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TERTIARY EFL TEACHERS' EXPERIENCE IN ICT INTEGRATION DURING THE COVID-19 PANDEMIC IN VIETNAM

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ABSTRACT

This qualitative study explores the experiences of 12 tertiary English as a Foreign Language (EFL) teachers from four diverse universities (two public and two private) in northern Vietnam navigating technology integration during COVID-19's transition to an endemic phase. The study employed a multi-method design, utilizing semi-structured interviews and document analysis of teaching materials and lesson plans**.** Participants were purposively sampled to capture varying teaching experiences, EFL specializations, and institutional contexts. Teachers faced challenges like unreliable internet connectivity, yet employed innovative strategies such as creating interactive digital materials, utilizing learning management systems, and leveraging multimedia resources**.** The transition to an endemic phase involved a shift towards hybrid learning models, with a combination of in-person and online instruction. The study highlights the critical need for improved technological infrastructure and comprehensive professional development to support teachers in the digital era. Findings suggest addressing these needs is essential for successful technology integration, offering insights for educational policy and practice. Moreover, the study reveals that teachers' adaptations and the integration of technology had a notable impact on students' learning experiences, fostering increased engagement and facilitating more interactive and dynamic learning environments.

Key words: tertiary EFL teachers, experience, ICT integration, COVID-19 pandemic

INTRODUCTION

The COVID-19 pandemic, which emerged in Wuhan, China, in December 2019, rapidly escalated into a global health crisis of unprecedented scale. Recognized for its significantly higher fatality rate compared to seasonal influenza and its greater contagiousness than the SARS virus, the World Health Organization declared it a public health emergency on January 30, 2020 (Ramij & Sultana, 2020). This pandemic has profoundly impacted various aspects of life, with the educational system being one of the most affected sectors. The disruption led to widespread school closures, impacting over 1.5 billion students in 165 countries (United Nations Educational, Scientific and Cultural Organization, 2020).

In response to the educational disruptions, institutions worldwide rapidly transitioned to online distance learning. This shift, while necessary, brought to light several challenges, such as the lack of preparedness in online education among teachers and students and the need for effective strategies to facilitate this new mode of learning (Moore et al., 2011; Baloran, 2020). Governments and educational authorities were urged to prepare for potential future outbreaks, acknowledging the likelihood of continued reliance on remote learning (Flores, 2020).

The context of Vietnam's education system prior to the pandemic was marked by challenges in integrating information and communication technology (ICT) in teaching and learning, particularly in EFL settings. Limited infrastructure, inadequate access to technology, and disparities in technology access between urban and rural areas, as well as among different socio-economic groups, were significant issues (Nguyen, 2019). For instance, rural areas often struggled with poor internet connectivity, and schools lacked sufficient digital resources, which hindered effective ICT integration (Nguyen, 2019).

This study zeroes in on the experiences of tertiary EFL teachers in northern Vietnam, investigating the integration of technology into their teaching practices during and after the COVID-19 pandemic. It is guided by three specific objectives: (1) to explore the unique challenges these teachers faced in adopting technology for teaching,

(2) to identify the strategies and adaptations they developed to overcome these challenges, and (3) to assess the long-term impacts of these adaptations on their teaching practices. This focus addresses a critical gap in the literature by providing detailed insights into the Vietnamese context, which has been underrepresented in global discussions on educational technology integration.

Despite these challenges, the shift to online learning also presented opportunities for innovation in educational practices. For example, teachers experimented with various online platforms like Zoom and Microsoft Teams, created interactive content using digital tools such as Kahoot and Quizlet, and explored blended learning models to maintain student engagement (van der Spoel et al., 2020). The pandemic marked a significant increase in the use of e-learning, with many educational institutions, including kindergartens and primary schools, rapidly integrating online platforms into their curricula to ensure continuity in education (Kim, 2020; Mardiah, 2020). Recent studies have highlighted the potential benefits of integrating ICT in education, such as fostering student engagement, promoting collaborative learning, and enhancing digital literacy skills (Kumar, 2023; Upadhayaya, 2023). However, the effective implementation of educational technology depends on various factors, including teacher readiness, institutional support, and the availability of adequate infrastructure (Basuki et al., 2024; Bokayev et al., 2021).

By providing a nuanced exploration of tertiary EFL teachers' challenges and strategies in northern Vietnam, this study contributes valuable insights to the field of educational technology. It highlights the critical need for equitable access to technology and quality education, especially in the face of unprecedented educational disruptions. This research is timely and significant, offering lessons for ongoing and future digital transformations in education.

Examining the impact of remote education during the COVID-19 pandemic, Scarpellini et al. (2021), Lee (2020), and Patel and Wang (2021) underscore the pivotal role of internet accessibility in shaping students' academic experiences. Addressing concerns about limited access to suitable devices and unreliable home internet, these studies emphasize the detrimental impact of digital divides on the quality of distance education. Afzal et al. (2023) consistently surfaces

throughout, highlighting the urgent need for equitable access to technology. In a parallel vein, Clark et al. (2021) investigate disparities in test performance linked to the source of online lesson recordings, indicating variations in teaching quality. This observation aligns with works by Brown and Green (2021), Kumar and Martin (2022), and Lee (2020), emphasizing the pressing need for systemic changes to bridge digital gaps and ensure equitable educational opportunities. Francom et al. (2021) provide a comprehensive overview of challenges faced by teachers during the pandemic, including issues of student engagement, the absence of clear guidelines, and problems associated with internet connectivity. Furthermore, research from diverse contexts has underscored the importance of considering sociocultural factors and contextual realities in the adoption of educational technology. For instance, Macann and Yadav (2023) emphasized the need for a culturally responsive approach to ICT integration, while Pattanasri et al. (2022) explored the challenges faced by marginalized communities in accessing digital resources. These studies highlight the complex interplay among technology, pedagogy, and socio-cultural dynamics.

The relevance of this study extends beyond the immediate context of the COVID-19 pandemic, providing critical insights into the ongoing impacts of educational technology integration. Focusing on the experiences of tertiary EFL teachers in northern Vietnam during a period of significant disruption, the research sheds light on broader implications for educational policy and practice in a post-pandemic world. As the integration of ICT in education continues to evolve, ongoing research remains crucial. Recent works by Du and Meier (2023) and Eden et al. (2024) call for a holistic approach that considers not only technological infrastructure but also teacher professional development, curriculum design, and inclusive practices to ensure equitable access and effective utilization of educational technology.

THEORETICAL FRAMEWORK

The COVID-19 pandemic has globally impacted various aspects

of existence, with a profound emphasis on the educational domain (Fuchs & Karrila, 2021). Teachers are compelled to undertake preparatory measures, decision-making processes, and adjustments to meet student expectations, and also to adhere to teacher education prerequisites, and accommodate the functioning circumstances of universities and schools (Gao & Zhang, 2020). The pandemic necessitated the delivery of instruction through online platforms, leading to the reconfiguration of education, teacher training, and educational institutions (Erlam et al., 2021). Traditional in-person instruction and educational interaction needed adaptation to suit the online learning environment. In practice, electronic teaching and learning occurred virtually through platforms like Google Classes, Zalo groups, the Moodle platform, and Zoom meetings (Wu & McGoogan, 2020). The shift to online learning in Vietnamese educational institutions to address pandemic challenges underscores the pressing need for enhanced professional development of teachers in digitalization. However, globally, the integration of technology into education has become a primary objective, and teachers often lack the necessary preparation for effective digital instructional methods (Juárez-Díaz & Perales, 2021; Li, 2022).

In addition to teachers' insufficient readiness for the rapid transition to online learning, maintaining their professional standing requires considering their opinions of technology. Blignaut et al. (2010) argue that teachers, to effectively participate in an education system incorporating ICT, need a lifelong learning mindset. Generally, the use of technology necessitates a receptive and open mindset. The Technology Acceptance Model (TAM) developed by Venkatesh and Davis (2000) serves as a theoretical framework for assessing individuals' attitudes toward technology adoption, focusing on perceived utility and ease of use (Venkatesh & Davis, 2000). This model has proven reliable in predicting teachers' attitudes and behavior during the implementation of new technologies, emphasizing the link between attitude, intention, and conduct (Alfadda & Mahdi, 2021). It suggests that an individual's capacity to engage in a specific action depends on their behavioral intention to carry out that conduct. Rooted in the idea of reasoned action, TAM posits that an individual's intention guides their behavior, influenced

by attitudes, subjective norms, and perceived societal pressure (Sheldon, 2016).

RESEARCH METHOD

Research design

The current investigation utilized a qualitative research methodology, employing a multi-method design that incorporated semi-structured interviews (Turner, 2014) and document analysis (Bowen, 2009). The study included a total of twelve teachers who were employed in the higher education sector in northern Vietnam. This study examines the collective perspectives of teachers regarding their encounters with technology in the context of teaching within the COVID-19 pandemic. According to Kvåle and Bondevik (2008), interviews serve as a valuable tool for researchers to delve into the actions, experiences, and opinions of participants within their linguistic context. Interviews were employed as a means of gathering data to investigate several aspects pertaining to the research participants' backgrounds, encompassing their academic, cultural, and psychological experiences. To provide a comprehensive account of the participants' experiences, Creswell (1997) proposes eight procedures to be followed during an interview session. The procedures encompass several steps.

In this study, tertiary EFL teachers in northern Vietnam were selectively sampled based on their experience with technology integration during the pandemic. Data collection was conducted through semi-structured interviews, chosen for their relevance to the research questions and ability to elicit detailed responses. Semi-structured interviews are particularly suitable for this study due to their flexibility in capturing complex and nuanced experiences. This method allows for the exploration of unexpected themes that may arise during the conversation, providing a deeper understanding of the participants' perspectives (Adhabi & Anozie, 2017). High-quality audio recording equipment was used for both interviewers and participants to ensure clarity and precision in data capture.

Additionally, document analysis was conducted to examine

teaching materials and lesson plans developed and used by the participating teachers for online instruction during the pandemic. This method provided tangible evidence of the strategies employed by teachers for technology integration and offered data triangulation to strengthen the study's validity (Bowen, 2009).

In conducting this research study, two key tasks were undertaken. First, a comprehensive interview protocol was developed, spanning approximately four to five pages. This protocol included five open-ended questions, designed to elicit detailed responses from participants. Ample space was provided between each question to facilitate the recording of participants' remarks. Second, a suitable location for conducting the interviews was selected. A quiet room, free from potential disturbances and designed for optimal comfort, was chosen. During the interviews, researchers and participants were seated across from each other with a recorder strategically placed in between to ensure accurate recording of both voices. Additionally, this role facilitated the documentation of participants' nonverbal cues, including but not limited to laughter and forehead patting (Rahayu & Wirza, 2020). Beyond the standard practices of obtaining informed consent and ensuring confidentiality, this study adhered to strict ethical principles in handling sensitive data and protecting participants' well-being. All data collected, including interview recordings and transcripts, were securely stored on encrypted devices and servers with restricted access limited to the research team. Any personally identifiable information was promptly removed from the data, and pseudonyms were used in all reports and publications to safeguard participants' identities. Moreover, during the interview process, the researchers remained vigilant for any signs of discomfort or distress among participants. In such instances, the interview would be paused, and appropriate support or counseling resources would be offered to the participant. The researchers also maintained sensitivity to cultural norms and practices, ensuring that all interactions were conducted with respect and cultural awareness. Informed consent was obtained through a comprehensive process where participants were provided with detailed information about the study's aims, procedures, and potential risks. Participants signed consent forms to confirm their understanding and voluntary participation.

Participant recruitment

In the initial phase of the investigation, a purposive sampling strategy was employed to select a sample of twelve teachers from four universities in the north of Vietnam, aiming to capture a broad spectrum of experiences and perspectives on technology integration in EFL teaching. The selection criteria included a range of teaching experience levels, from novice to veteran, to understand the influence of experience on technology integration; a willingness to participate and provide detailed, reflective responses; and a diversity in subject specialization within EFL, such as grammar, speaking, and writing, to assess how technology integration varies by subject area. The universities were chosen based on criteria that ensured institutional diversity, encompassing both public (UniA and UniC) and private institutions (UniB and UniD); varied sizes and student populations to explore the influence of these factors on EFL teaching practices; a strong reputation of their EFL programs, indicating experienced and innovative EFL teachers; and differing levels of technology integration in their EFL programs, to capture a wide range of experiences and challenges in technology use.

To expand beyond this initial sample from the north region, the study also utilized snowball sampling techniques by asking the purposively selected participants to recommend other teachers who could offer diverse perspectives, particularly from underrepresented demographics or teaching contexts. An initial survey was also conducted across Vietnam's tertiary institutions to identify potential participants representing a broader range of experiences. While efforts were made to ensure diversity, the study sample was still ultimately limited to EFL teachers in the north region due to resource constraints. This geographic limitation is acknowledged as a potential source of bias in fully representing the national population of tertiary EFL teachers in Vietnam. Additionally, demographic factors like gender, age, ethnicity, and so on were not strictly controlled for, which could introduce sampling biases.

To address potential sampling bias and ensure a more inclusive and comprehensive understanding of technology integration across different EFL teaching contexts, additional measures were taken.

These measures included conducting an initial survey to identify potential participants who represent a wide range of teaching contexts and experiences not initially considered. Furthermore, snowball sampling techniques were utilized, asking initial participants to recommend other teachers who might offer diverse perspectives or experiences, particularly those from underrepresented groups or institutions with less visibility in EFL excellence.

To mitigate these potential biases, the analysis process involved triangulation of data from the interviewed teachers, supplementary documents/artifacts provided, and the researchers' observations during data collection. Findings are presented with clarity about the study's boundaries and context.

The teachers were invited to participate in the survey through Zalo messages. Nevertheless, a total of seven teachers opted to withdraw from the study, while twelve teachers expressed their willingness to participate. Prior to the initiation of the study, a comprehensive explanation was provided regarding the research aims, methodologies employed, and potential dangers that participants may encounter (Hammersley & Traianou, 2012). The teachers who participated in this research study demonstrated their eagerness to engage in the interviews, which are convenient for the participants, and aimed at sharing their own experiences with the integration of technology in teaching amidst the COVID-19 pandemic. The confidentiality of participants' identities was maintained (Widodo, 2014). Table 1 presents the demographic information of the participants, providing a clearer understanding of the participant profile. The participants consist of a mix of genders (eight females and four males) and represent four universities (UniA, UniB, UniC, UniD). They cover a range of teaching subjects within EFL, including General English, English for Specific Purposes, and English for Academic Purposes. The ages of the participants range from 25 to 45 years, and their teaching experience varies from 3 to 22 years. This diversity ensures a broad spectrum of insights into technology integration in EFL teaching.

Table 1

The demographic information of the participants

Participants	Gender	University	Teaching Subject	Age	Years of Teaching Experience
Alex	M	UniA	General English	25	3
Bella	F	UniA	General English	32	10
Chris	M	UniA	English for Specific Purposes	43	20
Dana	F	UniB	English for Academic Purposes	36	12
Ethan	M	UniB	General English	40	15
Fiona	F	UniB	General English	29	5
George	M	UniC	English for Specific Purposes	31	9
Hannah	F	UniC	English for Specific Purposes	37	14
Ian	M	UniC	English for Specific Purposes	45	22
Julia	F	UniD	General English	27	4
Kevin	M	UniD	General English	38	16
Lily	F	UniD	General English	36	13

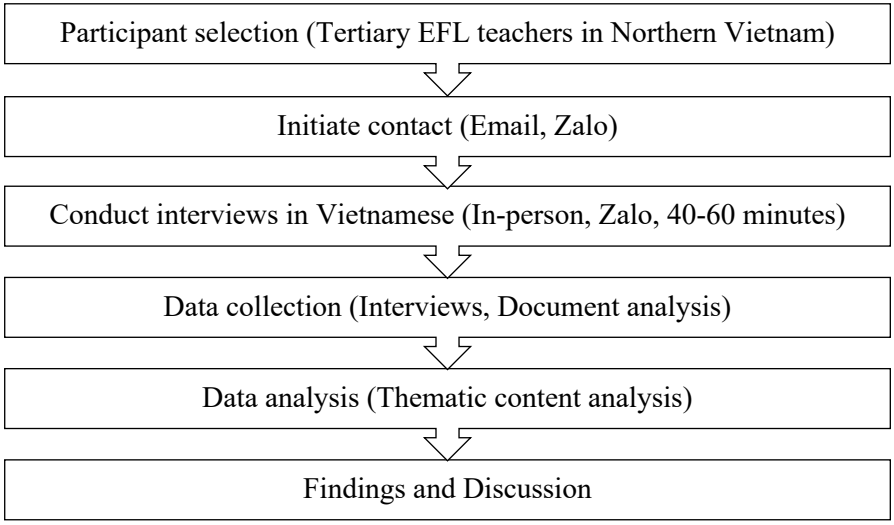
This approach to participant selection acknowledges the potential for sampling bias and actively seeks to minimize its impact by broadening the scope of participant recruitment and selection. Through these efforts, the study aims to provide a more balanced and representative insight into the integration of technology in EFL teaching across a variety of teaching experiences, institutional backgrounds, and technological environments.

Research procedure

The research procedure involved several steps to ensure effective execution. Participant selection was based on their experience in teaching EFL at the tertiary level in northern Vietnam. Contact with potential participants was initiated via email, followed by further coordination through the Zalo platform for those who expressed interest. Interviews were conducted either in person or via Zalo video calls, depending on the geographical location of the participants. Each interview session lasted approximately 45 to 60 minutes and was conducted in Vietnamese, the participants' mother tongue, to ensure comfort and accuracy in expressing their views. The exclusive use of Vietnamese aimed to minimize potential language barriers and ensure that nuanced expressions related to cultural and teaching practices were accurately conveyed and understood. The use of Zalo for video conferencing was particularly significant, as it provided a viable alternative to in-person interviews, aligning with the need for social distancing during the pandemic. While using Zalo, several technical challenges were encountered, including connectivity issues and interruptions. These challenges were managed by conducting connectivity tests prior to interviews and ensuring backup plans were in place. Participants were briefed on these procedures to mitigate frustration and ensure smooth data collection.

Figure 1

Research Procedure



Data collection

The primary method employed for data collection in this study was through interviews. The choice of interviews as the data collection technique was justified by their ability to elicit in-depth, qualitative insights into the teachers' experiences with technology integration during the COVID-19 pandemic. Semi-structured interviews were utilized, allowing for flexibility in exploring topics while ensuring that all relevant themes were addressed (Adhabi & Anozie, 2017). Technical challenges associated with using Zalo for interviews were mitigated through pre-established procedures, including connectivity tests before interviews and high-quality audio recording to ensure data fidelity. In addition to interviews, document analysis was conducted to examine teaching materials and lesson plans. These documents were collected directly from the participating teachers, who were requested to share examples of materials and lesson plans they had developed and used for online instruction during the pandemic. This method of collecting documents ensured that the

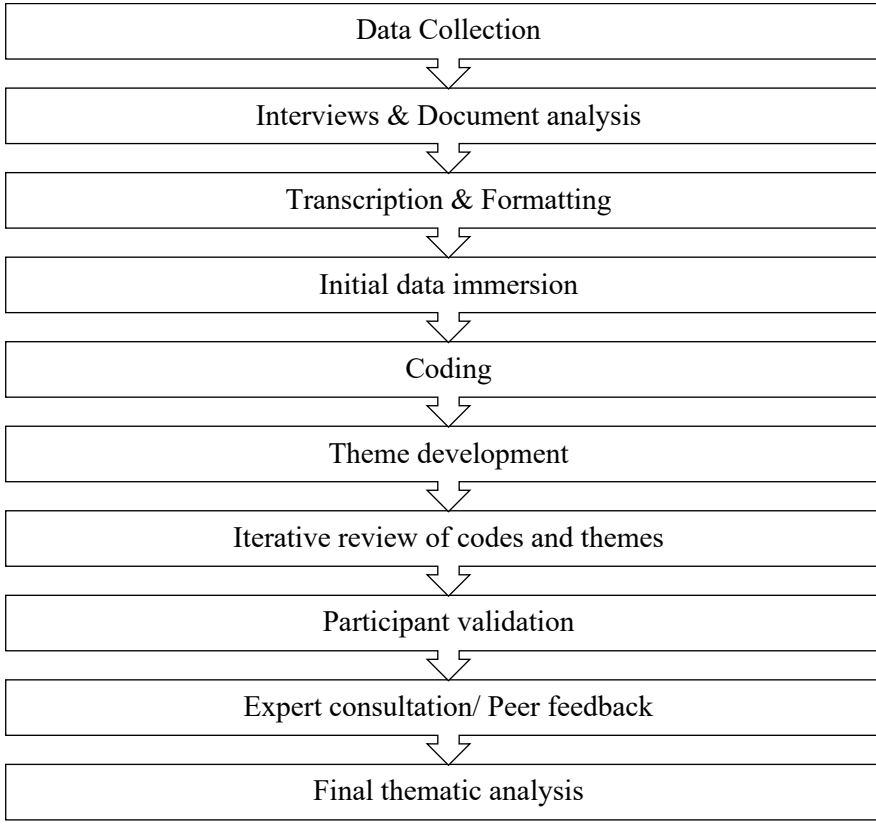
analysis was grounded in the actual resources utilized by teachers, providing a tangible representation of their strategies for technology integration. This approach offered a broader perspective on technology integration practices and provided data triangulation to strengthen the study's validity. The interview questions were centered around four main themes: the availability of technological resources in students' homes, the challenges teachers face in online instruction delivery, the adaptability of teachers to the online teaching environment, and their personal experiences with technology-assisted instruction. In conducting interviews, a series of meticulously crafted questions were employed, aligning with four identified themes: Internet Accessibility and Connectivity Challenges, Creation, Dissemination of Materials, and Use of Online Platforms, Teacher Preparedness and Adaptability in Technology Use, and Overall Experience and Improvement in Teaching Capabilities. However, recognizing the need for greater depth and reliability, the question sets for each theme have been expanded to ensure a more comprehensive exploration. The questionnaire for the theme of technological resources, for instance, includes inquiries such as, "What challenges have you observed regarding students' access to technological devices for online learning?" and "In your opinion, how have these challenges impacted the learning experience?" Similarly, within the theme of adaptability, questions have been refined to encompass aspects like specific modifications made by teachers in their teaching approach to the online environment and the perceived effectiveness of these adaptations. This nuanced and expanded questioning approach aims to capture a richer and more nuanced understanding of teachers' experiences. The interviews were documented using a smartphone device, chosen for their capacity to ensure clear audio quality and facilitate efficient data transcription.

Data analysis

The data gathered were subjected to thematic content analysis (Fullana et al., 2014). Thematic analysis has been proposed as a versatile and valuable research methodology that yields comprehensive and intricate data reports (Braun & Clarke, 2006).

Figure 2

Data Analysis



The analysis was meticulously conducted in stages: initial data immersion, coding, and theme development. To ensure analytical rigor, the researcher engaged in an iterative review of codes and themes, refining them for coherence and alignment with the study's objectives. The validity of the analysis was enhanced through participant validation, where participants reviewed the thematic findings for accuracy, and expert consultation, albeit as a single researcher, leveraging published guidelines and peer feedback where direct consultation was impractical. Thematic analysis entails the process of finding and locating recurring patterns that are present

within an individual interview or a collection of interviews (DeSantis & Ugarriza, 2000). The objective of this thematic method is to comprehend the narrative content rather than focusing on the story's structure. It involves the identification of issues and experiences that align with pre-established themes. The primary objective of this study is to engage in a thorough examination of the interview transcripts through numerous readings, with the aim of comprehending the underlying significance and discourse embedded within the narrated events. Following that, the transcripts underwent a systematic coding procedure in which they were classified according to the identified themes and subthemes. The procedure for analyzing the interview data largely aligns with Widodo's (2014) analytical method inside the qualitative research paradigm. The procedure entails systematically transcribing the outcomes of the interview, as delineated in the following manner: There are two key steps involved in the analysis of interview data.

In the data analysis phase, recorded interviews were repeatedly listened to for theme identification relevant to the research aims. Subsequently, these interviews were transcribed and formatted to facilitate coding, sorting, and classifying key data, thereby enhancing the efficiency of analysis. This methodical approach ensured a rigorous examination of the findings. The process involves analyzing interview data, including the opinions and viewpoints expressed by participants, as well as ensuring the reliability of the data by allowing participants to provide feedback on the interpretation of the results. The significance of this matter lies in the fact that the participants serve as the primary source of data, therefore necessitating the accurate representation of their perspectives. Furthermore, the inclusion of expert researchers was extended to engage in focus group deliberations, as outlined in Table 2.

Table 2

Thematic Data Analysis Sample

Sample	Word encoding	Theme
Bella	It's really challenging with our internet at home. Even though we have a data plan, the connection is often unreliable. This is particularly bothersome since our phones, which are usually more data-efficient than laptops and easier to use, still struggle with the weak signal.	Internet Accessibility and Connectivity Challenges
Dana	Adapting classroom materials for online teaching was challenging, especially with the unreliable internet in my rural area. I had to redesign lesson plans for digital formats, which was often disrupted by connectivity issues, impacting student engagement.	Creation, Dissemination of Materials, and Use of Online Platforms
George	In response to the shift to online learning, I had to rapidly adapt my teaching methods. Initially unprepared for the extent of technological integration required, I found myself exploring various digital tools to maintain student engagement. This adaptation was a significant learning experience, enhancing my digital literacy and teaching approach.	Teacher Preparedness and Adaptability in Technology Use
Ian	My overall experience in adapting to online instruction has been both challenging and transformative. The need to document online educational endeavors and disseminate them on platforms like YouTube has reshaped my approach. This experience enhanced my ability to create engaging instructional content and fostered a more flexible and dynamic teaching style.	Overall Experience and Improvement in Teaching Capabilities

FINDINGS AND DISCUSSION

The study presents its findings in relation to four prominent themes that have emerged, augmented by a methodologically rigorous approach that includes semi-structured interviews and document analysis. This multifaceted approach allows for a more nuanced exploration of the complexities involved in ICT integration during the COVID-19 pandemic.

Internet Accessibility and Connectivity Challenges

This theme focuses on the accessibility of technology, particularly internet connectivity, within the home environment. The findings reveal that teachers and students faced varied challenges regarding internet access, which significantly impacted the effectiveness of distance learning.

> *"I utilize the Wi-Fi network that is made available by the educational institution. My primary focus will be on the transmission of educational information and the evaluation and rectification of student assignments within the school setting." (Alex)*

Bella highlighted the issue of unreliable internet at home:

> *"It's really challenging with our internet at home. Even though we have a data plan, the connection is often unreliable. This is particularly bothersome since our phones, which are usually more data-efficient than laptops and easier to use, still struggle with the weak signal."*

Chris added:

> *"Our internet connection is consistently reliable, which is a huge plus for my teaching. I tend to use my mobile phone way more than my laptop for accessing the internet, as it's just more convenient for me. However, a significant issue we're facing is that many of our students don't have access to smartphones. While most of us*

teachers use our phones primarily for communication and internet access, the use of laptops is pretty rare, limited to just a few occasions."

The finding underscores a pivotal aspect of the digital divide that significantly influences the efficacy of distance learning, a phenomenon extensively documented in educational research.

Alex's reliance on institutional Wi-Fi for educational activities aligns with the findings of Patel and Wang (2021), who emphasize the fundamental role of stable internet connectivity in facilitating effective online education. This reliance also reflects a broader dependency on institutional support for digital resources, a critical factor in ensuring equitable access to online learning opportunities.

Contrastingly, Bella's struggle with unreliable home internet connectivity vividly illustrates the challenges faced by teachers in less connected environments. Her experience resonates with Lee's (2020) findings, which highlight how inconsistent internet access, especially in remote or rural areas, can severely hinder the online learning experience. This inconsistency not only affects the delivery of education but also impacts the quality and continuity of learning, as students and teachers grapple with intermittent connectivity.

Furthermore, Chris's experience of consistent internet access, yet facing challenges due to students' lack of smartphones, brings to light another dimension of the digital divide. This situation mirrors the concerns raised by Patel and Wang (2021) regarding the growing reliance on mobile technology in education and the disparities it creates. While mobile phones offer a convenient mode of internet access, their limitations in screen size and functionality compared to traditional computers can impede certain aspects of online learning, such as detailed content review or extensive typing work.

The finding also implicitly touches upon the broader implications of these connectivity challenges. As Brown and Green (2021) argue, disparities in internet access can lead to significant inequities in educational outcomes. This situation necessitates a critical examination of the infrastructural and policy measures required to bridge the digital divide. It calls for concerted efforts to enhance internet infrastructure, particularly in underserved areas, and to

provide alternative means of access where traditional broadband services are lacking.

In conclusion, Theme 1 of this study not only highlights the varied experiences of teachers with internet connectivity during the pandemic but also serves as a microcosm of the larger challenges in the realm of digital equity in education. To further illuminate these challenges, document analysis of teaching materials - such as digital textbooks, online resource repositories, and learning management system (LMS) platforms - was conducted. These materials often included guidance for offline use or were designed to be low-bandwidth friendly, aiming to mitigate some of the connectivity issues described. For instance, several digital textbooks provided downloadable chapters in PDF format, allowing students to access content without a stable internet connection. Additionally, LMS platforms like Moodle and Blackboard offered offline access modes, enabling students to download course materials and complete assignments locally before submitting them online when connectivity was available.

This additional layer of analysis provides tangible examples of the systemic responses employed to adapt educational content to the varied technological landscapes encountered by students. It underscores the need for systemic changes to ensure that the transformative potential of online education is accessible to all, irrespective of geographical location or socio-economic status.

Creation, Dissemination of materials, and Use of Online Platforms

This theme explores the challenges teachers faced in creating and disseminating instructional materials and using online platforms for conducting classes. This theme is pivotal in understanding the pedagogical adaptations necessitated by the shift to online education during the pandemic.

> *"Adapting classroom materials for online teaching was challenging, especially with the unreliable internet in my rural area. I had to redesign lesson plans for digital formats, which was often disrupted by connectivity issues, impacting student*

engagement." (Dana)

Dana's struggle with adapting classroom materials for online teaching, compounded by unreliable internet connectivity in a rural setting, highlights a significant barrier in the effective delivery of online education. This issue aligns with the findings of scholars like Moorhouse and Kohnke (2021), who emphasize the critical role of stable internet connectivity in facilitating effective online education. Dana's experience underscores the broader issue of infrastructural limitations in less urbanized areas, which can severely impede the efficacy of online teaching and learning.

"Transitioning to online ELT teaching was complex. It was difficult to replicate the interactive nature of physical classrooms. I explored various platforms for better real-time interaction and feedback, requiring a significant shift in my teaching and content presentation methods." (Fiona)

Fiona's experience in transitioning to online English Language Teaching (ELT) illustrates the complexities of replicating the interactive and dynamic nature of physical classrooms in a virtual environment. Her challenges resonate with the observations made by Kumar and Martin (2022), who note the difficulties in adapting interactive teaching methods to online platforms. Fiona's exploration of various platforms for real-time interaction and feedback reflects a significant shift in teaching methodologies, underscoring the need for teachers to be proficient not only in their subject matter but also in leveraging digital tools to enhance student engagement.

"Assessing student understanding online was a challenge. I adapted by assigning digital tasks, but ensuring these were meaningful and effective required a learning curve. Familiarizing myself with different online platforms for content delivery and assessment was crucial." (Ethan)

Ethan's approach to addressing student comprehension issues online through the assignment of digital tasks highlights the challenges of assessing student understanding in a remote learning

environment. This aligns with the findings of Sharma et al. (2020), who emphasize the necessity of innovative and adaptable teaching strategies in online education. Ethan's experience points to the importance of developing effective online assessment methods that can accurately gauge student learning and engagement.

To add depth to these narratives, an in-depth document analysis of lesson plans, online course syllabi, and associated teaching materials was conducted. This analysis provided insight into the specifics of the pedagogical content adaptation for online platforms. For instance, lesson plans included detailed instructions for using interactive digital tools, such as forums and quizzes on learning management systems (LMS) like Moodle, designed to foster student engagement and facilitate real-time feedback. These documents also highlighted strategies for creating downloadable content that students could access offline, directly addressing the connectivity concerns mentioned by Dana. One example was the use of narrated PowerPoint presentations with embedded audio, which students could download and review without an internet connection.

Moreover, the lesson plans revealed efforts to incorporate a variety of multimedia resources to enhance the virtual learning experience, illustrating the innovative approaches teachers like Fiona sought to implement for more dynamic and interactive online classes. These resources included video lectures, virtual reality simulations, and interactive websites for language practice.

Additionally, professional development materials provided guidance on effective online assessment strategies, such as using online quizzes and assignments with automated grading and feedback mechanisms, aligning with Ethan's efforts to ensure meaningful and effective digital assessments.

These document findings reveal the strategic and creative efforts made by educators to overcome the barriers of distance learning, complementing the personal accounts of Dana, Fiona, and Ethan. Through the lens of document analysis, we see a clear picture of how educators navigated the challenges of digital material creation and dissemination as well as the utilization of online platforms for teaching and assessment. This dual perspective underscores the critical need for not only digital literacy but also continuous

professional development in digital tool utilization, instructional design for online environments, and innovative assessment strategies. It further highlights the importance of reliable internet infrastructure to ensure equitable access to quality online education.

Teacher Preparedness and Adaptability in Technology Use

This theme delves into the multifaceted aspects of how teachers have prepared for and adapted to the integration of technology in educational settings, particularly in the context of the sudden shift to online learning necessitated by the pandemic.

> *"In response to the shift to online learning, I had to rapidly adapt my teaching methods. Initially unprepared for the extent of technological integration required, I found myself exploring various digital tools to maintain student engagement. This adaptation was a significant learning experience, enhancing my digital literacy and teaching approach." (George)*

George's experience highlights a common scenario faced by many teachers at the onset of the pandemic: a lack of preparedness for the extent of technological integration required in online teaching. His journey of exploring various digital tools to maintain student engagement is reflective of the broader need for teachers to rapidly acquire digital literacy skills. This aligns with the findings of scholars like Wang and Wiesemes (2021), who emphasize the importance of digital literacy in the effective implementation of online education. George's experience underscores the necessity for ongoing professional development in digital tool utilization, a sentiment echoed in the literature on educational technology integration.

> *"The transition to online teaching required me to quickly develop new skills in digital pedagogy. I focused on creating interactive and engaging online content, which was a departure from my traditional teaching methods. This process involved not only learning new technologies but also rethinking my instructional strategies to suit the digital format, fostering active student participation and leveraging digital tools for formative*

assessment." (Hannah)

Hannah's response sheds light on the need for developing new skills in digital pedagogy, extending beyond technological proficiency. Her focus on creating interactive and engaging online content represents a significant shift from traditional teaching methods, involving the adaptation of instructional strategies to suit the digital format. This aligns with the observations made by Kim (2020), who note the critical role of innovative instructional strategies and student-centered approaches in enhancing online learning experiences. Additionally, Hannah's mention of leveraging digital tools for formative assessment highlights the importance of integrating technology into assessment practices, a crucial aspect of effective online education.

"Adapting to technology use in teaching during the pandemic was both challenging and enlightening. I had to embrace a variety of online platforms and tools, which initially was outside my comfort zone. This experience has significantly improved my digital competencies and has reshaped my approach to teaching, making it more dynamic and versatile. However, I also recognized the need to foster digital literacy among my students to ensure their active engagement and participation in the online learning environment." (Julia)

Julia's experience encapsulates the dual nature of the challenge – the initial discomfort with new technologies and the eventual enhancement of teaching capabilities. Her journey of embracing a variety of online platforms and tools resonates with the experiences of many teachers who found themselves outside their comfort zones during the pandemic. This experience, as Julia notes, led to a significant improvement in her digital competencies and reshaped her approach to teaching, making it more dynamic and versatile. This observation aligns with the findings of Mdhlalose and Mlambo (2023), who highlight the transformative impact of technology integration on teaching practices.

Notably, Julia also acknowledges the importance of fostering

digital literacy among students, a critical factor in ensuring their active engagement and participation in online learning environments. This recognition aligns with the arguments of Hatlevik and Christophersen (2013), who emphasize the need for both teachers and students to possess adequate digital literacy skills for effective technology integration in education.

To enrich these narratives, document analysis was conducted on professional development materials, technology integration guides, and digital literacy frameworks provided by educational institutions. This analysis offered insights into the structured support systems in place to assist teachers like George, Hannah, and Julia in their transition to online teaching. Professional development programs detailed in these documents emphasized not only the technical aspects of digital tools but also pedagogical strategies for engaging students online, mirroring the adaptative journey described by the teachers. These materials showcased a wide array of topics covered, from basic digital literacy to advanced online instructional design, indicating a comprehensive approach to supporting teacher adaptation to online education.

Furthermore, technology integration guides provided clear examples and best practices for utilizing online platforms effectively, complementing Julia's exploration of various digital tools. These guides often included recommendations for software and applications that could enhance interactive teaching and learning, alongside strategies for overcoming common obstacles encountered in remote education settings.

In conclusion, Theme 3 of this study underscores the critical importance of teacher preparedness and adaptability in the successful integration of technology in education. The experiences of George, Hannah, and Julia illustrate the rapid adaptation and skill development that teachers underwent in response to the demands of online education. The document analysis confirms the critical role of systemic support, through professional development and technology integration resources, in facilitating teachers' adaptation to online education. This theme underscores the ongoing need for comprehensive professional development opportunities that enable educators to navigate the evolving technological landscape of modern

education successfully.

Significantly, the adaptations made by teachers during the pandemic, such as adopting new digital tools and online platforms, are likely to have long-lasting impacts on their teaching practices beyond the immediate crisis. As teachers become more proficient in leveraging technology for instruction, there is a strong possibility that they will continue to incorporate blended learning approaches and digital resources into their classrooms, even after the transition back to traditional in-person settings (Cobo-Rendón et al., 2022). This sustained integration of technology could lead to more engaging and interactive learning experiences for students, fostering their digital literacy skills and better preparing them for the demands of the modern workforce (Kumbo et al., 2023). However, the successful long-term integration of these adaptations will require ongoing professional development opportunities and institutional support for teachers to continually enhance their digital competencies and align their pedagogical practices with the evolving technological landscape.

Overall Experience and Improvement in Teaching Capabilities

This theme delves into an in-depth analysis of the cumulative experiences of teachers as they navigated the challenges and opportunities presented by the shift to online education. It intricately explores how these experiences have not only tested but ultimately enhanced the teaching capabilities of teachers, reshaping their pedagogical approaches in profound ways.

> *"My overall experience in adapting to online instruction has been both challenging and transformative. The need to document online educational endeavors and disseminate them on platforms like YouTube has reshaped my approach. This experience enhanced my ability to create engaging instructional content and fostered a more flexible and dynamic teaching style." (Ian)*

Ian's reflection on the challenging yet transformative nature of adapting to online instruction underscores the multifaceted impact of the pandemic on teaching practices. The necessity to document online educational endeavors and disseminate them on platforms like

YouTube signifies a shift towards more dynamic and accessible instructional content. Ian's experience aligns with the findings of Asare et al. (2023), who argue that the integration of technology allows teachers to create engaging and interactive learning materials, fostering a more flexible and dynamic teaching style.

> *"The journey of incorporating technology into my teaching practices during the pandemic has been a significant one. Initially challenged by the unfamiliarity with platforms like Google Classroom and Zoom, I have witnessed a remarkable improvement in my proficiency. This experience prompted a reevaluation of my teaching methods, making them more adaptable to the evolving educational landscape." (Kevin)*

Kevin's journey of incorporating technology into his teaching practices unveils the significant learning curve experienced by teachers during the pandemic. The initial challenges stemming from the unfamiliarity with platforms like Google Classroom and Zoom evolved into a remarkable improvement in proficiency. Kevin's experience resonates with the literature on technology integration, as noted by Harris and Hofer (2011), emphasizing the transformative potential of technology in prompting teachers to reevaluate and adapt their teaching methods to suit the evolving educational landscape.

> *"Embracing technology in teaching has not only made the learning process more dynamic but has also led to a noticeable shift in student engagement. My overall experience during the pandemic has highlighted the importance of adapting teaching methods to meet contemporary needs. The increased use of technology has positively impacted my teaching capabilities, fostering a more innovative and student-centered approach." (Lily)*

Lily's testimony reflects the broader impact of embracing technology on the learning process and student engagement. The noticeable shift she observes underscores the potential of technology to enhance student-centered approaches and create more dynamic

learning environments. Lily's experience aligns with the scholarship of Granić and Marangunić (2019), who argue that increased technology use positively impacts teaching capabilities, fostering innovation and adaptability.

To corroborate and deepen the understanding of these personal experiences, an extensive review of teaching materials, including online course outlines and digitally enhanced lesson plans, was undertaken. This document analysis revealed a broad range of innovative teaching strategies that had been documented and shared among educators, such as Ian's use of YouTube for disseminating educational content. For example, course outlines now frequently include links to digital resources, guiding students to external websites for supplementary learning and outlining expectations for digital engagement. Digitally enhanced lesson plans showcase a variety of multimedia integration, from embedded videos to interactive quizzes that require students to engage actively with the material online, mirroring the innovative approaches mentioned by Kevin and Lily.

These documents not only validate the teachers' accounts of their development and adaptation to online teaching but also highlight the institutional acknowledgment and support for such innovations. They serve as a testament to the educational community's collective effort to enhance the quality of online instruction and student engagement through technology integration. This analysis further underscores the critical importance of continuous professional development and the availability of resources to support teachers in harnessing the potential of digital tools for educational advancement.

Collectively, the experiences of Ian, Kevin, and Lily, enriched by the insights gained from document analysis, underscore the transformative impact of the shift to online education on teachers' overall teaching capabilities. This comprehensive view emphasizes the ongoing need for teachers to embrace and effectively leverage technology to foster sustained improvements in teaching methodologies and student learning outcomes.

While the rapid transition to online learning posed significant challenges, the experiences also presented valuable opportunities for teachers to enhance their digital competencies and pedagogical

approaches. The innovative strategies and adaptations developed during the pandemic, such as the use of interactive digital tools, multimedia resources, and collaborative online platforms, hold promise for improved student outcomes in the long run. For instance, the integration of multimedia resources and interactive digital tools may facilitate better comprehension, retention, and engagement with course content among students (Waang, 2023). Additionally, the exposure to collaborative online platforms could foster essential skills such as teamwork, communication, and digital literacy, which are highly valued in the modern workforce (Herriott & McNulty, 2022).

However, it is important to note that the findings of this study capture a snapshot of experiences during the height of the pandemic, and to fully understand the long-term impact of these experiences on teaching practices, a longitudinal study would be necessary. As educational institutions transition towards more stable and integrated approaches to online and blended learning, it would be valuable to explore how the challenges and adaptations faced during the pandemic have evolved over time.

For instance, a longitudinal perspective could shed light on whether the innovative teaching strategies and digital competencies developed during the pandemic have been sustained and further refined or whether there has been a reversion to pre-pandemic teaching methods. Additionally, it could provide insights into the long-term implications of these experiences on teacher professional development, institutional support systems, and the overall integration of technology in tertiary education.

As a recommendation for further research, a longitudinal mixed-methods study could comprehensively examine the long-term impacts of ICT integration on teaching practices and student outcomes. Such a study could employ quantitative measures like student assessments and teacher surveys to evaluate changes in academic performance, engagement, digital literacy, and technology acceptance over an extended period. Qualitative data from teacher interviews and classroom observations would provide valuable insights into the practical implementation of ICT, challenges faced, and adaptations made by educators. Moreover, collecting institutional data on professional development programs, technology infrastructure

investments, and policy changes related to ICT integration could shed light on the broader systemic factors influencing the long-term adoption and effectiveness of educational technology.

Such a longitudinal study could also explore the potential lasting effects of the pandemic on student engagement, digital literacy, and learning outcomes, as well as any shifts in the digital divide and equity considerations in online education. By capturing the long-term trajectories of these experiences, researchers and policymakers could gain a more comprehensive understanding of the enduring impact of the pandemic on teaching practices and the role of technology in shaping the future of education.

In the context of this study, the identification of external variables influencing technology adoption in educational settings can be effectively analyzed through the Technology Acceptance Model (TAM), as delineated by Scherer et al. (2019). TAM provides a theoretical framework to understand the factors driving teachers' acceptance and use of new technologies. According to this model, two primary factors, perceived usefulness and perceived ease of use, significantly influence an individual's attitude towards technology adoption. In the realm of education, teachers, having been exposed to a variety of technologies within their home environments, possess a foundational knowledge of numerous technological tools. This exposure, as Arkorful et al. (2021) suggest, primes teachers to not only acquire new software and applications but also fosters a favorable disposition towards their utilization. This progressive inclination is pivotal in integrating these technologies into instructional practices.

In the post-pandemic era, the relevance of these findings is further accentuated. The abrupt shift to online and hybrid learning modes necessitated by the pandemic has underscored the critical role of ICT integration in education. The application of TAM in this context offers valuable insights into how teachers have adapted to and accepted these new modes of teaching. It highlights the ongoing need for tools that are both effective in enhancing learning outcomes and user-friendly to encourage widespread adoption among teachers. As educational institutions continue to navigate the blend of traditional, online, and hybrid teaching methodologies, understanding the factors that influence teachers' acceptance of technology becomes

increasingly crucial. This understanding is essential not only for the effective implementation of current technologies but also for guiding future developments in educational technology, ensuring they align with the needs and preferences of teachers in a rapidly evolving digital landscape.

However, it is important to acknowledge that the findings of this study are based on a relatively small sample of 12 EFL teachers from northern Vietnam. While this sample provided rich qualitative insights into the experiences and challenges faced by tertiary educators in integrating ICT during the pandemic, the limited sample size and regional focus may impact the generalizability of the results to the broader population of EFL teachers in Vietnam and across different educational and cultural contexts. Additionally, the purposive sampling approach employed, although appropriate for the study's objectives, may have introduced potential biases, further limiting the representativeness of the sample. Therefore, while these findings offer valuable perspectives, they should be interpreted within the specific context in which the data were collected, and future research with larger and more diverse samples is necessary to validate and extend the findings' generalizability.

CONCLUSION AND IMPLICATIONS

The primary objective of this study was to investigate the pedagogical encounters of teachers who utilized technology as a teaching tool throughout the COVID-19 outbreak in Vietnam. This study examines four key aspects: (1) Internet Accessibility and Connectivity Challenges; (2) Creation, Dissemination of Materials, and Use of Online Platforms; (3) Teacher Preparedness and Adaptability in Technology Use; and (4) Overall Experience and Improvement in Teaching Capabilities.

This study elucidates the intricate challenges and transformative experiences encountered by teachers amid the expeditious shift to online education prompted by the COVID-19 pandemic. The exploration of themes such as internet accessibility, creation and dissemination of materials, and teacher preparedness underscores the

multifaceted nature of pedagogical adaptations necessitated by the pandemic-induced virtual learning environment. The findings underscore the persistent digital divide, emphasizing the exigency for urgent systemic changes to ensure equitable access to quality online education, particularly in underserved areas. Moreover, teachers' experiences illuminate the critical importance of continuous professional development to cultivate digital literacy and adaptability, prerequisites for navigating the evolving landscape of educational technology. Furthermore, the study unveils the transformative impact of the pandemic on teaching capabilities, with teachers demonstrating resilience and innovation in response to the demands of online instruction. This underscores the imperative for a holistic approach encompassing technological infrastructure improvements, targeted professional development, and judicious policy interventions to cultivate an inclusive and effective educational landscape. In essence, the insights garnered contribute to a nuanced comprehension of the challenges confronted by teachers, offering a foundation for strategic initiatives that can shape the trajectory of education in an increasingly digital world.

Expanding upon the policy implications derived from these findings, a series of strategic recommendations are proposed. Among these, enhancing national broadband strategies to guarantee universal internet connectivity emerges as a priority, with a focus on extending coverage to rural and marginalized communities. Additionally, advocating for policy measures that provide internet subsidies to economically disadvantaged families could significantly democratize access to online education. Embedding digital literacy within the framework of teacher education programs is crucial, equipping educators with essential skills for deploying technology in pedagogy effectively. Promoting the adoption and creation of open educational resources (OERs) is also recommended to alleviate the barriers to accessing quality educational content and tools.

The implications drawn from this study carry substantial ramifications for educational practices and policies. The persistent digital divide, as elucidated by the challenges in internet accessibility, underscores the urgency for systemic reforms to ensure equitable access to quality online education. Efforts must be directed towards

addressing infrastructural limitations, especially in underserved areas, to bridge the existing gaps. The critical role of continuous professional development in fostering teachers' digital literacy and adaptability further emphasizes the necessity for institutional support and initiatives. Moreover, the transformative impact of the pandemic on teaching capabilities signifies a paradigm shift in pedagogical approaches, necessitating a reevaluation of traditional teaching methodologies. This study contributes not only to the immediate understanding of teachers' challenges but also provides a foundation for future research endeavors in a post-COVID-19 era. The evolving landscape of education demands sustained attention to the intersection of technology and pedagogy, calling for nuanced strategies and policies that promote inclusivity and innovation. As educational institutions navigate the aftermath of the pandemic, informed by the experiences uncovered in this study, there lies an opportunity for continuous improvement and adaptation in the delivery of quality education.

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