COVID-19 Educational Side Effects: Pre-service EFL Teachers' Use of Digital Education Tools

Efectos educativos secundarios de COVID-19: uso de herramientas digitales por profesores de inglés en formación

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ABSTRACT

Recent research has revealed the complexities of incorporating technology tools into lessons, despite the creation of several platforms and applications for education (Wen & Hua, 2020). The radical shift from traditional to online learning during the COVID-19 pandemic compelled teachers and students to develop technical skills to adapt to this new reality. This study explores the impact of this phenomenon on the perspectives of Pre-Service (PS) English language teachers (students in a teacher-training program), regarding the use of technology to support their own English language learning (ELL) process. To achieve this, an explanatory sequential mixed-method approach was employed. A questionnaire consisting of seven Likert scale statements and six open-ended questions was administered to 32 PS teachers from the English Language B.A program at a major public university in Southeast Mexico. Subsequently, eight participants were interviewed. The results indicated that despite most participants having prior knowledge of technological tools and educational platforms before the pandemic, they did not utilize them to support their ELL. However, the findings also revealed a positive response from participants towards continuing to use digital platforms due to perceived benefits experienced during Emergency Remote Teaching. These findings provide additional evidence concerning English learning and teaching and how classes can be more effective and significant using platforms and applications if classrooms are well equipped.

KEYWORDS: English Language Learning, Educational Technology, Emergency Remote Teaching, ERT, Preservice Teacher Education, COVID-19.

RESUMEN

Investigaciones recientes han revelado las complejidades de incorporar herramientas tecnológicas en el salón de clases a pesar de la creación de varias plataformas y aplicaciones para la educación (Wen & Hua, 2020). El cambio radical del aprendizaje tradicional al aprendizaje en línea durante la pandemia de COVID-19 obligó a docentes y estudiantes a desarrollar habilidades técnicas para enfrentar una nueva realidad, y este estudio explora el impacto de este fenómeno en las perspectivas de futuros profesores y profesoras de inglés, estudiantes de un programa formador de docentes de inglés, con respecto al uso de la tecnología como apoyo en su propio proceso de aprendizaje del idioma inglés. Para lograr este propósito, se seleccionó un enfoque de método mixto secuencial explicativo. Se administró un cuestionario de siete declaraciones de escala de Likert y seis preguntas abiertas a 32 futuros docentes de una Licenciatura en Lengua Inglesa en una de las principales universidades públicas en el Sureste de México. Posteriormente, se entrevistó a ocho participantes. Los resultados mostraron que a pesar de que la mayoría de los y las participantes tenían conocimientos sobre herramientas tecnológicas y plataformas educativas antes de la pandemia, no las utilizaban para apoyar

su aprendizaje de lengua. Los hallazgos también mostraron una respuesta positiva de los y las participantes para continuar usando plataformas digitales debido a los beneficios percibidos durante la Enseñanza Remota de Emergencia. Estos hallazgos brindan evidencia adicional sobre el aprendizaje y la enseñanza del inglés y cómo las clases pueden ser más efectivas y significativas utilizando plataformas y aplicaciones si las aulas están bien equipadas.

PALABRAS CLAVE: Aprendizaje de inglés, Tecnología educativa, Enseñanza Remota de Emergencia, ERE, Formación preparatoria de docentes, COVID-19.

INTRODUCTION

Technology has become an essential part of human life, permeating various sectors such as industries, administrations, government, and the education system. The integration of digital platforms in education has led to the development of numerous digital educational tools like Google Classroom, Moodle, Edmodo, Blackboard Learn, and Formative, among others. These tools support teachers' and students' learning objectives by providing access to extensive libraries and vast amounts of material, saving both time and money (Wen & Hua, 2020).

However, despite these technological advancements, many teachers lack the necessary skills to effectively use educational platforms and all the technological resources available in education. Although a significant number of educators are familiar with technological tools useful for educational purposes, not all of them have been trained to integrate these tools into their teaching practices effectively. Many educators admit to not feeling well-prepared to apply information, communication, and technology (ICT) in their classrooms in a meaningful way (Van der Spoel et al., 2020).

Since teachers serve as role models for students, this lack of knowledge negatively impacts students' attitudes and motivation toward using educational tools during their learning process. Moreover, despite the remarkable development of platforms and applications for education, insufficient investment from schools to adapt classrooms to more technology-based environments has hindered teachers from integrating ICT into their classes (Wen & Hua, 2020). The adaptations resulting from the lockdown, referred to as Emergency Remote Teaching (ERT) (Cahyadi et al., 2021), caused by the COVID-19 pandemic marked a new beginning in education. This period highlighted the potential benefits of using platforms and applications in the students' learning process. However, despite some schools already incorporating technology into their instruction policies, not all teachers and students were prepared for this sudden shift (Almusharraf & Khahro, 2020; Perifanou et al., 2021).

The abrupt transition from face-to-face to online classes revealed that educators and learners were not fully prepared to effectively integrate ICT into the learning process (Almusharraf & Khahro, 2020). It also exposed the fact that most schools were not adequately equipped for this change (Pe-

rifanou et al., 2021). For teachers, one of the main challenges was adapting their classes to different platforms and applications in a way that could involve and engage students in their own learning (Turnbull et al., 2021). Meanwhile, students had to quickly familiarize themselves with various technological tools to complete their instructors' activities. Additionally, in most cases, neither teachers nor students were sufficiently skilled in using digital tools (Perifanou et al., 2021).

Eventually, some schools adopted different approaches such as hybrid and Hyflex education, as well as synchronous and asynchronous classes, where technology remained integral (Keshavarz, 2020). This transition led students to experience both positive and negative outcomes during this phase of their education (Mahyoob, 2020), which likely persist and may continue to impact their learning process. Thus, the radical shift from traditional to online learning during the pandemic forced teachers and students to develop technical skills to face a new reality.

The use of digital educational tools during the pandemic not only fostered new teaching and learning strategies for educators and students (Kaharuddin et al., 2020) but also altered students' perspectives on the use of technology in classrooms (Almusharraf & Khahro, 2020). It can be said that this significant change from traditional to online learning during this period compelled teachers and students to develop technical skills to adapt to a new reality. Nonetheless, little is known about how this change affected pre-service teachers in the Mexican context, as no prior studies have been conducted on this subject.

The Pre-service (PS) teachers, participants of the present study, were not the exception in this adaptation and technical skills development processes. Enrolled in the last year of a BA in English Language at a public university in the south-east of Mexico, they started their undergraduate studies attending regular face-to-face classes, then abruptly switched to Emergency Remote Learning during the pandemic, and then back to normal during their last year. The aim of the present study was to explore these PS EFL teachers' perceptions about the impact of ERT on their use of technology in their learning process.

In this paper, the effects of ERT on the use of technology in education and the instructional models adopted after the COVID-19 pandemic are first discussed. Then, the methodology of the study, including the research design, context and participants, research instruments, and data analysis, is described. This is followed by the presentation of the study's results. Finally, the conclusions are presented.

Effects of Emergency Remote Teaching in the Use of Technology

The global lockdown caused by the COVID-19 pandemic forced educational institutions to quickly shift from traditional face-to-face classes to an online delivery mode known as Emergency Remote Teaching (ERT) (Cahyadi et al., 2021). While this transition may have been smoother for schools already utilizing technological tools, it posed a significant challenge for many teachers and students who were not proficient in using technology for educational purposes.

The use of technological resources during the lockdown, compared to face-to-face instruction, had several disadvantages across cognitive, affective, social, and physical domains (Ezra et al., 2021). Concerns were raised regarding learning quality; learners' concentration, interest, motivation, anxiety, and achievement expectations; and the impact of the lack of social interaction and fatigue from online learning (Ezra et al., 2021).

Despite these challenges, digital tools and other software were advocated as resources that could produce better outcomes than traditional classes. For instance, the increased use of educational technology during ERT not only helped students develop their technological skills (Qiao et al., 2021) but also led to higher levels of engagement (Su et al., 2023). However, for this modality to be effective, it required meaningful interaction and collaboration between students and teachers (Aguilera-Hermida, 2020).

Therefore, several considerations need to be addressed before making any conclusions regarding any positive impact of ERT on the subsequent post-pandemic integration of technological tools in education. An obvious step is teacher training on the use of ICT. Furthermore, e-learning may be enhanced in line with technological advancement, but there may be difficulties with online learning performance and effectiveness for students of different ages due to the decrease in financial support for schooling and the expansion of social isolation (Aguilera-Hermida, 2020; Qiao et al., 2021). Aguilera-Hermida (2020) suggests that these difficulties could improve with social influence and the facilitation of certain conditions, such as facilitating conditions where students can use technology anytime and anywhere. She also suggests that before beginning an online course, students must get instruction and support in using the platforms and resources for learning to have an effective class.

Models of Education Adopted After the Coronavirus Pandemic

With the advent of vaccines, many institutions began considering a return to a new normal where students could attend face-to-face classes again. This transition was managed gradually, with schools implementing different protocols such as adapting classrooms for physical distancing and adjusting schedules to avoid student congestion (Sheikh et al., 2020).

To prevent the spread of the coronavirus, some countries, including the university in Mexico in question, adopted a combination of face-to-face and online classes. The experiences during the period of social distancing revealed a significant shift in typical behavior, prompting many schools to consider moving towards fully online or hybrid learning modes (Cahapay, 2020).

Several flexible and accessible learning models were adopted by institutions to facilitate students' learning in the post-pandemic scenario, including Hybrid, Hyflex, Synchronous, and Asynchronous models (Bashir et al., 2021). The Hybrid model combines blended learning and traditional classrooms, where teachers and half of the students attend classes in person on different schedules while the other half participate virtually (Keshavarz, 2020). Benefits of this model include improved communication between teachers and students, enhanced online interaction among students, interaction

with peers from other parts of the world, improved technological skills, and greater commitment to classes (Triyason et al., 2020).

The Hyflex model has the same characteristics as the Hybrid model with a slight difference in which teachers assign the activities synchronously and asynchronously, and students can freely decide if they want to participate in one way or another (Bashir et al., 2021). Nonetheless, even though the Hyflex method gives students more options, it may also lead to higher inequalities in their experiences and disrupt their sense of belonging to a class (Bashir et al., 2021).

The Asynchronous model is a learning system where it is not necessary to attend face-to-face classes, and the activities are assigned through applications and platforms where students can visualize and deliver them, while the Synchronous model involves simultaneous interaction mostly through videoconferences (Turnbull et al., 2021). The benefits of carrying out a synchronous model are that students can get instant feedback, and the communication between teacher and students is better, whereas the benefits of an Asynchronous model are that learners feel more confident in participating, and they can complete their activities at any place and time (Fabriz et al., 2021).

METHODOLOGY

To explore the impact of ERT on pre-service (PS) English teachers' perceptions regarding the use of technology in their English language learning process, this study followed an explanatory sequential mixed-method model. Initially, a quantitative research method was administered, and the findings were subsequently expanded through a qualitative research method and analysis (Creswell & Creswell, 2018). The following sections provide a brief description of the participants and the context of the study, along with details of both research methods and the data analysis conducted for each.

Context and Participants

This research paper was conducted at a BA in English Language at a public university in Southeast Mexico. The main aim of the program is to prepare its students with a high command of English and teaching competencies. The levels of English that the program offers go from Elementary (A2) to Advanced (C1) in six semesters. Regarding the development of teaching competencies, the program offers several courses in this area, especially in the last two years of the BA curriculum. The participants in this study were students in the last year of the BA, and therefore are considered Pre-service (PS) teachers. Another selection criterion was the fact that they had experienced classes before, during, and after COVID-19.

For the quantitative phase, non-probability sampling was used (Bhardwaj, 2019). That is to say, the participants were selected according to the semester they were studying at the time of the investigation. 59% of the participants were female while 41% were males. Most of the participants were 22-23 years old (71%), but the age range went from 21 to 44 years old overall. For the second phase,

seven of the participants who answered the questionnaire were asked to participate in the interview. For confidentiality issues, the following pseudonyms are used: Ofelia (44 years old), Alma (30 years old), Pamela (24 years old), Nadia (23 years old), Miguel (23 years old), Carlos (23 years old), and Guillermo (21 years old); that is, four women and three men.

The Methods: Online Questionnaire and Face-to-face Interview

The data for this research was first collected by administering an online questionnaire. The questionnaire was hosted in the web-based survey tool Google Forms, which was selected due to the benefits of its low cost, large sample size scope, and the reduction of human error (Fleming & Bowden, 2009).

The questions in this instrument were formulated in a way that the PS EFL teachers might reflect on their use of apps and platforms before, during, and after the pandemic as the instruction changed accordingly. Before the questionnaire was sent to the participants, it went through the process of experts' audit; it was sent to three professors knowledgeable in research and the use of questionnaires to collect data for their analysis. Then, the questionnaire was piloted with ten PS teachers of the same program. It comprised seven statements from which participants could select the answer that better related to their experience (Likert scale) and six open-ended questions which aimed to explore participants' experiences with the use of technology for supporting their English learning as well as their views about their teachers' use of educational technology.

Then, seven participants were invited to expand on their answers to the questionnaire. A semi-structured interview guide was used to let participants provide more in-depth answers to the open questions in the questionnaire. Each interview was performed on a one-to-one, face-to-face basis and lasted approximately 20 minutes.

Data Analysis

Basic statistical analysis was conducted on the questionnaire responses, which were represented numerically (Bergin, 2018). Descriptive statistics, as defined by Trochim (2006), were utilized to interpret the data collected, encompassing frequencies, means, standard deviations, and percentages of responses from PS teachers (Johnson & Christensen, 2019). An Excel spreadsheet containing all participant responses was automatically generated via Google Forms. For the purposes of this paper, only the means are presented in the results. Qualitative data derived from six open-ended questions and interviews underwent content analysis.

RESULTS

The findings are categorized into three principal themes: participants' utilization of technology before the pandemic, the perceived impact of COVID-19 on PS teachers' adoption of technology for educational purposes, and participants' perspectives on technology use post-pandemic. The ranges of agreement for Likert scale responses were adapted from Chanwaiwit's (2018) classifications (see Table 1).

Table 1.

Range of answer options of the Likert scale

Range	Agreement	Classification
4.21 – 5.00	Strongly Agree	Positive
3.41 – 4.20	Agree	
2.61 – 3.40	Neither agree nor disagree	Neutral
1.81 – 2.60	Disagree	Negative
1.00 – 1.80	Strongly Disagree	

Source: Adapted from Chanwaiwit (2018).

Using a five-point Likert scale in the questionnaire, the intervals and classification of the results were the following: *Strongly agree* ranging from 4.21 – 5.00, *Agree* ranging from 3.41 – 4.20, *Neither agree nor disagree* ranging from 2.61 – 3.40, *Disagree* ranging from 1.81 – 2.60, and *Strongly disagree* ranging from 1.00 – 1.80. Furthermore, they were classified into three categories, where the ranges from *Strongly agree* and *Agree* are considered positive, *Neither agree nor disagree* is considered neutral, and *Disagree* and *Strongly Disagree* are considered negative (Chanwaiwit, 2018). The mean for the Likert scale questions was calculated and reported in each case. The interviews were conducted in the participants' L1, Spanish, hence the quotes that were selected and included to discuss results here were translated into English.

Use of Technology in Education Before the Pandemic

The questionnaire included three statements related to PS teachers' knowledge and experience before the lockdown regarding the use of educational platforms for their English learning process (Table 2).

Table 2.

Background of the use of technology before the pandemic

Statement	N	Mean	Classification
Before the pandemic, I already knew platforms and/or applications to support my English learning.	32	3.09	Neutral
Before the pandemic, I used platforms and/or applications to support my English learning.	32	2.65	Neutral
Before the pandemic, my teachers already used platforms and/or applications to support my English learning.	32	2.28	Negative

Source: Own elaboration.

As observed, participants' experiences ranged from neutral to negative, a sentiment echoed in interviews. For instance, Ofelia acknowledged awareness of platforms and applications by name but expressed disinterest in utilizing them: "I knew they existed, but I didn't use them because I didn't feel interested in them".

Similarly, other participants shared similar sentiments, citing the institutional learning platform Eminus. Alma, for example, pointed out:

> I knew that Eminus existed, but nobody used it, the only thing related to technology was to get into the Wi-Fi network of the university campus and that's it, because they [teachers] didn't assign homework on platforms, or applications, or anything related, so I didn't use them.

Carlos also mentioned his experience to this respect: "One or another teacher would take us to the computer room from time to time to do some activities related to the subjects, and some of them were on Eminus". Overall, a common view among interviewees was that classes were limited to the use of the whiteboard, photocopies, and books and that teachers barely use ICT. This reinforces the idea that the implementation of technological resources is highly dependent on schools, hence teachers, which can influence students' interest in integrating different technology into their learning (Sumaimi & Susilawati, 2021).

However, even when teachers attempt to integrate ICT, PS teachers may not be sufficiently prepared to leverage the selected tools for enhancing their learning. Guillermo remarked on this issue: "When I got here in 2019 there was already a teacher who used Google Classroom, and I did not know how to use it, so I did not understand him".

Participants demonstrated limited interest in educational technology tools, but this lack of interest does not solely stem from school or teachers' attitudes toward them. Given PS teachers' reluctance to independently integrate ICT into their learning processes, it can be inferred that one reason integrating technology into the classroom remains challenging for teachers is students' passivity and resistance to new experiences (Winter et al., 2021), rather than solely teachers' own resistance or lack of skills.

This challenges the prevailing notion that students inherently understand and effectively use technology to access resources that enhance their learning (Qiao et al., 2021; Sumaimi & Susilawati, 2021). Furthermore, it suggests that barriers to effective integration into classroom practices are not solely attributable to teachers' technological knowledge gaps (Wen & Hua, 2020) or demographic factors such as age, gender, education, and attitudes toward technology (Manco et al., 2020). Merely being born into a 'technological' world does not necessarily equip students to leverage technology effectively for educational purposes.

The Impact of COVID-19 on Education

This category discusses the impact of incorporating technological tools in PS teachers' English learning during the pandemic and attempts to identify the most significant aspects of PS teachers' transition from face-to-face to online classes (Table 3).

PS teachers responded positively, with a mean score of 3.68, regarding the impact of virtual classes on their language learning and development, indicating that technology has enhanced their English skills. Moreover, when asked about their willingness to independently continue using technological

tools, participants expressed strong affirmation. They emphasized the benefits of these tools in improving their English proficiency, enhancing motivation through dynamic activities, and facilitating cost savings by managing materials through institutional platforms. This underscores the contemporary trend where both teachers and students prioritize enjoyable classes facilitated by technology, emphasizing entertainment, internet connectivity, and reduced reliance on textual materials as preferred elements of their learning styles (Abdul-Aziz et al., 2020).

Table 3.

The impact of COVID-19 on the learning process

Statement	N	Mean	Classification
Virtual classes during the pandemic significantly impacted my English learning process.	32	3.68	Positive

Source: Own elaboration.

The participants also emphasized the significance of feedback in their efforts to enhance their performance. Prior to the pandemic, the constraints of class time made it impossible for them to receive feedback. However, they now perceived that the platform they were using enabled them to conveniently access feedback from their instructors, thereby facilitating their language skills improvement. One of the most salient advantages of receiving feedback through digital means that the participants reported was that they possess the capability to retrieve these resources at any given time and location.

During the interviews, when asked about the complexity of integrating educational technology for English learning, five participants noted that the shift from traditional classroom settings to online learning at the onset of the pandemic was relatively smooth. They attributed this ease to their perceived familiarity with technological tools and the user-friendly interfaces of specific platforms. Nadia commented, "it was not so difficult because most of these [platforms and applications] are very intuitive, and I understood them very quickly". Carlos was also familiar with them: "It wasn't that difficult, since I am used to using Discord a lot, or some other applications that are used for communication, I already had an idea about how things [platforms and applications] worked".

However, this does not mean that they did not face any difficulties. Participants expressed that their comprehension of the platform was contingent upon the tool utilized. They perceived that certain platforms offered a multitude of options to navigate, resulting in a sense of confusion. For example, Alma said:

> Sometimes Google Classroom did get me confused because it has too many functions and I did not know how to use it, so then I had to ask or look for tutorials. … Also Teams, because the teachers used to assign some sections as activities and I did not know how to find them and I had to ask others.

Other reported drawbacks to the use of technology during the period of lockdown included issues such as outdated hardware, diminished motivation, and difficulties in maintaining focus on the subject matter. During the interview, Ofelia highlighted that while comprehending these technological tools posed mini-

mal challenges, the primary issue rested in the lack of attention: "Getting into the technical aspect was not difficult, but it was difficult to keep our attention on whatever the teacher wanted us to pay attention to".

The participants also expressed experiencing declining motivation, which they attributed to the absence of teacher-student interaction. Consequently, a diminished sense of interest in the pursuit of knowledge began to manifest within them. Guillermo commented:

> Some teachers only used these technological tools to set up activities and from my point of view, it was simply to carry out the activity, we were not really interested in learning because we did not feel close to the teacher, I thought, "If they notice that I delivered the activity they will assign me the grade", but really as to learn I feel that it did not turn out so well if the teacher did not organize his content well in a platform.

During the interviews, another aspect explored was the pre-pandemic perspectives of Pre-Service (PS) teachers regarding the use of technology for educational purposes, as well as the changes in these perspectives following their experiences throughout the pandemic. As previously mentioned, pre-pandemic perspectives on this matter were generally not very positive. For example, Alma emphasized "I considered them useless tools because nobody used them, they were there, we all knew they existed and what they were for, but nobody used them, not even the teachers".

However, the general consensus was that despite the infrequent use of these tools prior to the lockdown, they were perceived as auxiliary instruments for facilitating the learning process. After the lockdown, the PS teachers seemed to have gained a heightened understanding of educational tools, recognizing their significance. Participants also agreed that certain educators continued to employ these tools to assign activities, which proved advantageous as it provided them with additional time to complete and submit their assignments. For instance, Miguel observed an increase in the popularity of these tools among PS teachers:

> Before the pandemic, we only used them for research or storage, and after it, we began to use them more frequently to publish the contents of the classes and post announcements, now I see that their use is more frequent.

Although some of the participants, namely Carlos and Alma, observed that some educators still lack proficiency in using these digital platforms, they noticed that there is a widespread practice of integrating these to supplement the content covered in traditional classroom settings, thereby providing additional resources for PS teachers to enhance their comprehension and engagement with the contents of the course.

These results corroborate previous research on the integration of technology in education and its benefits, including increased opportunities and flexibility for students to access course materials at their convenience (Kaharuddin et al., 2020). They also confirm a growing preference among students for an educational approach that blends face-to-face and online classes. This blended learning model

enhances student engagement, offers the ability to review recorded lectures, and facilitates improved communication with teachers (O'Dea & Stern, 2022).

Digital Skills after the Lockdown

In the interest of knowing how PS teachers' abilities improved regarding the management of technology, the study analyzed the main skills that people must have to use technology effectively (Table 4).

Table 4.

Digital skills

	Statement	N	Mean	Classification
My skills regarding the use of the following computer programs have greatly improved after the lockdown…	Educational platforms (Quizziz, Kahoot, Go Formative, Edmodo, etc.).	32	3	Neutral
	Management of electronic devices	32	3.59	Positive
	Use of web browsers (Google Chrome, Internet Explorer, Mozilla Firefox).	32	3.43	Positive
	Audio and video management and editing.	32	3.28	Neutral
	Mobile applications and platforms (Download, create an account)	32	3.3	Neutral

Source: Own elaboration.

According to the results shown in Table 4, the participants perceived that their proficiency in using various platforms and applications remained unchanged compared to their pre-pandemic abilities. One explanation for this phenomenon is that many educational platforms and technological tools share similar interfaces. Consequently, PS teachers may not encounter a significant learning curve when using these tools, as they do not need to acquire new skills or knowledge to navigate them effectively.

Similarly, participants' proficiency in downloading and creating an account did not show any improvement. This may be attributed to pre-existing proficiency among PS teachers, who have been exposed to and engaged with technological devices over an extended period. Likewise, regarding the management and editing of audio and video, research participants reported a neutral outcome, likely influenced by their frequent use of interactive technologies like Facebook, Instagram, and TikTok, which offer editing features for videos and photographs. This proficiency in specific digital skills among PS teachers underscores the generational gap, with newer generations being more familiar and skilled with digital devices compared to older ones (Peimani & Kamalipour, 2021).

Conversely, participants noted an enhancement in their ability to manage electronic devices, likely due to frequent use leading to improved proficiency and efficiency in handling various tasks. They also expressed positive outcomes regarding their use of web browsers, possibly due to their ongoing search for information and reliance on efficient tools to support their learning and task completion.

Overall, these findings underscore the importance of consistent use of digital tools in enhancing PS teachers' academic performance. The onset of the COVID-19 pandemic prompted both educators and students to recognize the pervasive role of technology in education. They became aware of the diverse platforms and applications available to them, leveraging their existing digital competencies to enrich their learning experiences. Schools should therefore continue integrating digital resources, ensuring classrooms are equipped to effectively support learning (Wen & Hua, 2020).

PS teachers' Perceptions of the Use of Technology

This category presents findings in relation to how the change from face-to-face classes to online learning influenced PS teachers' perceptions regarding the use of technology for educational purposes. In this respect, two statements from the questionnaire (Table 5) and two questions in the interview addressed the importance of adapting platforms and applications during lessons to improve their English skills.

Table 5.

PS teachers' perceptions of the use of technology

Statement	N	Mean	Classification
The use of educational platforms and/or applications are helpful for my English learning process.	32	3.96	Positive
The use of educational platforms and/or applications improves my understanding of the topics covered in class.	32	3.78	Positive

Source: Own elaboration

The results indicated that PS teachers acknowledge the utility of educational platforms and/or applications in facilitating their English language learning. In addition, participants perceive the use of these digital tools as advantageous in enhancing their comprehension of the topics addressed during instructional sessions. As a result of these positive experiences with educational tools, most PS teachers mentioned that they would continue using them because of their accessibility and user-friendliness. During the interview, Guillermo shared the following:

> I like to use them (platforms and applications) because if I did not understand something during the class or had questions about something, I think that we can easily have access to consult information on them and, put the topics into practice on different platforms such as Worksheets, Kahoot! Quizziz, Quizlet, which I consider a very good complement.

These responses illustrate two of the main advantages of educational technology: accessibility to information and ease of use (Mahyoob, 2020). Having a device (laptop, tablet, or smartphone) and an internet connection provides students with the opportunity to access a vast array of information. In the context of English language learning, this enables them to avail themselves of numerous supplementary resources for practice purposes, which can be accessed conveniently anytime and anywhere.

Moreover, the participants expressed that certain educational platforms exhibit a high level of interactivity and interest, as they present activities through diverse modes such as games, multiple-choice questions, and flashcards. These platforms enable users to engage in continuous practice and enhance various skills. According to Alma, "Duolingo and other similar [apps] to it had activities that resembled video games, and, at the same time, the interface was very interactive to learn so they were useful for reviewing vocabulary and grammar".

Furthermore, participants expressed that using educational technology facilitated their development as self-directed learners. They attributed this to the availability of certain applications that enabled them to generate personalized study materials, thereby enhancing their awareness of areas needing improvement and allowing them to engage in continuous practice. Pamela succinctly stated, "Kahoot! and Jamboard helped me a lot to learn, I even got to do activities for myself and study".

An additional benefit that was perceived regarding the impact of educational platforms on PS teachers' learning is their potential to enhance efficiency and cost-effectiveness in the completion of assignments, thereby fostering a sense of ease and relaxation among PS teachers. This could be explained by the presence of participants who come from other cities and towns (outsiders) because their economic circumstances remain unaffected when they are required to undertake multiple tasks.

Participants, on the other hand, recognized certain challenges in implementing instructional technology. The most frequently reported issues were inadequate internet connectivity, a lack of engagement, and cost, as some of the platforms are not free. The most notable finding, however, is that PS teachers acknowledge that they may abuse them. They indicated that it is simple to cheat when taking an exam, and as a result, they procrastinate more or simply stop working hard; as Ofelia shared:

> I think that the teachers … used them with the best intention but there was no time to test what is not working for the subject or what else they could do with the tool. For example, I had a teacher who used to assign activities in a platform, and I consider them to be a good tool, but soon you learn to cheat or not give your best effort. Finally, all of us, or rather most of us, look for the easiest way to answer the activities.

It is not uncommon for students to believe that cheating is easier in online learning environments due to the abundance of technological tools available (Valizadeh, 2022). However, at the onset of Emergency Remote Teaching (ERT), the constrained timeframe for teachers to develop instructional materials adequately resulted in a series of improvised initial adaptations (Hernández-López et al., 2022), possibly contributing to the lack of effective measures to prevent cheating.

Another challenge pertained to how Pre-Service (PS) teachers perceived the role of educators and its impact on learning. Some participants developed the perception that teachers were using educational technology as a substitute for their instructional role, leading PS teachers to prioritize

task completion over genuine learning. For instance, Ofelia believes "that with a little more time the teachers would have had the opportunity to know which tool to use and complement with their guide, so that the tool could be taken advantage of in this way …", and, in Guillermo's words, "I would have liked more of a complement, not a substitution, because it was a substitution, but more than anything forced, that's why I see it more as a complement".

All in all, most PS teachers agreed with the ongoing integration of applications and platforms, as they perceive them as a substantial means of transforming conventional classroom settings into more meaningful learning environments. Nevertheless, participants assert that the presence or absence of these tools is inconsequential, as they will heavily rely on teachers' creativity:

> In Ofelia's view:
>
> I think it is a combination, you cannot leave everything to the platform, in the end, it is a tool and the one behind that tool is the teacher, and if he or she is not sure how to take advantage of it, it will not work.
>
> In Carlos' opinion:
>
> I think it also depends on how a teacher uses it because he is the one who uploads the content, the activities, the exams … all this depends on how well he or she knows how to use the platform because the better the teacher organizes it, the clearer it will be for the student.
>
> And in Guillermo's words:
>
> I consider Duolingo is a very useful application … to learn vocabulary and how to express oneself in a certain way, but it resorts to translation a lot, only providing how you say something in English, and how in Spanish. I mean, it teaches you how to use the language [form] but not the reason for this rule, why I suddenly have to use this word and not another … a beginner student would have many problems.

The efficacy of these tools is contingent upon the guidance provided by teachers. However, in order to maximize their potential, the findings presented in this study indicate the significance of equipping teachers with up-to-date training on educational platforms. This will enable them to effectively exploit these tools in classroom settings, including assigning activities and developing relevant content for PS teachers.

As for the most used applications and platforms, participants have identified Duolingo, Google Classroom, Kahoot!, British Council Listening, Zoom, Socrative, Wordwall, and Quizziz. Many participants reiterated that these tools are beneficial for studying various subjects, as well as for facilitating communication with their instructors and submitting assignments. However, they expressed their intention to continue using these tools with their instructors' guidance, as they do not perceive themselves as entirely self-directed learners, which Alma voiced as follows:

It would be a good idea to continue using them although I wouldn't use them on my own, much less if I have to hand in assignments. I would use them as long as the teacher applies them because I like them, but I do not consider myself self-taught, and during the pandemic, I noticed that they supported me a lot since I consider myself a visual and auditory learner.

Therefore, when it comes to linking technology with education, educational institutions must re-evaluate their instructional approaches and incorporate technology into their teaching methods (Rashid & Yadav, 2020). This initiative has the potential to equip educational institutions, educators, and students with the necessary resources and strategies to effectively address and resolve forthcoming challenges that may hinder the conventional implementation of educational practices.

CONCLUSIONS

This study aimed to investigate the perspectives of Pre-Service (PS) English as a Foreign Language (EFL) teachers on the impact of Emergency Remote Teaching (ERT) on their use of educational technology. The survey included open-ended questions and a five-point Likert scale, engaging PS teachers who began their studies before the pandemic, navigated through lockdown conditions, and returned to conventional education modes. The findings revealed that while most participants had prior exposure to technological tools, their utilization by both teachers and students was limited.

Participants often believed that platforms and applications did not significantly contribute to their educational advancement, resulting in a consistent lack of motivation to explore their potential benefits, even when integrated into classes by teachers. This challenges the assumption that new generations inherently understand and utilize technology's benefits in educational environments.

During the lockdown, PS teachers were compelled to use various platforms and applications to facilitate English language acquisition, such as Quizziz, Quizlet, Duolingo, British Council Listening, Kahoot!, Go Formative, Google Classroom, and Teams. Participants reported increased motivation and skill improvement, alongside appreciation for the cost and time-saving benefits. This suggests that, despite unfamiliarity, new generations are adaptable and capable of integrating educational technologies when necessary.

Furthermore, PS teachers deemed it crucial to receive feedback from their instructors via a designated platform, as it offers a greater level of privacy and enables them to respond appropriately to enhance their performance. They also indicated that being able to go back and retrieve the feedback whenever it was necessary for them contributed to a better learning experience. This improvement in feedback within distance education environments has also been identified by teachers themselves (United Nations Educational, Scientific and Cultural Organization [Unesco], 2022).

Nonetheless, despite the perceived relevance, practicality, and ability to promote PS teachers' interest in educational technology, and the perception of online learning platforms as experiential,

motivating, and constructive learning environments, consistent with previous studies (e.g. Almusha-rraf & Khahro, 2020; Famularsih, 2020), several challenges were encountered in the use of platforms and applications during instructional sessions. These challenges encompassed the requirement of payment for access, inadequate internet connectivity, and limited engagement from fellow PS tea-chers. This adds to other previously reported challenges such as a lack of investment from institutions (Turnbull et al., 2021; Wen & Hua, 2020), or the use of ICT only for simple assignments because of teachers' lack of confidence (Perifanou et al., 2021), to name a few.

The advantages and disadvantages of the integration of ICT in education have long been resear-ched and discussed, and while technology may not lead to more meaningful learning on its own, its positive impact on learning, if integrated effectively, cannot be denied. The pandemic has highlighted the need for teachers and students to prepare for the use of digital tools in schools, which cannot be disregarded, as we would be risking falling back into old habits and practices before the pandemic.

Therefore, institutions should support educators in keeping up to date with e-learning technologies and allow them to gain expertise in best practices in instruction and curriculum design; otherwise, they might not be able to integrate them successfully. They should also continue to invest in impro-ving technological resources available in the facilities, such as more reliable internet connectivity and more classrooms equipped with at least the minimum necessary technological resources, which constitute some of the major potential drawbacks in many educational institutions. It is also impor-tant to continue researching on how ICTs have been integrated into English teaching and learning practices after the COVID-19 pandemic. It would be particularly interesting to explore if any new technological tool that might have been used during the lockdown has been successfully incorporated into different English language learning environments, or if little by little teachers and learners have returned to their old practices.

REFERENCIAS

Aguilera-Hermida, A. P. (2020). College Students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open, 1*, 1-8. https://doi.org/10.1016/j.ijedro.2020.100011

Almusharraf, N. M., & Khahro, S. H. (2020). Students' satisfaction with online learning ex-periences during the COVID-19 pandemic. I*nternational Journal of Emerging Technolo-gies in Learning, 15*(21), 246-267. https://doi.org/10.3991/ijet.v15i21.15647

Abdul-Aziz, M. N., Harun, S. N., Baharom, M. K., & Kamaruddin, N. (2020). Preferred Lear-ning Styles for Digital Native and Digital Immigrant Visitors in the Malaysian Music Mu-seum. *Asian Journal of University Education, 16*(3), 234-246. http://doi.org/10.24191/ajue.v16i3.11085

Bashir, A., Bashir, S., Rana, K., Lambert, P., & Vernallis, A, (2021). Post-COVID-19 Adaptations; the Shifts Towards Online Learning, Hybrid Course Delivery and the Implications for Biosciences Courses in the Higher Education Setting. *Frontiers in Education, 6*, 1-13. https://doi.org/10.3389/feduc.2021.711619

Bergin, T. (2018). *An Introduction to Data Analysis: Quantitative, Qualitative and Mixed Methods*. Sage Publications.

Bhardwaj, P. (2019). Types of Sampling in Research. *Journal of the Practice of Cardiovascular Sciences, 5*(3), 157-163. https://doi.org/10.4103/jpcs.jpcs_62_19

Cahapay, M. B. (2020). Rethinking Education in the New Normal Post-COVID-19. *Era: A Curriculum Studies Perspective. Aquademia, 4*(2), 1-5. https://doi.org/10.29333/aquademia/8315

Cahyadi, A., Hendryadi, Widyastuti, S, Mufidah, V. N., & Achmadi. (2021). Emergency remote teaching evaluation of the higher education in Indonesia. *Heliyon, 7*(8), 1-9. https://doi.org/10.1016/j.heliyon.2021.e07788

Chanwaiwit, P. (2018). Using Effective Feedback to Improve Professionalism as an English Student Teacher. *The New English Teacher, 12*(2), 1-14. https://www.proquest.com/docview/2384112119?pq-origsite=gscholar&fromopenview=true

Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). SAGE.

Ezra, O., Cohen, A., Bronshtein, A., Gabbay, H., & Baruth, O. (2021). Equity factors during COVID-19 pandemic: Difficulties in emergency remote teaching (ERT) through online learning. *Education and Information Technology, 26*(6), 7657-7681. https://doi.org/10.1007/s10639-021-10632-x

Fabriz, S., Mendzheritskaya, J., & Stehle, S. (2021). Impact of Synchronous and Asynchronous Settings of Online Teaching and Learning in Higher Education on Students' Learning Experience During COVID-19. *Frontiers in Psychology, 12*, 1-16. https://doi.org/10.3389/fpsyg.2021.733554

Fleming, C. M., & Bowden, M. (2009). Web-based surveys as an alternative to traditional mail methods. *Journal of Environmental Management, 90*(1), 284-292. https://doi.org/10.1016/j.jenvman.2007.09.011

Famularsih, S. (2020). Students' experiences in using online learning applications due to COVID-19 in English classroom. *Studies in Learning and Teaching, 1*(2), 112-121. https://doi.org/10.46627/silet.v1i2.40

Hernández-López, E. M, Escobar-Mendoza, M. M., Núñez-Mercado, P., & Bórquez-Morales, L. S. (2022). Online learning impact on transitioning to ERT: Mexican ELT experiences. *Edähi Boletín Científico de Ciencias Sociales y Humanidades del ICSHu, 11*(21), 13-22. https://doi.org/10.29057/icshu.v11i21.8838

Johnson, R. B., & Christensen, L. (2019). *Educational research: Quantitative, qualitative, and mixed approaches*. Sage publications.

Kaharuddin, A., Ahmad, D., Nurdin, M. & Rusni, S. S. (2020). Contributions of Technology, Culture, And Attitude to English Learning Motivation During Covid-19 Outbreaks. *Systematic Reviews in Pharmacy, 11*(11), 76-84. https://ssrn.com/abstract=3700381

Keshavarz, M. H. (2020). A Proposed Model for Post-Pandemic Higher Education. *Budapest International Research and Critics in Linguistics and Education Journal, 3*(3), 1384-1391. https://doi.org/10.33258/birle.v3i3.1193

Mahyoob, M. (2020). Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners. *Arab World English Journal, 11*(4), 351-362. https://dx.doi.org/10.24093/awej/vol11no4.23

Manco, J. A., Uribe, Y. C., Buendía, R., Vertiz, J. J., Isla, S. D., & Rengifo, R. A. (2020). Integration of ICTS and Digital Skills in Times of the Pandemic Covid-19. *International Journal of Higher Education, 9*(9), 11-20. https://doi.org/10.5430/ijhe.v9n9p11

O'Dea, X. (C.)., & Stern, J. (2022). Virtually The Same?: Online Higher Education in The Post Covid-19 Era. *British Journal of Educational Technology, 53*(3), 437-442. https://doi.org/10.1111/bjet.13211

Peimani, N., & Kamalipour, H. (2021). Online Education in the Post COVID-19 Era: Students' Perception and Learning Experience. *Education Sciences, 11*(10), 1-14. https://doi.org/10.3390/educsci11100633

Perifanou, M., Economides, A. A., & Tzafilkou, K. (2021). Teachers' Digital Skills Readiness During COVID-19 Pandemic. *International Journal of Emerging Technologies in Learning, 16*(8), 238-251. https://doi.org/10.3991/ijet.v16i08.21011

Qiao, P., Zhu, X., Guo, Y., Sun, Y., & Qin, C. (2021). The Development and Adoption of Online Learning in Pre- and Post-COVID-19: Combination of Technological System Evolution Theory and Unified Theory of Acceptance and Use of Technology. *Journal of Risk and Financial Management, 14*(162), 1-17. https://doi.org/10.3390/jrfm14040162

Rashid, S., & Yadav, S. S. (2020). Impact of Covid-19 Pandemic on Higher Education and Research. *Indian Journal of Human Development, 14*(2), 340-343. https://doi.org/10.1177/0973703020946700

Sheikh, A., Sheikh, A., Sheikh, Z., & Dhami, S. (2020). Reopening schools after the COVID-19 lockdown. *Journal of global health, 10*(1), 1-3. https://doi.org/10.7189/jogh.10.010376

Su, F., Zou, D., Wang, L, & Kohnke, L. (2023). Student engagement and teaching presence in blended learning and emergency remote teaching. *Journal of Computers in Education, 11*, 445-470. https://doi.org/10.1007/s40692-023-00263-1

Sumaimi, M. M. & Susilawati (2021). The Role of ICT as a Media in Learning Activities before the COVID-19 Pandemic: Undergraduate Perspective. *Journal of Physics: Conference Series, 1882*(1), 1-6. https://doi.org/10.1088/1742-6596/1882/1/012130

Triyason, T., Tassanaviboon, A., & Kanthamanon, P. (2020). Hybrid Classroom: Designing for the New Normal after COVID-19 Pandemic. *Proceedings of the 11th International Conference on Advances in Information Technology,* (30), 1-8. https://doi.org/10.1145/3406601.3406635

Trochim, W. (2006). *Research methods knowledge base*. Conjointly. https://conjointly.com/kb/descriptive-statistics/

Turnbull, D., Chugh, R., & Luck, J. (2021). Transitioning to E-Learning during the COVID-19 pandemic: How have Higher Education Institutions responded to the challenge? *Education and Information Technologies, 26*(5), 6401-6419. https://doi.org/10.1007/s10639-021-10633-w

United Nations Educational, Scientific and Cultural Organization [Unesco]. (2022). *The Impact of the COVID-19 Pandemic on Education: International Evidence from the Responses to Educational Disruption Survey (REDS)*. Unesco. https://unesdoc.unesco.org/ark:/48223/pf0000380398

Valizadeh, M. (2022). Cheating in online learning programs: Learners' perceptions and solutions. *Turkish Online Journal of Distance Education-TOJDE, 23*(1), 195-209. https://files.eric.ed.gov/fulltext/EJ1329626.pdf

Van der Spoel, I., Noroozi, O., Schuurink, E., & Van Ginkel, S. (2020). Teachers' online teaching expectations and experiences during the Covid19-pandemic in the Netherlands. *European Journal of Teacher Education, 43*(4), 623-638. https://doi.org/10.1080/02619768.2020.1821185

Wen, K. Y. K., & Hua, T. K. (2020). ESL Teachers' Intention in Adopting Online Educational Technologies during COVID-19 Pandemic. *Journal of Education and e-Learning Research, 7*(4), 387-394. https://doi.org/10.20448/journal.509.2020.74.387.394

Winter, E., Costello, A., O'Brien, M., & Hickey, G. (2021). Teachers' use of technology and the impact of Covid-19. *Irish Educational Studies, 40*(2), 235-246. https://doi.org/10.1080/03323315.2021.1916559