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Evaluating the Impact of Online Teaching Resources in Higher Education During the COVID-19 Pandemic

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ABSTRACT

The COVID-19 pandemic significantly disrupted traditional teaching and learning processes in higher education, necessitating the rapid adoption of online instructional delivery resources. This study evaluates the impact of online teaching resources on instructional delivery among tutors in Colleges of Education in Northern Ghana during the COVID-19 pandemic. The study employed a descriptive survey design, with data collected from 100 tutors selected through purposive sampling across ten Colleges of Education. Data were gathered using a structured questionnaire administered and analyzed using descriptive statistics. The findings revealed that several online instructional resources were available to tutors during the pandemic, with Zoom (98%), Telegram (90%), Microsoft Teams (85%) and Google Classroom (60%) being the most commonly used platforms. Tutors utilized these resources primarily for delivering online lectures, sharing course materials, conducting e-assessments, providing feedback to students and completing course outlines during school closures. The results further indicated that the use of online teaching resources positively influenced instructional delivery by enhancing flexibility in teaching, improving tutors' digital competencies, facilitating collaborative learning and ensuring the continuity of academic activities. The study concludes that online instructional delivery resources played a critical role in sustaining teaching and learning during the pandemic and recommends increased institutional support and continuous professional development for tutors to enhance effective integration of digital technologies in higher education.

INTRODUCTION

The COVID-19 pandemic caused an unprecedented disruption to educational systems worldwide. As governments implemented lockdowns and social-distancing measures to curb the spread of the virus, educational institutions were forced to suspend face-to-face teaching and rapidly transition to online modes of instruction. This abrupt shift significantly altered traditional teaching practices and compelled institutions and instructors to rely heavily on digital technologies and online instructional resources to sustain academic activities. Across the globe, higher education institutions adopted various online platforms, learning management systems and digital communication tools to ensure continuity in teaching and learning during the crisis (Pokhrel & Chhetri, 2021).

Online teaching resources including video conferencing platforms, digital learning management systems, multimedia instructional materials and collaborative online tools became central to the delivery of education during the pandemic. These resources enabled instructors to communicate with students, share learning materials, facilitate discussions and assess learning outcomes remotely. Research indicates that online learning became one of the most viable alternatives to traditional classroom instruction because it allows teaching and learning to occur independent of time and location constraints (Li, 2023).

Despite the rapid expansion of online education during

the pandemic, the effectiveness of online instructional delivery remains an important area of scholarly inquiry. Many educators had limited prior experience with fully online teaching and the emergency transition required them to quickly adapt their teaching strategies and instructional approaches. Mishra *et al.* (2020) observed that the pandemic created a sudden transformation in teaching and learning practices, forcing universities to explore new methods of delivering instruction through virtual platforms and digital tools. This shift raised questions about how effectively these resources supported teaching practices and whether they enhanced or constrained the quality of instruction.

Emerging studies suggest that the use of online teaching resources during the pandemic had mixed outcomes. On the one hand, digital platforms enabled the continuation of academic activities and provided flexible learning opportunities for both instructors and students. Some studies reported improvements in attendance, communication and access to learning materials when online platforms were used effectively (Essiam, 2024). On the other hand, challenges such as limited digital literacy, technological constraints, unstable internet connectivity and reduced interaction between instructors and students affected the overall teaching and learning experience.

Furthermore, research has highlighted that the adoption of online instructional resources during COVID-19 significantly influenced teaching practices in higher education institutions. For instance, Adzovie (2022)

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found that the pandemic accelerated the adoption of e-learning technologies and strengthened the integration of digital tools in higher education teaching processes. This suggests that online instructional resources not only supported emergency remote teaching but also contributed to broader transformations in instructional methods and pedagogical approaches.

Although numerous studies have explored online learning during the pandemic, much of the literature has focused primarily on student perceptions and learning experiences. Comparatively fewer studies have examined the impact of online instructional delivery resources from the perspective of tutors or instructors, particularly in terms of how these resources influenced teaching effectiveness and instructional practices. Understanding tutors' experiences is essential because instructors play a central role in integrating technology into teaching and shaping the quality of learning experiences in online environments.

Given the increasing reliance on digital teaching tools in higher education, it is important to evaluate the role and impact of online instructional resources in supporting effective teaching during crisis situations such as the COVID-19 pandemic. Therefore, this study seeks to evaluate the impact of online teaching resources in higher education during the COVID-19 pandemic, with particular attention to how these resources influenced teaching practices and instructional effectiveness among college tutors.

Research Questions

1. What impact did online teaching resources have on instructional delivery in higher education during the COVID-19 pandemic?
2. How did the use of online teaching resources influence the effectiveness of teaching practices among college tutors during the COVID-19 pandemic?

Objectives of the Study

- To evaluate the impact of online teaching resources on instructional delivery in higher education during the COVID-19 pandemic.
- To examine how online teaching resources influenced teaching effectiveness among college tutors during the COVID-19 pandemic.

Statement of the Problem

The COVID-19 pandemic forced higher education institutions worldwide to shift abruptly from traditional face-to-face instruction to online teaching environments. While this transition enabled academic activities to continue during the crisis, many institutions adopted online teaching resources without adequate preparation, training, or infrastructure. As a result, tutors were required to rapidly adapt to new technologies and teaching approaches while maintaining the quality of instruction. Although online instructional resources played a crucial role in sustaining teaching during the pandemic, there

remains limited empirical understanding of their actual impact on teaching effectiveness from the perspective of instructors. Much of the existing research has focused on students' experiences of online learning, leaving a gap in knowledge regarding how tutors experienced and evaluated the effectiveness of these digital resources in their instructional practices. Consequently, there is a need to investigate the extent to which online teaching resources supported or hindered instructional delivery during the pandemic. This study therefore seeks to evaluate the impact of online teaching resources on teaching practices in higher education during the COVID-19 pandemic.

Significance of the Study

This study contributes to the growing body of research on technology-enhanced learning by providing insights into how online teaching resources influenced instructional delivery in higher education during the COVID-19 pandemic. The findings will help educators and institutions better understand the effectiveness of digital teaching tools and the ways in which they shape teaching practices in online learning environments.

For educational institutions and policymakers, the study offers valuable evidence that can inform decisions about the integration of digital technologies into higher education teaching. Understanding the strengths and limitations of online instructional resources can guide institutions in developing more effective strategies for blended and online learning in the future.

The study is also significant for tutors and educators, as it highlights practical insights into how online teaching resources can enhance or challenge instructional practices. These insights may inform professional development programs aimed at improving tutors' digital competencies and pedagogical strategies for online teaching. Finally, the findings may contribute to the broader discourse on the future of higher education by identifying lessons learned from the emergency transition to online teaching during the pandemic. As digital learning continues to evolve, understanding the impact of online teaching resources can help institutions design more resilient and effective teaching models for both crisis situations and post-pandemic education systems.

LITERATURE REVIEW

The rapid advancement of digital technologies has significantly influenced teaching and learning practices in higher education. Online instructional delivery resources such as WhatsApp, YouTube, Telegram, Google Meet and other digital platforms have increasingly become integral tools for facilitating communication and instructional delivery. These technologies support both social interaction and educational engagement, thereby blurring the boundaries between informal communication and structured academic learning environments. Bouhnik and Deshen (2014) identified several instructional functions of messaging platforms such as WhatsApp and Telegram, including facilitating communication between tutors and

students, encouraging social interaction among learners, enabling the sharing of learning materials and supporting collaborative learning activities. These functions highlight the growing relevance of social media technologies in contemporary educational settings.

Several studies have demonstrated that online communication platforms can significantly enhance interaction in learning environments. For instance, Aburezeq and Ishtaiwa (2013) reported that WhatsApp improves various forms of interaction within the learning process, including student–student interaction (71%), student–content interaction (54%) and student–instructor interaction (42%). Similarly, Yilmazsoy, Kahraman and Baysan (2019) observed that students perceive messaging platforms such as WhatsApp and Telegram as convenient tools for learning due to their accessibility and ease of use. These findings suggest that social media platforms, originally designed for communication, have evolved into effective instructional tools capable of supporting collaborative and interactive learning.

The integration of online instructional delivery resources has also been associated with improvements in teaching and learning outcomes. Adeoye, Adanikin and Adanikin (2020) argue that the adoption of digital teaching platforms enhances content delivery, promotes interactivity and facilitates collaborative learning among students. In addition, the use of these resources contributes to the development of tutors’ information and communication technology (ICT) competencies while improving students’ access to educational materials. The authors further noted that online instructional platforms allow students to study at their own pace and access lecture materials conveniently, thereby promoting flexibility and learner autonomy in higher education.

Research also indicates that online instructional resources can improve students’ motivation and engagement in the learning process. Bere (2013) observed that participation in WhatsApp discussion groups encourages active engagement among students and fosters self-confidence in academic participation. Similarly, Plana *et al.* (2013) found that students using WhatsApp for instructional purposes reported increased motivation and enjoyment in their learning activities. Other studies have noted that online collaborative environments encourage positive attitudes toward learning by promoting social interaction and cooperative learning among students (Bansal & Joshi, 2014). These findings suggest that online platforms can create interactive learning environments that stimulate student participation and engagement.

The effectiveness of online instructional resources is also attributed to their technological features, which facilitate communication and information sharing. Platforms such as WhatsApp and Telegram allow users to engage in group discussions, share multimedia content and participate in synchronous or asynchronous conversations. These features make them valuable tools for instructional delivery in digital learning environments (Calvo, Arbiol, & Iglesias, 2014; de Souza, Garcia,

Moreira, & Silva, 2017). According to Moran (2018), the ease of use, structured communication channels and interactive capabilities of these platforms contribute to their effectiveness in educational settings. Similarly, Lopes and Vaz (2016) noted that these technologies enable efficient communication between tutors and students while providing mechanisms for confirming receipt and understanding of instructional information.

Beyond communication and collaboration, online instructional resources also support broader pedagogical transformations in higher education. Takalani (2008) argues that online learning environments allow students to take greater ownership of their learning process, which can foster self-confidence and independent learning skills. The adoption of digital technologies in education has also been linked to the promotion of active learning, improved access to information and enhanced opportunities for collaborative knowledge construction (Khan, Hasan, & Clement, 2012). These benefits demonstrate the potential of online instructional resources to enrich learning experiences and expand educational opportunities.

Another important aspect of online learning environments is the emergence of informal learning opportunities facilitated by digital technologies. Due to the availability of digital information and online learning materials, students are no longer limited to institutional resources provided by their universities. Instead, they can access a wide range of educational content, including video lectures, tutorials, online courses and e-books from various online platforms. According to UNESCO (2011), informal learning refers to deliberate learning activities that occur outside formal institutional structures but contribute significantly to knowledge acquisition. This type of learning often occurs through self-directed exploration of digital resources and online communities. In contemporary higher education contexts, the distinction between formal and informal learning is becoming increasingly blurred due to the integration of online technologies. Lai, Khaddage and Knezek (2013) noted that digital technologies allow students greater control over the selection of learning content and the evaluation of knowledge acquisition. Similarly, Mills, Knezek and Khaddage (2014) argued that Web 2.0 technologies enable new forms of knowledge sharing and collaboration that extend beyond traditional classroom boundaries. These developments highlight how digital platforms support both structured academic instruction and independent learning practices.

Online learning environments also depend heavily on interaction among participants. Anderson (2008) described several forms of interaction in online education, including learner–content interaction, learner–instructor interaction and learner–learner interaction. Learners may engage with digital content independently, interact with tutors through structured instructional resources, or collaborate with peers through online discussion forums and communication tools. Advances in communication technologies have made it possible for students and

tutors to build virtual communities of inquiry that support collaborative knowledge construction and shared learning experiences.

Furthermore, technology continues to play a critical role in supporting academic tasks and learning activities in higher education. Students increasingly use digital tools such as collaborative document platforms, online discussion forums, video conferencing applications and social networking tools to communicate and collaborate with peers (Arkilic, Peker, & Uyar, 2013; Bennett, Bishop, Dalgarno, Waycott, & Kennedy, 2012; Dabbagh & Kitsantas, 2012). In addition, productivity tools such as multimedia editing software, presentation tools and other digital applications are widely used by students to prepare assignments and develop learning products (Conole, De Laat, Dillon, & Darby, 2008; Sedek, Mahmud, Daud, & Jalil, 2012; Thompson, 2013). These technologies also support a variety of learning activities, including educational games, virtual simulations, online courses and self-assessment tools, which contribute to the development of students' digital literacy and problem-solving skills.

Overall, the literature suggests that online instructional delivery resources play a significant role in supporting teaching and learning in higher education. These resources facilitate communication, collaboration and access to learning materials while promoting flexible and student-centered learning environments. However, despite their potential benefits, the effectiveness of these technologies largely depends on how tutors and students utilize them within the instructional process. Understanding how online teaching resources influence instructional delivery and teaching practices therefore remains an important area of research, particularly in the context of the rapid digital transformation that occurred during the COVID-19 pandemic.

Research Gap

Although existing literature has highlighted the growing role of online instructional delivery resources in education, much of the early research focused primarily on the potential benefits of digital technologies for enhancing communication, collaboration and access to learning materials (Khan, Hasan, & Clement, 2012; Dabbagh & Kitsantas, 2012). These studies largely examined the general use of technology in education rather than evaluating its effectiveness in emergency remote teaching contexts such as the COVID-19 pandemic. As a result, there is limited empirical evidence on how online teaching resources specifically influenced instructional delivery during the pandemic period.

Furthermore, limited attention has been given to tutors' experiences in using online teaching resources and how these tools influenced their teaching practices during the pandemic. Understanding tutors' perspectives is essential because they play a critical role in selecting, organizing and implementing digital instructional resources. Therefore, this study seeks to fill this gap by evaluating the impact

of online teaching resources on instructional delivery in higher education during the COVID-19 pandemic.

MATERIALS AND METHODS

Research Design

This study adopted a descriptive survey research design to evaluate the impact of online teaching resources on instructional delivery in higher education during the COVID-19 pandemic. The approach enabled the researcher to examine tutors' use of online instructional delivery resources, their perceived impact on teaching and the challenges encountered during the pandemic. Descriptive statistics were used to present the findings.

Population of the Study

The population for the study comprised tutors in Colleges of Education located in Tamale, Yendi and Bimbilla. These institutions of higher learning are distributed across the Eastern Corridor route, in the Northern region. The target population therefore included tutors who actively participated in online teaching during the pandemic period or lockdown.

Sample Size and Sampling Technique

A purposive sampling technique was employed to select participants for the study. This method was appropriate because only tutors who were directly involved in online teaching during the pandemic were relevant to the research objectives. A total of 100 tutors were selected from ten Colleges of Education in Northern Ghana. Purposive sampling allows researchers to deliberately select participants who possess relevant knowledge and experience related to the research problem (Acharya *et al.*, 2013).

Research Instrument

Data for the study were collected using questionnaire developed by the researcher and administered. The instrument consisted of closed-ended items measured on a four-point Likert scale ranging from Strongly Agree (4) to Strongly Disagree (1). The questionnaire collected information on demographic characteristics, availability and use of online instructional delivery resources, perceived impact on teaching and challenges encountered in the use of these technologies.

Validity and Reliability of the Instrument

To ensure content validity, the questionnaire was reviewed by experts in educational technology and experienced tutors who provided feedback on the clarity and relevance of the items. Their suggestions were incorporated into the final instrument. A pilot study involving 50 tutors was conducted to test the reliability and clarity of the questionnaire items. The reliability analysis produced a Cronbach's alpha coefficient ranging from 0.70 to 0.80, indicating an acceptable level of internal consistency (Taherdoost, 2016).

Data Analysis

The collected data were analyzed using IBM SPSS version 20. Descriptive statistical techniques were used to summarize and present the data from the respondents.

Ethical Considerations

Ethical principles were strictly observed throughout the study. Participation in the study was voluntary

and respondents provided informed consent before completing the questionnaire. Participants' identities were kept anonymous and all responses were treated with strict confidentiality.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

Table 1 presents the demographic characteristics of

Table 1: Demography of Respondents

Variable	Frequency (N= 100)	Percentage (%)	Total
Gender			
Male	94	94.0	100
Female	06	6.0	
Age range			
30-35	19	19.0	100
36-40	14	14.0	
41-45	12	12.0	
46-50	40	40.0	
50+	15	15.0	
Name of College			
EP CoE Bimbilla	18	18.0	100
St. Vincent, Yendi	13	13.0	
Tamale College	11	11.0	
Bagabaga, Tamale	09	9.0	
Tumu College	09	9.0	
Gbewaa College	07	7.0	
McCoy College	07	7.0	
Nusrat Jahan	05	5.0	
St. John Bosco's	09	9.0	
Gambaga College	12	12.0	
Department			
Maths/ICT	41	41.0	100
Education	16	16.0	
Social Sciences	11	11.0	
Sciences	18	18.0	
Languages	14	14.0	100
Rank			
Asst. Tutor	11	11.0	
Tutor	85	85.0	
Snr. Tutor	04	4.0	

the respondents who participated in the study. A total of 100 tutors from ten Colleges of Education located in Northern Ghana participated in the survey. The results show that male tutors constituted the majority of respondents (94%), while female tutors accounted for 6%. In terms of age distribution, most participants were within the 46–50 age range (40%), followed by those aged 30–35 (19%), 50 years and above (15%), 36–40 (14%) and 41–45 (12%). Regarding academic rank, the majority of respondents were Tutors (85%), followed by Assistant Tutors (11%) and Senior Tutors (4%). The respondents represented various departments including Mathematics/ ICT (41%), Sciences (18%), Education (16%), Languages (14%) and Social Sciences (11%).

Research Question 1: Impact of Online Teaching Resources on Instruction

The findings from Table 2 above also demonstrate

Table 2: Impact of Online Teaching Resources

Impact Indicator	Frequency	Percentage (%)
Improved digital skills	68	68.0
Helped cover course content	50	50.0
Enhanced collaborative learning	50	50.0

the significant impact of online instructional delivery resources on teaching practices during the COVID-19 pandemic. Most respondents reported that the use of digital teaching platforms improved their digital skills and competencies (68% strongly agreed and 32% agreed). Additionally, a large proportion of tutors indicated that these tools helped them adequately cover course content during the pandemic (92% agreement overall).

Online instructional resources also promoted collaborative learning among students. Half of the respondents (50%) strongly agreed that the use of these platforms enhanced student interaction, while 46% agreed. These results highlight the role of online technologies in sustaining teaching and learning activities while encouraging collaboration and engagement among students.

From Figure 1 above, sixty-one (61) respondents

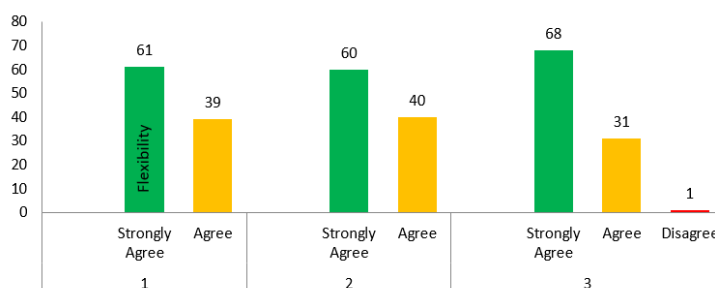


Figure 1: Advantages of using online instructional delivery resources during Covid-19

representing 61% strongly agreed that online instructional delivery resources gave them some kind of flexibility in teaching, with 39% of the respondents (39%) disagreeing to the same assertion. Again, when it came to tutors conducting e-assessments, 60% strongly agreed and 40% of the respondents agreed that they were able to perform e-assessments using online instructional delivery resources. Sixty-eight (68) respondents representing 68% strongly agreed that the online delivery resources made it possible for them to

easily share course materials, PowerPoint presentations and other learning materials with their students with 31 respondents representing 31% agreeing. Only 1% of the respondents disagreed.

Research Question 2: How did the use of online teaching resources influence the effectiveness of teaching practices among college tutors during the COVID-19 pandemic?

Results from Table 3 above further revealed how tutors

Table 3: Use of Online Teaching Resources

Variable	Frequency	Percentage (%)	Total
Sharing course materials			
Strongly Agree	61	61.0	100
Agree	38	38.0	
Disagree	01	1.0	
Deliver online lectures			100
Strongly Agree	90	90.0	
Agree	10	10.0	
I used it to conduct e-assessments for learners			100
Strongly Agree	76	76.0	
Agree	24	24.0	
I used it to provide instant feedback to learners			100
Strongly Agree	80	80.0	
Agree	20	20.0	
I used it to cover my course outline during the closure of schools			100
Strongly Agree	95	95.0	
Agree	05	05.0	

utilized online instructional delivery resources during the COVID-19 pandemic. The majority of respondents reported using these platforms to deliver online lectures (90%), conduct electronic assessments (76%), provide instant feedback to learners (80%) and share course materials with students (61%). In addition, 95% of tutors indicated that online teaching resources enabled them to complete their course outlines despite the disruption

caused by the pandemic.

Discussion of Findings

The results demonstrate that online instructional delivery resources played an important role in supporting teaching during the COVID-19 pandemic. Platforms such as Zoom, Telegram, Google Classroom and Microsoft Teams provided tutors with alternative channels to

continue instructional activities despite the closure of educational institutions.

The study further revealed that tutors relied heavily on these platforms to deliver lectures, share learning materials, conduct electronic assessments and provide timely feedback to students. These findings align with previous research which suggests that online learning technologies help maintain instructional continuity during disruptions and improve accessibility to learning resources.

Importantly, the findings indicate that online teaching resources contributed to the development of tutors' digital competencies and supported collaborative learning among students. The increased use of digital tools allowed tutors to enhance their technological skills while facilitating interaction between students in virtual learning environments.

CONCLUSION

The findings revealed that several online instructional delivery resources were available to tutors during the COVID-19 pandemic, with the most commonly used platforms being Zoom (98%), Telegram (90%), Microsoft Teams (85%) and Google Classroom (60%). These resources were utilized for a variety of instructional purposes, including sharing teaching materials (61%), delivering online lectures (90%), conducting electronic assessments (76%), providing instant feedback to students (80%) and completing course outlines during school closures (95%). Overall, the results indicate that online instructional delivery resources had a significant impact on teaching during the pandemic, as they introduced flexibility in instructional delivery, enabled tutors to conduct e-assessments, facilitated the sharing of learning materials and supported the completion of course content. Additionally, the use of these digital platforms contributed to the improvement of tutors' digital skills and competencies while promoting collaborative learning and increased motivation among students.

Recommendations

1. Strengthen institutional support for digital teaching platforms: Higher education institutions should continue to invest in reliable online instructional delivery platforms and provide tutors with the necessary digital tools and infrastructure to support effective online teaching and learning.

2. Enhance professional development in digital pedagogy: Regular training programs should be organized for tutors to improve their digital competencies and instructional skills in using online teaching resources for activities such as content delivery, e-assessment and collaborative learning.

Suggestions for Future Research

1. An assessment of online instructional delivery resources and if it has a link to the academic performance of pre-service teachers in the Colleges of Education in

Ghana. This study only was on tutors, so a future study focusing on students would be prudent.

2. Additionally, research in future should look at the impact of online instructional delivery resources on the quality of students' learning and their performance.

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