control than men when studying online. However, the survey by Fauzi and Khusuma (2020) revealed that men have more favorable opinions toward online participation than women. Women had greater persistence and engagement in online learning than men, according to research by Gharti (2023). Morante et al. (2017) found a similar situation, with female students participating and interacting with online learning materials more than male students.

Issues or Challenges Associated with Online Learning

Due to network issues and design defects, learning platforms may occasionally experience prolonged loading times or fail to load completely. Additionally, specific learning platforms make it difficult for students to download video lectures after a live session. When their internet connection is poor, they are unable to watch live video lectures. This also leads to incomplete live sessions and classes (Adzobu 2014; Sarvestani et al. 2019; Woodcock et al. 2015). When learning online, students with poor internet access often struggle to engage in live lectures and complete assignments on time. In online learning, poor internet also makes it difficult for students and professors to communicate (Omer et al., 2015). Another issue that students face when studying online is the lack of suitable tools (Sarvestani et al., 2019).

Gilbert (2015) asserts that students' inability to afford technology is the primary cause of their lack of access. Students who are unable to access course materials are limited in their potential to excel in the course, as access to pertinent course information is essential for a deeper understanding of the material. Users of online learning platforms who are new or inexperienced may also lack the clarity and communication skills

necessary to use the platform effectively. According to Gillett-Swan (2017), Adzobu (2014), and Omer et al. (2015), a situation like this might occur due to a lack of prior information. Once more, students who lack computer and tech skills typically do not profit from using online learning platforms (Sarvestani et al., 2019). Insufficient technical assistance for students also had a detrimental impact on their online learning experience. Students state that more efficient and effective online platform design, improved social presence on the platform, and trained technical staff who can assist them with specific e-learning issues are all necessary for a practical online experience (Sarvestani et al., 2019). According to the students in the Omer et al. (2015) study, they had only one technical support staff member available to them during their online learning experience, and they did not receive the necessary assistance when this staff member was unavailable.

A seamless online learning experience is not guaranteed when professors fail to provide the necessary pedagogical support to facilitate quick and effective interpersonal communication and feedback among students (Omer et al., 2015). Another problem for students in online learning, according to Grabinski et al. (2020), is the absence of efficient teacher-student communication. Students often miss the social and physical engagement that comes with attending a typical classroom and feel isolated when there is no physical contact between them and their professors (Sadeghi, 2019). Furthermore, the inability to communicate in person and utilize the audience's body language and nonverbal cues may be a hindrance during online presentations (Gillett-Swan, 2017). According to students in research by Cachero-Gonzalez et al. (2019), one of the main risks associated with online learning is that students may not receive the necessary encouragement to pursue their studies. In light of online examinations, some students also express that their

instructors and institutions have not been able to implement efficient evaluation techniques (Sarvestani et al., 2019).

To effectively complete the course, students must maintain their motivation, which can be challenging with online learning platforms due to the increased likelihood of distractions (Sadeghi, 2019). According to Gillett-Swan (2017) and Sarvestani et al. (2019), students experience disruptions from work and home activities in addition to online distractions, which causes them to miss live online sessions. It is challenging to work and take an online course, as it limits students' ability to fully and effectively participate in in-person classrooms and offline activities (Omer et al., 2015; Sarvestani et al., 2019). One of the challenges faced by online learners is effective time management (Grabinski et al., 2020). Lack of self-control causes online learners to not set aside enough time for assignments, which leads to late or subpar submissions, according to Grabinski et al. (2020).

Several studies have been conducted on the effectiveness of online learning and the challenges it presents. Among these studies is that of Fauzi and Khusuma (2020), who argue about the ineffectiveness of online education due to the associated difficulties. Muilenburg and Berge (2005), one of the earliest researchers to explore this subject, identified eight barriers or challenges to online learning. Their study highlighted the following key issues: (1) technical problems, (2) technical skills, (3) time and support for studies, (4) academic skills, (5) cost and access to internet connectivity, (6) learner motivation, (7) social interaction and (8) administrative issues. This study discusses the challenges associated with online learning under four main headings, as illustrated in Figure 1.

Figure 1

Schematic Presentation of Issues Associated with Online Learning



Technical issues

An essential element for the success of online learning is stable and high-speed internet connectivity. Thus, an erratic internet connection will constitute a stumbling block to practical online study. It is, therefore, not surprising that poor internet connectivity is constantly listed among the key challenges hindering the progress and use of online learning, especially in developing countries. For instance, Clarin and Baluyos (2022), identified poor internet connection as the main barrier to the successful implementation of online learning in the Philippines. Similarly, in Thailand, another developing country in Southeast Asia, poor internet connectivity was ranked among the leading challenges against the smooth facilitation of teaching and learning on e-learning platforms (Aroonsrimarakot et al., 2023). Poor internet connectivity has sometimes resulted in students' unwillingness to patronize online learning. A typical case of this was recorded in Malaysia, where students were reluctant to switch to online learning for teaching and learning during the pandemic. These students cited low internet access as

the main reason for their lack of enthusiasm for online studies (Ismail et al., 2020). In the West African country of Ghana, slow internet speeds were cited among the challenges students faced in online studies, alongside factors such as poor mobile network coverage, insufficient data, and high data costs (Atakorah et al., 2023).

Other crucial technical challenges or issues include access to computers/laptops, tablets/iPads, or sophisticated smartphones with the capacity to support the software applications or programs of e-learning platforms. It is worth acknowledging that current technological advancements make it possible to have electronic devices that support online learning. However, as per Haleem et al. (2022), students or persons from financially distressed backgrounds may find it challenging to purchase or own these devices for their online study.

Physical issues/challenges

The positive impacts of online learning on education cannot be downplayed. Online learning, since its inception, has been pivotal in expanding access to education. Nevertheless, despite the surrounding benefits, some health issues are linked to online learning. For instance, prolonged exposure to screens has emerged as a primary health concern associated with online learning. The life of students or people undergoing online learning is characterized by constant and long hours staring at screens of electronic devices, i.e. mobile phones and laptops. There is considerable evidence suggesting that prolonged screen time is a leading cause of intraocular pressure (Ha et al., 2018; Qudsiya et al., 2017; Zhuang et al., 2023). Other conditions, such as headaches, dry and irritated eyes, and blurred vision, have been linked to prolonged exposure to the screens of electronic devices (Alexander et al., 2020; Porcar et al., 2016).

On the other side, ergonomic factors have been associated with some physical health conditions emanating from long hours of online studies (Symanzik et al., 2023). Neck and back pains are common physical pains that students experience when they sit for long periods during online studies. This is evident in the report about the surge of lower back pain among students during the period of the pandemic (Hawamdeh et al., 2022). According to Kim et al. (2021) prolonged sitting in non-ergonomic conditions, that is, poor study setups or workstations, is primarily responsible for these physical health conditions among online learners.

Mental Issues

Despite its distinct benefits, such as offering flexibility, saving commuting time, and expanding accessibility to learners worldwide. Online learning comes with a host of challenges. One of such challenges is its toll on students' mental health. Based on the study of Torales et al. (2022), and Warner et al. (2020), Xu and Wang (2023) grouped mental problems into two main categories: technostress and online anxiety. They explained technostress as the stress that emanates from extensive exposure to e-learning platforms, whilst online anxiety was described as the mental stress that arises from consuming knowledge via the internet. Other online learning mental health-related issues include depression, emotional instability, burnout, and sleep disorders (Baltà-Salvador et al., 2021; Pelucio et al., 2022; Semsarian et al., 2021).

Interaction Issues

A major setback of online learning is the reduction or absence of face-to-face interaction between instructors and among students. This is in sharp contrast to traditional classroom settings, where students are presented with opportunities for real-time

discussions, peer-to-peer interactions, and group activities. Such an avenue fosters socialization and collaboration among learners. Conversely, in online environments, such avenues are limited, leading to a sense of isolation and loneliness among learners (Leal Filho et al., 2021). Thus, online learning may hinder the formation of meaningful relationships, as there is limited communication to foster trust among learners.

Role of Online Learning in Expanding Educational Access and Quality

The advent of technology has revolutionized every aspect of modern human society, including education. In recent years, distance and inadequate infrastructure have become less significant barriers to educational access, thanks to the rise of online education. Employing technological tools for teaching and learning has simplified education, allowing educational content to be accessed anywhere and at any time. A typical example is Khan Academy, edX and Coursera, which have users from across the globe, with the majority from developing countries (Hollands & Tirthali, 2014). The ease of learning, lifelong access to instructional materials, and affordability are among the key benefits of online learning. Furthermore, reference can be made to platforms such as open educational resources (OER) and Massive Open Online Courses (MOOCS), where quality educational content can be accessed at little or no cost (Yuan & Powell, 2013).

In addition to its ability to reach populations in underserved areas, online learning flexibility allows individuals with busy schedules to attain educational certificates without compromising their job roles. Asynchronous programs provide learners with the flexibility to manage their studies at their own pace. Online learning also gives inclusive support to people with disabilities. Current virtual learning platforms have been designed to have adjustable interfaces, screen readers and video captions (Burgstahler, 2020). For

instance, at the higher education level, online learning is reported to be more supportive for students with disabilities than in-person schooling (Reyes et al., 2023).

Although concerns have been raised regarding the quality of education obtained through online learning, with some authors asserting that theories with limited practical application characterize online learning, it is essential to note that recent digital learning tools incorporate components such as gamification and interactive simulations to enhance learning outcomes. According to Freeman et al. (2014), these integrated tools or software provide learners with the avenue to practically apply taught theories. For example, the use of virtual labs and periodic case studies, specifically in an online medical science program, was noted to enhance learners' reasoning capabilities (Cook et al., 2011). Furthermore, collaborative tools and discussion forums or platforms associated with specific e-learning tools facilitate collaborative learning among learners. Collaborative or social learning has been identified as a critical component of 21st-century learning design. This component is said to inculcate in learners improved communication and critical thinking skills (Anderson & Krathwohl, 2001).

The above merits associated with online learning highlight the role online learning could play in bridging the educational gaps in Ghana, a country with significant infrastructural challenges in the academic sector. A conscious effort to integrate online education into the educational scheme could go a long way in expanding educational access, particularly to the more remote communities in the country.

Post-pandemic Assessment of Online Learning in Ghana

Ghanaian researchers, like their global counterparts, have conducted studies to determine Ghanaian perceptions and attitudes towards online learning in the post-pandemic era. The objectives of most of these studies have been to compare students'

perceptions before, during and after the novel coronavirus pandemic. The current study aims to examine Ghana's online learning policy in relation to the post-pandemic online learning experience of Ghanaian tertiary students. By juxtaposing Ghana's online learning policy with students' experiences, as revealed by empirical studies, deductions can be made regarding whether the policies reflect the realities and expectations of the primary targets, students.

To achieve this, a brief narrative review was undertaken to synthesize information from studies on the post-COVID-19 online learning assessment by tertiary students in Ghana. The selection of relevant and related scholarly research was conducted using the following databases: Google Scholar (<https://scholar.google.com/>), Web of Science (<https://www.webofscience.com/wos/woscc/basic-search>), ACM Digital Library (<https://dl.acm.org/>), Science Direct (<https://www.sciencedirect.com/>), Springer Nature Link (<https://link.springer.com/>), IEEE Xplore[®] (<https://ieeexplore.ieee.org/Xplore/>), Scopus (<http://www.scopus.com>) and Engineering Village (<https://www.engineeringvillage.com/>). The core keywords and their synonyms used for the search process are given below:

- Online learning {digital learning, virtual learning, E-learning, digital education, distance education, online courses}
- Assessment {analysis, effectiveness, evaluation, performance, review}
- Post-COVID-19 {post-pandemic, post-coronavirus, post-SARS-CoV-2, after pandemic, after coronavirus, after COVID-19, after SARS-CoV-2}
- Tertiary students {university students, undergraduate students, postgraduate students, polytechnic students, college students, higher education students}

Upon identifying the core keywords and their synonyms, a search string was formulated employing the Boolean operators “AND” and “OR.” Thus, the following search strings were formulated:

- (“Post-COVID-19”) AND (“Online learning”) AND (“Ghana”)
- (“Post-pandemic”) AND (“Assessment”) AND (“Online learning”) AND (“Ghana”)
- (“Post-COVID-19” OR “Post Coronavirus”) AND (“Evaluation” OR “Assessment”) AND (“E-learning” OR “Virtual learning”) AND (“Ghanaian student” OR “Tertiary student”) AND (“Ghana”)
- (“Post-coronavirus” OR “Post-pandemic” OR “Post-SARS-CoV-2”) AND (“Impact” OR “Assessment” OR “Evaluation”) AND (“Online learning” OR “Virtual Learning” OR “E-learning”) and (“Ghanaian universities” OR “Ghanaian schools”)
- (“Post-COVID-19” OR “post-pandemic”) AND (“online learning” OR “e-learning” OR “distance education”) AND (“Ghana”)

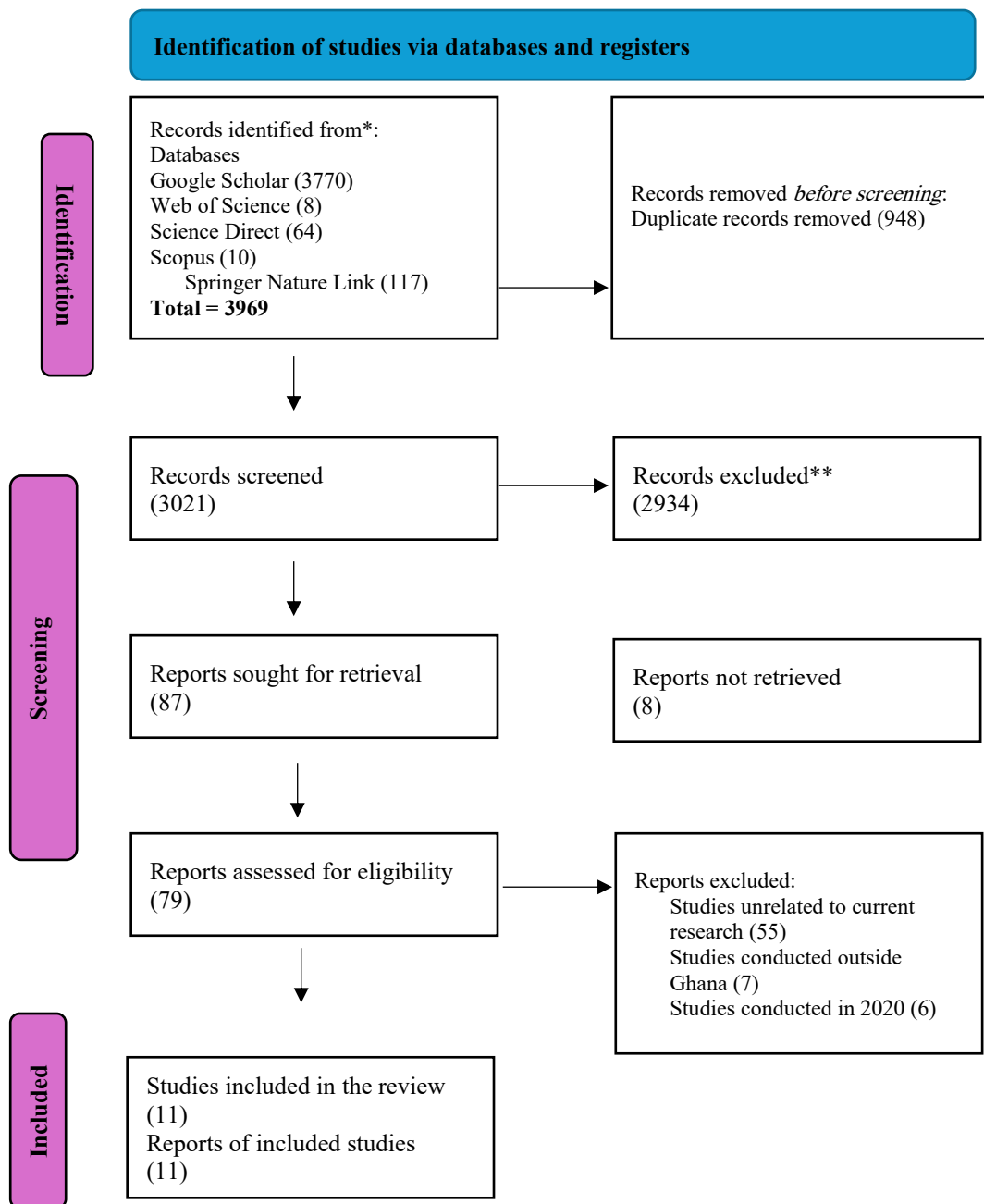
After the search, studies carried out outside Ghana and in languages other than English were excluded. Also, studies conducted before and during the pandemic were excluded. The exclusion and inclusion criteria adopted in the review are shown in Figure 2.

A total of 8 databases were utilized to search for the relevant articles. However, a total of 3,969 articles were retrieved from five databases (Google Scholar, Web of Science, ScienceDirect, Scopus, and Springer Nature Link) out of the eight databases. About 948 articles were excluded in the first phase of screening due to duplication. Also, 2934 were excluded because the scope of the research was irrelevant to the

current study. Eventually, 11 published research articles aligned with the current study were selected and utilized for the review.

Figure 2

Identification of Existing Studies and Research Gap Flow Chart (PRISMA)



Not only was it evident in these 11 studies that online learning was a valuable tool during the pandemic, but there was also a clarion call from all authors for its continued use post-pandemic. A typical example is the study by Adekanmbi et al. (2021) that sought to make a case for online learning as a means to expand access to education in the post-pandemic era. The authors acknowledged the role that technological tools play in continuous teaching and learning amid the pandemic crisis. They noted an increase in enrollment in online courses during and after the pandemic, compared to the onset of the COVID-19 pandemic. They supported this with the scenario where the government of Ghana, through the Ghana Library Authority, made it possible for approximately 1,000 Ghanaians to enroll in Coursera courses with scholarships. The study offers valuable insights into the potential of technological tools in enhancing educational access. However, it lacks an empirical basis for providing a comprehensive understanding of the factors that accelerate interest in online learning after the pandemic. Nonetheless, the study highlights an important factor for consideration when formulating a national policy for online education. That is, partnerships and collaboration of all government agencies and/or institutions, as well as other stakeholders.

Similarly, Dei (2024) conducted a qualitative study to determine the role of online learning in promoting quality education post-pandemic. The study purposively sampled registrars from 25 accredited institutions in Ghana and solicited information about how the pandemic disrupted teaching and learning within their respective institutions. Based on the feedback from the respondents, namely the registrars, the author presented a strong

argument for blended learning, which is the integration of online learning to circumvent the identified challenges. While contributing to discussions about the prospects of online learning in advancing quality education in Ghana, the study overlooked the perspectives of students. A similar observation can be made regarding the research by Dramani et al. (2022), which employed quantitative methods to ascertain the willingness of the teaching staff at the University for Development Studies to continue using e-learning platforms in the post-pandemic era. Nonetheless, both studies provide important insights into the deliberate efforts of university management in sustaining online learning post-pandemic.

Conversely, Segbenya and MensahMinadzi (2023) included students' perspectives on online learning post-COVID-19 in their study. The study primarily examined the application of the blended learning model in distance education among postgraduate students following the novel coronavirus pandemic. Specifically, it explored the practical implications for curriculum implementers and human resource managers, highlighting the challenges encountered by students in both the online and traditional face-to-face learning environments. The authors recognize the limitations in the methodological approach and recommend future experiments to explore the mixed-method approaches. Nevertheless, the authors did not fail to make a strong argument for the implication of online learning alongside face-to-face learning, herein referred to as blended learning, to balance the challenges that exist between the two methods. Furthermore, the authors strongly advocate for a well-defined policy framework to support effective distance education in Ghana.

Unlike the research by Segbenya and MensahMinadzi (2023) that targeted postgraduate students as the study's population, Ansah et al. (2023) focused on unraveling the post-COVID-19 experience of online learning platforms by undergraduate students in

one region of Ghana. This study sets the tone for discussions on the perspectives of undergraduate students regarding online learning after the pandemic. Notwithstanding, the study was conducted in only two public tertiary educational institutions in the Ashanti Region of Ghana. Thus, it is challenging to apply the results to other populations or contexts. The foregoing conclusion is equally applicable to the study by Nkrumah et al. (2024), which assessed the post-COVID-19 era experience of e-learning among 291 undergraduate and 90 postgraduate students at the University of Cape Coast in the Central region of Ghana. The interesting revelation that emerged from Ansah et al.'s (2023) study is that approximately 37% and 55% of the participating students supported the continuous use of online learning and blended learning, respectively. Not only do the study's findings align with existing literature, but they also highlight key factors to consider for a national policy on online education.

CHAPTER 3

METHODOLOGY

This section outlines the methodological approach used for the current study, which aims to review Ghana's online learning policy and explore how it can help address the challenges facing its tertiary institutions, especially public ones. The chapter is organised into sections such as research design, data selection process, and data analysis.

Research design

The study employed a qualitative policy review design, focusing on policies related to Ghana's online learning at the tertiary level as a case study. The qualitative approach is suitable for this type of review because it enables researchers to understand the reasons behind policy decisions (Ernst, 2019). Additionally, it supports analysis and deduction about how policies operate within a specific context. In this study, data from government websites, international agency repositories, and academic research databases were utilised to answer research questions. The information gathered was evaluated based on its relevance (i.e., role in expanding access to education) and the challenges associated with its implementation.

Data sources and selection process

Identification of sources

Data was collected from multiple sources through a systematic search of databases, including institutional repositories and academic sources. Institutional repositories examined include the websites of the Ghana Education Service (GES), Ghana Tertiary Education Commission (GTEC), and the Ministry of Education (MoE).

Additionally, the World Bank Open Knowledge Repository and the UNESCO digital library, which provide information on global education, were used.

Search strategy

For academic sources, data were obtained from Google Scholar, Web of Science, ACM Digital Library, ScienceDirect, Springer Nature Link, IEEE Xplore®, Scopus, and Engineering Village. The search strings used included the Boolean operators: (“Access” OR “equity” OR “challenges”) AND (“e-learning” OR “online learning” OR “ICT in education”) AND (“Ghanaian universities” OR “Ghanaian tertiary”) AND (“Framework” OR “policy” OR “post-COVID-19”). Manual searches of reference lists and grey literature (e.g., government reports) were also conducted. In total, approximately 512 articles or reports were retrieved.

Screening and Eligibility

Screening

A modified version of the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) framework was employed to ensure a comprehensive collection of relevant materials. PRISMA provides a structured approach for identifying, screening, and including relevant materials in a reproducible manner. To enhance this process, the SPIDER framework was integrated into the PRISMA framework. SPIDER stands for Sample (i.e., information sources), Phenomenon of Interest (i.e., online learning policies), Design (i.e., evaluation or review), Evaluation (i.e., impact of the policies), and Research Type (i.e., qualitative approach).

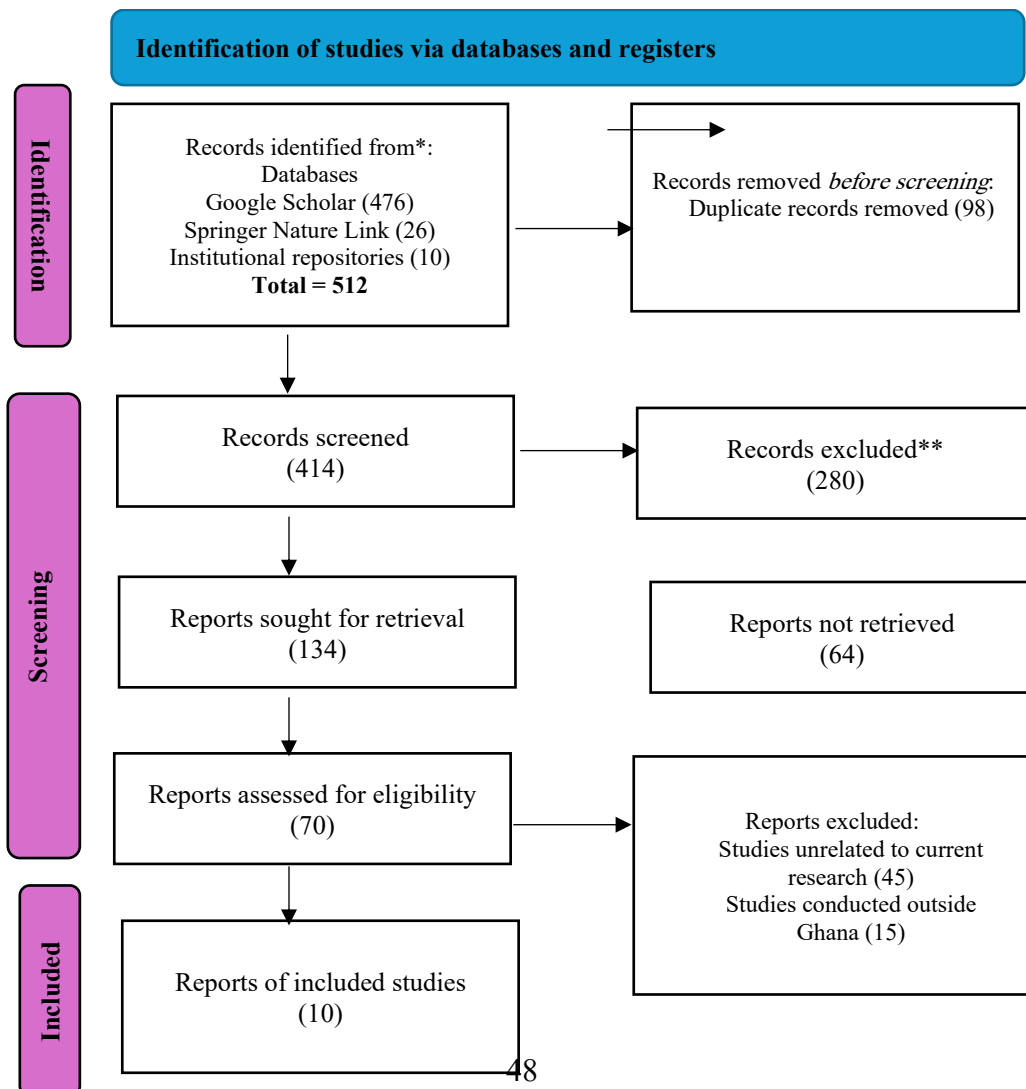
Out of the 512 documents, a total of 502 were excluded due to duplication (n=98) and irrelevance (n=404), as they fell outside the scope of the current study.

Eligibility

A total of 70 documents were thoroughly assessed and analyzed based on their policy formulation and/or implementation. Out of this, 60 were excluded for the following reasons: studies unrelated to the objectives of the current research (n=45) and studies conducted outside Ghana (n=15). Finally, 10 documents (five policy documents and five academic studies) were selected for inclusion in the study. The remaining articles and reports were excluded because they were not directly related to the focus of this study (Figure 3).

Figure 3

Identification of Policy Documents Flow Chart (PRISMA)



Analytical framework and data analysis

The thematic analysis, as proposed by Braun and Clarke (2006) was operationalized to review the 10 eligible and selected policy-related documents. First, all 10 selected documents were read repeatedly for familiarization while noting down keywords and impressions. Next was an open coding phase, where codes were generated (NVivo computer software) for the most frequently occurring words or terms. Essentially, each of the selected policy documents was coded around these dimensions. The coding elements were synthesized from the research questions by identifying recurring themes or words in the policy documents. The most frequently used words included access, inclusivity, infrastructure, ICT skills, quality assurance, funding avenues, and sustainability. Then, for systematic interpretation, the Walt and Gilson's (1994) policy triangle framework was adopted. This framework allows policies to be assessed based on four key dimensions, namely:

1. Content: what the policy is about (goals and/or strategies)
2. Context: the circumstances (socio-political, economic) underpinning or necessitating the formulation of the policy.
3. Actors: who are the stakeholders involved in the design and implementation of the policy
4. Process: denotes the stages of conception, formation and implementation of the policy.

Also, the criteria suggested by Lincoln et al. (1985) was adopted to strengthen methodological rigour. The criteria are hinged on four key elements: credibility, dependability, confirmability and transferability. Figure 4 is a visualization of a word cloud that concludes the analytical framework and data analysis.

Figure 4

Visual Presentation of the Frequently Occurring Terms. The More Regularly a Term was Used, the Larger it Appeared.



CHAPTER 4

RESULTS

This section outlines the results of the policy review, synthesised from the ten identified policy-related documents that chronicle the emergence of online learning initiatives in Ghana. These policy-related documents were selected based on their relevance to answering the study's research questions and their effectiveness in offering solutions to the challenges prevailing in Ghana's tertiary educational institutions in the post-pandemic era. The results have been presented in a manner that corresponds to the research questions, with interpretations guided by the Innovation Diffusion Theory, as proposed by Rogers (2003). However, the detailed understanding and implications of these results are discussed in the next chapter.

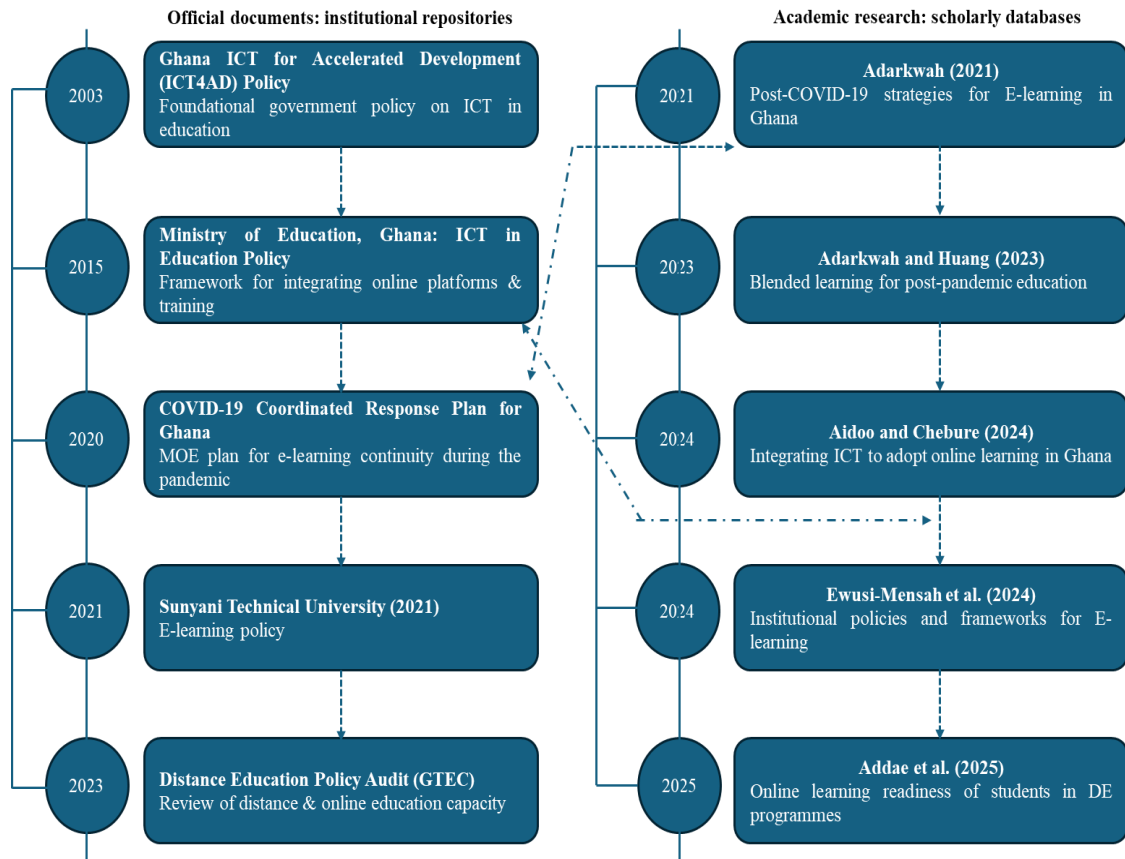
Retrieval of Information

Overall, 512 policy documents, reports, and articles were sourced from institutional repositories and databases (Figure 3). After removing duplicates ($n = 98$), 414 records remained. Further screening excluded 380 records that did not address the main subject, which is online learning in Ghana. Additionally, 60 of the remaining texts were excluded at the eligibility stage because they focused on global topics with no Ghana-specific content. Ultimately, only ten policy-related documents were included and utilised in the final review.

The SPIDER framework, incorporated into PRISMA, identified these documents (Figure 4) as the most relevant policy materials related to the current study.

Figure 5

Policy-Related Documents included in the Current Study



Results by Research Questions

Research Question 1: What is Ghana’s current policy framework on online learning?

The findings indicate that Ghana currently lacks a comprehensive national policy on online learning. Instead, the country’s online learning components are embedded within broader ICT and educational policy frameworks. Nonetheless, Ghana’s online learning policy framework has shifted from the extensive, multi-sectoral focus of the ICT4AD policy (2003), which initiated discussions on introducing ICT across education, to a more targeted, tertiary-specific policy, the Distance Education Policy Audit (2023). It is worth noting that other intermediary policies have developed between the policies mentioned above. Additionally, the emergence of scholarly studies has contributed to

shaping the discussion on online learning in Ghana by providing perspectives from stakeholders. Therefore, there has been significant progress in frameworks, moving from dialogue or planning to a more practical approach, despite weaknesses in implementation. This supports the findings in Chapter 2 of the current study, which view online learning as a tool to address some of Ghana's educational challenges, even though early policies fall short of meeting modern digital demands.

Research Question 2: How does Ghana's existing online learning policy address challenges within tertiary education?

Each of the selected documents acknowledges the challenges in the Ghanaian educational sector and offers recommendations to address these challenges. For instance, the ICT4AD policy emphasises the potential of ICT to expand access to education by limiting the need for physical space. Thus, the policy has the potential to address the overcrowding issues characterizing most public universities in Ghana due to inadequate facilities (e.g. lecture halls). However, the policy lacks metrics for university implementation because basic education was the target or focus of the policy. The Ghana Tertiary Education Commission (GTEC), recognizing the massive infrastructural deficits in Ghana's public tertiary educational institutions, builds on the ICT4AD policy as a means to expand access to tertiary education. The commission, in its audit report, not only recommended a connectivity upgrade to close the digital divide but also emphasized the institutionalization of quality assurance to safeguard accessibility. The COVID-19 emergency response plan undoubtedly demonstrated how technology can be relied upon to address issues such as overcrowded classrooms and dormitories. Nevertheless, this policy was weak in terms of rural equity, as chronicled in scholarly articles (Adarkwah, 2021; Adarkwah & Huang, 2023; Aidoo & Chebure, 2024; Kevor & Asiedu, 2010).

Research Question 3: What practical recommendations are documented within existing policies to improve access to online learning?

All policy and policy-related documents contain significant recommendations for enhancing online learning. These include developing and expanding ICT infrastructure to facilitate access to digital education and utilizing learning management systems, such as Sakai and Moodle, in tertiary institutions. Furthermore, as part of Ghana's digital transformation agenda, these policies suggest that e-learning should be implemented across all educational levels, particularly at the tertiary stage, to advance this agenda. There are also practical recommendations for training in ICT tools, hybrids for implementation and subsidies for equity (Aidoo & Chebure, 2024). GTEC 's policy strongly advocates for the institutionalization of quality frameworks. This is to ensure that the quality of Ghana's online learning meets global standards. The E-learning policy, as drafted by the Sunyani Technical University, supports the idea of a hybrid system, that is, blended learning, to advance access to tertiary education. Additionally, the policy supports training and equipping institutional staff who will be at the forefront of implementation with the necessary technological skills.

Policy evaluation matrix of eligible/selected policy documents

An evaluation matrix of eligible policy documents, based on the current study's research questions and objectives, reveals a series of fragmented and inadequate policy strategies for online learning in Ghana's tertiary education (Table 1). The evaluation matrix considered only 4 of the 10 selected documents. These four documents are directly from institutions/agencies of the Ghanaian government and are clothed with the authority to effect or implement these policies.

It was evident that while the country acknowledges the essential role of ICT in education, efforts to tailor policy to the needs of tertiary education began only recently. Nevertheless, these policies do not fully address the challenges of online learning. This could stem from the initial focus on broad ICT goals without considering specific outcomes. Moreover, it appears that these policies are more urban-centred, lacking equity provisions for rural inhabitants, as recorded by the GTEC policy audit. The lack of targeted rural investment reflects socio-economic disparities that hamper the overall goal of digital education (Adarkwah, 2021).

Table 1

Policy Evaluation Matrix of Eligible/Selected Policy Documents

Evaluation metric	ICT4AD Policy	ICT Education Policy	in COVID-19 Response Plan	Distance Education Policy
Well-structured framework for online learning	✘	0	✘	✓
Tertiary-specific framework	✘	0	✘	✓
Tertiary-level infrastructural development (e.g. ICT facilities, internet connectivity)	0	0	✘	✓

Professional				
development and ICT	0	✓	0	✓
training for faculty				
members				
Students'				
preparedness and ICT	0	✓	0	✓
literacy				
Technology-mediated	0	✓	✓	✓
pedagogy				
Equity and inclusive	x	0	0	0
provisions				
Oversight and				
appraisals	x	0	x	✓
frameworks				
Long-term	x	0	x	0
sustainability				
Adaptive policy	x	x	0	✓
framework				
Ties to national				
development	✓	✓	✓	✓
strategies				
Stakeholder	x	0	0	✓
participation				

Availability	of				
funding	for	0	0	✘	0
implementation					
Comprehensive					
rollout plan		0	✓	0	✓
Quality assurance					
frameworks		✘	✘	✘	✘

Legend: ✓ = Clearly addressed; 0 = Partially addressed; ✘ = Not addressed

CHAPTER 5

DISCUSSION AND CONCLUSION

Discussion of the Findings

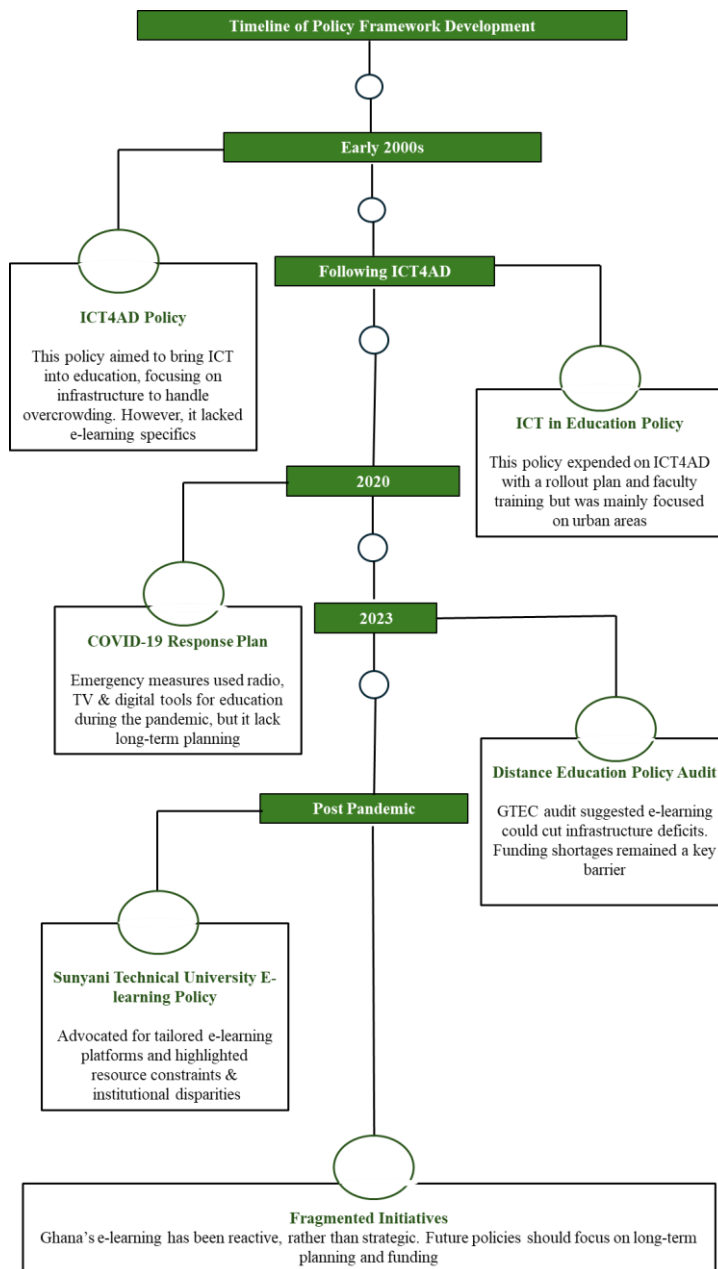
Online learning is on the rise in the post-pandemic era, shaping global education and offering innovative solutions to challenges linked with traditional face-to-face teaching. Through online learning, barriers such as distance and rigid schedules are no longer obstructions to learning, creating unprecedented access to education. Furthermore, online learning has enhanced learner engagement through the use of digital tools and increased institutional cost efficiency. Currently, Singapore stands out as a country that has distinguished itself on the global stage, achieving a 25% boost in digital literacy through its Singapore Learning Space (SLS) initiative in the post-pandemic era. In Europe, Finland is notable for its swift transition to distance education, with around 85% of higher education students motivated by the advantages of self-paced learning. In Africa, Kenya's efforts to implement e-learning at the tertiary level have resulted in a 30% reduction in government expenditure, a 20% increase in enrollment, and broader rural access to higher education. By comparison, South Africa's blended model has helped address digital inequality and improved retention in public universities by 15%. These global examples should serve as benchmarks for Ghana, a country whose tertiary institutions face numerous issues, including overcrowding, a high teacher-to-student ratio, and digital divides. Although Ghana's online learning framework has developed considerably to tackle some of these challenges, it remains hampered by implementation issues. The following paragraphs of this section critically analyze the study's findings within the larger academic and policy context.

Ghana's current policy framework on online learning

Ghana currently lacks a dedicated national policy for online learning and instead relies on broader ICT policies, particularly the ICT4AD framework. While this policy aims to integrate ICT into education and address around 30% of infrastructure challenges, it does not include specific e-learning metrics. In contrast, Singapore's SLS has achieved a remarkable 95% adoption rate due to targeted investments. Subsequent initiatives, such as the ICT in Education policy, have established a comprehensive rollout plan linked to national strategies, with a focus on faculty training to help bridge the digital divide. However, these policies primarily target urban areas, leaving rural institutions overlooked. Conversely, Kenya's approach to e-learning explicitly benefits rural schools. During the pandemic, the COVID-19 Emergency Response Plan aimed to leverage digital tools for education, but it highlighted a significant shortfall in continuity necessary for sustaining long-term success once the immediate crisis had passed. In contrast, India's SWAYAM initiative stands out as an effective educational programme that continued to operate well after the pandemic. Additionally, insights from the Distance Education Policy Audit by GTEC suggest that Ghana has a promising opportunity. With the implementation of a robust e-learning framework, the country could reduce its infrastructure deficits by 50% and bridge the digital divide by 45%. This emphasises the importance of adopting long-term strategies for digital education in various contexts. Despite these promising outcomes, funding constraints continue to pose significant barriers to the implementation of online learning, as highlighted by the e-learning policy from Sunyani Technical University. Overall, e-learning initiatives in Ghana have tended to be reactive and fragmented, often driven by crises rather than by strategic long-term planning (Adarkwah, 2021), as noted in Figure 6.

Figure 6

Timeline for Online Learning Policy in Ghana



Addressing challenges in tertiary education through policy

All ten reviewed policies and policy-related documents noted and highlighted the perennial challenges in Ghana's tertiary-cycle education. The ICT4AD policy projected

ICT as the means to expand access to education; however, the policy's focus was more tilted to basic education and hence fell short in terms of the mechanisms to be implemented at the tertiary level. Following this, recent attempts, such as the GTEC audit report, sought to close this gap by proposing infrastructural upgrades and the operationalization of quality assurance mechanisms.

These findings corroborate earlier research. For example, Adarkwah (2021) chronicled the challenges and barriers to the successful implementation of online learning in Ghana. The study employed the qualitative method with a narrative inquiry approach to solicit the views of students about online education in Ghana. The primary focus of the study was to integrate ICT in education to benefit students in poor rural and urban areas. Clearly, the author identified how inhabitants in such places are often neglected in government interventions and policies. Kevor and Asiedu (2010) listed Ghana's infrastructural deficit as one of the leading barriers to ICT integration.

From the viewpoint of Innovation Diffusion Theory, Ghana exhibits a significant level of awareness regarding digital innovations; however, it encounters challenges during the implementation phase due to various contextual factors, including infrastructure limitations, affordability issues, and a shortage of skilled human resources. This observation aligns with global research on digital education in low- and middle-income nations, highlighting that ambitious policy goals often fall short without strategic investments in rural areas and adequate training for educators (Czerniewicz et al., 2020; Raabu, 2025).

In a nutshell, Ghanaian policies accurately recognize the pertinent challenges; yet they fail to offer comprehensive solutions, especially in tackling inequalities. This study

emphasizes the importance of equity-focused strategies to ensure that digital education does not deepen existing socio-economic disparities.

Practical recommendations from identified policies and policy-related documents

Again, all ten identified and eligible documents have practical recommendations for advancing online learning in Ghana's tertiary institutions. It is worth noting that while all the documents acknowledge the transformative impact of online learning in education, the focus and extent of the recommendations differ significantly, highlighting the priorities of the issuing institutions and the period in which they were drafted.

The ICT4AD policy (2003) provided one of the earliest blueprints for ICT integration in Ghana. It emphasized the use of technology to expand educational access and reduce reliance on physical infrastructure. However, its recommendations were broad and primarily focused on basic education, with limited attention to tertiary-level implementation. This aligns with (Kevor & Asiedu, 2010), who criticized earlier ICT policies for overlooking higher education's distinct needs despite the increasing enrolment pressures. In Rogers' terms, the ICT4AD policy represents the knowledge stage of innovation diffusion, creating awareness but not yet embedding clear adoption strategies.

Building on this, the ICT in Education Policy (2008/2009) moved towards mainstreaming ICT across teaching, learning, and administration. It highlighted the need for professional development of teachers and the integration of ICT into curricula to foster students' digital literacy. Yet, like its predecessor, its recommendations remained only partially implemented. As Adarkwah (2021) notes, Ghanaian policies often struggle with the implementation stage due to weak funding commitments and a lack of institutional ownership.

The COVID-19 Emergency Response Plan (2020) marked a turning point, making explicit recommendations for utilizing digital platforms to sustain academic continuity during the pandemic. Universities were encouraged to adopt virtual classrooms, online assessments, and e-resources. These recommendations demonstrated the potential of technology to alleviate challenges such as overcrowded lecture halls. However, the policy was reactive and temporary, lacking provisions for sustainability or rural access. This mirrors the findings of (Adarkwah & Huang, 2023), who argued that Ghana's digital shift during COVID-19 was necessary but uneven, exposing deep infrastructural divides. More recent policies, particularly the Distance Education Policy (2023) led by the Ghana Tertiary Education Commission (GTEC), presented more targeted recommendations. These included upgrading institutional ICT infrastructure, establishing quality assurance frameworks, and training faculty in digital pedagogy. Notably, the audit emphasized blended learning as a sustainable model and highlighted the need to reduce the rural–urban digital divide. Although ambitious, the policy's recommendations lacked clear resource allocation strategies, raising questions about long-term sustainability. This reflects Aidoo and Chebure's (2024) conclusion that Ghana's policy responses are often well-intentioned but hampered by inadequate financial planning.

At the institutional level, the Sunyani Technical University (STU) draft e-learning policy (2021) offered practical recommendations tailored to implementation realities. These included standardizing the use of learning management systems such as Moodle and Sakai, equipping faculty with ICT skills, and adopting hybrid learning models. Compared to national frameworks, STU's approach was more pragmatic, reflecting Rogers' trial and adoption stage, where innovations are tested within specific institutional contexts before being widely diffused.

In parallel, scholarly studies (Adarkwah, 2021; Adarkwah & Huang, 2023; Aidoo & Chebure, 2024) have reinforced many of these recommendations, particularly the call for rural ICT investment, subsidized internet packages, and ongoing ICT literacy training. These studies emphasize that without equity-focused interventions, online learning may reinforce rather than reduce educational disparities.

Taken together, the recommendations across documents reveal both convergence and areas of divergence. There is a broad consensus on the need for the development of ICT infrastructure, faculty training, and the adoption of blended learning models. However, critical areas such as quality assurance, long-term sustainability, and rural access remain inconsistently addressed. Compared to international experiences, such as South Africa's structured national e-learning frameworks (Czerniewicz et al., 2020) or Malaysia's comprehensive online learning strategies (Meng Hong, 2024), Ghana's recommendations appear fragmented and reactive.

This analysis suggests that while Ghana has made significant strides toward recognizing online learning as a solution to tertiary education challenges, the diffusion of these recommendations into practice remains uneven. Without a unified national framework and adequate resource commitments, innovations risk remaining at the experimental stage rather than becoming institutionalized and sustainable.

Implications for Policy and Practice

The results suggest a transformative approach for higher education in Ghana, leveraging insights from global successes to address local needs and gaps. The moderate advancements in infrastructure highlighted in the Distance Audit (2023) and the Sunyani Policy (2021) indicate a need for decentralization to empower educational institutions. This signals a shift from stringent top-down directives to more localized governance. The

Ministry of Education (MoE) may consider dedicating 20% of the 2026 budget, approximately GHS 500 million, to establish 50 rural ICT hubs by 2028, aiming to bridge the digital gap by 15%. This initiative draws inspiration from Kenya's enrollment successes (Muuro et al., 2014). This initiative would tackle the urban-centric focus evident in earlier initiatives like ICT4AD, which prioritized funding for urban areas, as noted in various studies on African policies (Walt & Gilson, 1994).

In practical terms, institutions could embrace the hybrid models proposed by Sunyani, incorporating iCampus tools from the ICT in Education initiative (2015), which could effectively reduce student-to-faculty ratios by 20%, consistent with the advantages of blended learning (Hrastinski, 2019). The ongoing issues of overcrowded classrooms and high student ratios, alongside ICT4AD's limited 10% effectiveness and the short-term benefits of the COVID-19 Plan, highlight the urgent need for scalable hybrid solutions. (Aidoo & Chebure, 2024) highlight a 25% gap in faculty training, suggesting that a national initiative to train 5,000 educators over two years could alleviate classroom pressures by 20%, like the literacy advancements seen in Singapore (Ministry of Education Singapore, 2023).

Tools developed through the COVID-19 Plan could evolve into a sustainable system through partnerships with telecom companies, potentially reducing costs by 30% similar to Kenya's approach (Muuro et al., 2014) and servicing an additional 30% of students by 2028. In terms of equity, Adarkwah (2021) and (Addae et al., 2025) highlight barriers faced by 60% of nontraditional learners; offering subsidies for 1GB of monthly data could benefit 100,000 students, thus decreasing exclusion by 25%, in line with South Africa's student retention strategies (Yakobi & Yakobi, 2025). Establishing mentorship programs for 200 learners per institution could enhance retention by 10%, addressing

mental health issues, in contrast to the isolation challenges noted in Finland (Rimpelä et al., 2021).

A centralized entity might be responsible for quarterly progress monitoring to mitigate coordination challenges (Walt & Gilson, 1994b), which could help cultivate a knowledge economy with 20% more skilled graduates, as envisioned in ICT4AD. Achieving success will depend on strong political commitment and collaborative efforts, which differ from the structural obstacles encountered in India (Kapasias et al., 2020).

Conclusion

Overall, the integration of policy recommendations with previous scholarship shows that Ghana has advanced from broad ICT discussions (ICT4AD) to more practical, tertiary-focused strategies (GTEC audit, STU draft). Nonetheless, weaknesses in equity, quality assurance, and sustainability persist, aligning with earlier critiques in the literature. Using Innovation Diffusion Theory, Ghana's trajectory appears to shift from awareness and persuasion towards trial, yet progress at the stages of implementation and confirmation remains stalled. This indicates that while the nation recognizes the transformative potential of online learning, without a cohesive national policy, equity-based infrastructure investment, and quality assurance frameworks, adoption will continue to be fragmented and uneven.

Limitations of the Study

While this study offers valuable insights into online learning policy for Ghana's tertiary education, it is not without its limitations. Firstly, the range of available and current data was relatively narrow. Out of numerous documents reviewed, only five policy papers and five scholarly articles met the inclusion criteria. Although this small

dataset was carefully selected, it may not fully represent the broad spectrum of policies, institutional frameworks, and academic viewpoints that shape online learning in Ghana's tertiary education system. The limited number of policy documents mainly results from the restricted publication and access to official records from some government agencies and higher education institutions. Therefore, policy developments or strategic changes made after the COVID-19 pandemic might have been overlooked in this analysis. The same applies to the limited pool of peer-reviewed articles, most of which focus specifically on Ghana's post-pandemic educational context, thereby restricting the broad applicability of the findings to other regions or national settings. Additionally, this research used only document analysis as its methodological approach. Although this method is effective for policy evaluation, it lacks the human element, the voices, experiences, and perceptions of those directly impacted by online learning policies. The absence of perspectives from students, lecturers, and policymakers creates a gap that future research could address through mixed-method designs incorporating interviews, surveys, and content analysis. Despite these limitations, they do not diminish the significance of this study. Instead, they emphasize the need for ongoing research into Ghana's shifting online education landscape. Despite its limited scope, this work highlights significant policy trends, laying a foundation for further academic discussion and practical reforms aimed at strengthening tertiary education in the post-COVID-19 era.

Recommendations

The findings of this study show that while Ghana's online learning policy framework has made moderate progress in addressing the long-standing challenges of tertiary education, significant gaps remain. Issues such as infrastructure, equity, and

policy implementation continue to hinder the full development of an inclusive digital learning ecosystem. However, these gaps also present opportunities for transformative action. Drawing on both the national policy review and global best practices, the following recommendations propose strategic interventions to strengthen Ghana's post-COVID-19 online education landscape.

The first step towards sustainable progress involves decentralization. Tertiary institutions should be empowered to design and implement e-learning strategies suited to their local contexts. The Sunyani E-learning Policy (2021) demonstrated that such localized efforts would be relevant in addressing effectively the infrastructural deficiencies. Building on this, the Ministry of Education (MoE) could allocate a significant percentage of the national budget to the education sector to establish a substantial number of rural ICT hubs across the country by 2030. This investment would help narrow the urban-rural digital divide, similar to Kenya's 20% rise in tertiary enrolment following mobile-based learning initiatives (Muuro et al., 2014).

The second recommendation is to expand hybrid learning models. Overcrowded lecture halls and high student-lecturer ratios, averaging 50:1 in Ghana's public universities, warrant urgent attention. Expanding hybrid learning models offers a practical solution. A nationwide training programme for educators in digital pedagogy by 2028 could help close the current 25% training gap reported by Aidoo and Chebure (2024). If effectively executed, this initiative may reduce in-person teaching burdens by at least 25%, following Singapore's example, where 95% of teaching shifted to digital platforms, transforming classroom dynamics. Universities could further incorporate iCampus and similar technologies to deliver up to 40% of courses virtually, enhancing flexibility and resilience (Moore & Diehl, 2018).

The third recommendation is to improve equity through targeted subsidies. Equity remains the core of sustainable online education. About 60% of non-traditional learners in Ghana face barriers to access (Addae et al., 2025). To bridge this gap, partnerships with telecommunications companies like MTN could offer students 10 GB of monthly data subsidies, which could potentially reduce digital exclusion. South Africa's experience, where data support improved student retention by 15% (Du Plessis, 2022), demonstrates the viability of this approach. Complementary mentorship programmes could further increase retention, while also addressing mental health challenges often reported among online learners (Adarkwah, 2021).

Finally, the sustainability of these initiatives depends on effective oversight. A centralized coordinating body should be established to supervise policy implementation and outcomes quarterly. Such a structure would address the coordination gaps identified in Ghana's COVID-19 Education Response Plan (2020) and prevent inefficiencies that have hampered similar efforts in countries such as India (Kapasias et al., 2020). By institutionalizing emergency-driven digital tools into permanent systems, this body could extend the benefits of online learning to an additional 30% of tertiary students by 2028, consistent with the governance principles outlined by Walt and Gilson (1994).

When executed effectively, these recommendations could reposition Ghana's tertiary education system as a model of resilience and inclusivity in the digital age. A strengthened online learning framework, rooted in equity, innovation, and evidence-based policy, would not only close existing gaps but also bring the nation closer to the vision of a knowledge-driven economy outlined in the ICT4AD Policy (2003).

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