The Role of Technology during the COVID-19 Pandemic: The Case of EFL Online Teaching Placements

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Abstract

The Coronavirus 2019 pandemic has undeniably changed the educational scenario around the world. With schools and universities closing until further notice, initial teacher education had to be moved from a traditional setting to an entire online environment, making technology the fundamental support for its development. Considering that the current health emergency uncovered the scarcity of practice and empirical research about online teaching placement, this study aims to examine the use of technology as the pivotal tool that allowed EFL student teachers to continue learning to teach during the COVID-19 pandemic. Fourteen Chilean EFL student teachers undertaking their teaching experience remotely participated in this interpretative case-study. Data was collected through a semi-structured interview at two different points of their online teaching experience, and it was analysed using thematic analysis as a framework. The results show that adaptations to technological teaching strategies affected prospective teachers' development of teaching skills. Nevertheless, this online placement prompted the interest and motivation to search and discover new technological tools to enhance school learners' learning process, especially in a context where access to technology cannot be afforded by everyone. Student teachers also acknowledged that this once-in-a-lifetime experience would potentially contribute to their technology literacy and their future teacher development. As this health emergency has affected the education sector worldwide, implications for teacher education providers that have faced this transition in multiple contexts are discussed.

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1. Introduction

The COVID-19 pandemic has undoubtedly affected educational systems worldwide. Teacher education providers were forced to adapt not only their teaching-related activities, but also prospective teachers' field-experience due to schools' adjustments to remote teaching. This practical phase is an integral part (Anderson & Stillman, 2013) and key component of most teacher education programmes serving as a building block in the education of future teachers (Darling-Hammond, 2017). It is during this phase where student teachers exhibit and develop a personal teaching competence bridging the gap between theory and practice and improving aspects about teaching such as classroom management (Smith & Lev-Ari, 2005). Due to the unprecedented scenario presented by the current pandemic, student teachers had to display all these skills in an entirely virtual setting. Technology thus played a fundamental part in enabling them to continue learning to teach under these uncommon circumstances and offered them a basis to explore, discover and take part in the changes that education systems had to face.

Most of the adaptations to online teaching and learning have come from the experience of face-to-face education. However, this is challenging when it comes to the practical stage of teacher education programmes as there are only few face-to-face aspects that can serve as a basis for the development of an online practical experience. Here, the use of technology has become the means of instruction, development, teaching and learning. It is therefore crucial to research its uses and implications for teacher education, particularly if this scenario stays for longer. As the COVID-19 pandemic is nowhere near the end and the use of technology seemed to have come to stay, there is a current call for more research into the development of the final practical and fundamental phase in teacher education in online environments. Hence, this study seeks to shed light on the role that technology played during the development of online teaching placements, offering the possibility for EFL student teachers to continue their teacher preparation.

2. Literature Review

2.1 Student teachers' placement

The curriculum underpinning Initial Teacher Education (ITE) programmes is generally structured around standards of skills, values and knowledge that future teachers are required to meet. During their training years, student teachers undergo a series of teaching experiences that built up towards their teaching skills and teacher identity. An important stage of this process is the practical experience student

teachers undertake at schools displaying all the dynamic nature of content and pedagogical content knowledge (Abel, 2008) acquired in university-based courses. Literature on teacher education has described this experience using different terms (e.g., teaching placement, teaching internship, practice, teaching practicum and field-experience) which all refer to the time teacher candidates spend at schools fulfilling the teacher's role. For this study, the concepts of teaching placement, internship and practicum will be used interchangeably.

Although teaching placements can vary in terms of length (e.g., around 18 weeks in Chile and 10 weeks in China) (Chunmei & Chuanjun, 2015), the objective of this practical experience is quite similar: giving prospective teachers a first-hand experience into the school context since the setting presented in higher education cannot equate with the school reality (Ulvik, Helleve & Smith, 2018). This in-the-field phase contributes to the development of university-based learnt aspects (Lawson, Çakmak, Gündüz & Busher, 2015) and the enactment of their pedagogic skills (Pedraja-Rejas, 2012). Hascher, Cocard and Moser (2004, p. 624) regard this teaching practice as a "protected field of experimentation" where student teachers are offered the opportunity to show their teaching competencies in a safe environment with the support and guidance of the cooperating teacher and university supervisor (Murray-Harvey et al., 2000).

Lofthouse, Greenway, Davies, Davies and Lundholm (2020) argue that this hands-on experience promotes the development of practices in the school and encourages student teachers to interact with other members of the community. Here, the teaching practice offers a site for questioning and collaboration where teachers-to-be question practices, reflect on them and prepare for the unknown (Ulvik et al., 2018). Not only pedagogical competencies are developed, but also emotional aspects such as self-esteem and well-being are enhanced during this practical activity (Hascher, et al., 2004). Considering that this crucial phase in teacher education had to be adapted to fit the rapid changes in education caused by the COVID-19 pandemic, the use of technology for learning to teach became an aspect of interest for teacher educators and researchers.

2.2. ICT for teaching and learning

Teachers' knowledge about technology and its adaptations to the teaching and learning process are key aspects when analysing technology integration in classrooms. The Technological Pedagogical Content Knowledge (TPCK or TPACK) framework (Mishra & Koehler, 2006) provides powerful insights into teachers' views of technology as a support for teaching rather than a simple instrument for content delivery. The TPACK framework comprises three main components: Content Knowledge, which relates to teachers' knowledge about the subject that is being taught (e.g., English as a foreign language); Pedagogical Knowledge, their knowledge of the methods of teaching and learning (e.g., lesson planning and assessment); and Technological Knowledge, which can be seen as a state of knowledge of technology broad enough to be able to constantly adapt to the changes in Information Communication Technology (ICT). All these different constructs interact with each other making up the TPACK, as
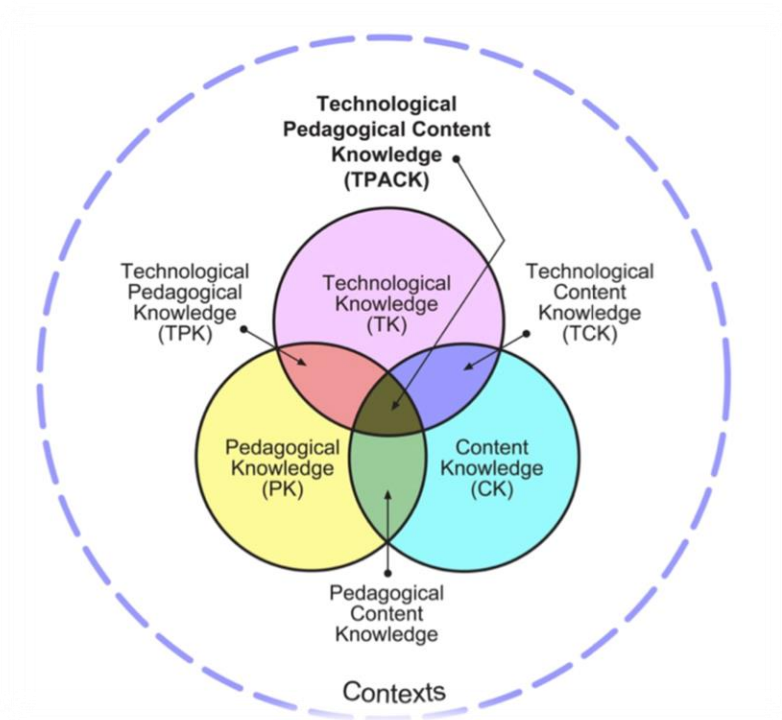
shown in Figure 1.

Figure 1. The TPACK framework and its knowledge components (Koehler & Mishra, 2009, p. 63)

The TPACK framework provides a new approach into teaching by combining knowledge of three different areas. However, it is important to be aware of the singularities each teaching situation has, and that technology use cannot be seen as a 'one size fits all' approach. Hence, it is not possible to provide a singular technological solution that can be used by all teachers, in all classes, and all contexts. There are other factors that can also affect technology adoption. Ertmer (1999) classified them into first-order and second-order, which are also known as external and internal barriers respectively. Following this classification, further studies emerged (e.g., Francom, 2020; Kopcha, 2012) which are summarised in Table 1.

Table 1 *Barriers to Technology Integration*

Barrier	Brief description
Access	Access to technology: quantity and quality of technology resources (Hew & Brush, 2007)
Training	Training and support for teachers to use technology to education-related activities (Kopcha, 2012)

Administrative support	Besides technical training and support for teachers, schools need to provide support so teachers can work towards the proper integration of technology (e.g., the management and leadership of schools and regional administrative who promote technology in schools) (Francom, 2020).
Time	Time for teachers to plan classes where technology can be used. Because of the time limitations teachers tend to face, the use of technology can become teacher-centred, instead of student-centred (Tondeur, van Braak, Ertmer & Ottenbreit-Leftwich, 2017).
Teachers' beliefs	Teachers' beliefs about technology integration. These beliefs can vary, from beliefs about their own capacity to the effectiveness technology has in education.

The plethora of technology-related research in language education in the past decades has shown the different benefits that integrating technology in the classroom has in terms of improving learners' responsibility (Drayton, Falk, Stroud & Hammerman, 2010) and their linguistic skills (Peregoy & Boyle, 2012). Language teachers should then be accordingly prepared during their training years to integrate ICTs into their curricula as "the groundwork must be laid at the trainee or pre-service teacher's level. To do otherwise is to produce future teachers with underdeveloped skills in the use of technology" (Teo, 2009, p. 2). Teachers' preparation to integrate technology does not only include the instruction for using it, but also the support they need to set it up and maintain it (Inan & Lowther, 2010). Deficient teacher training and lack of support from the teaching programmes might hinder the proper integration of ICT in student teachers' L2 classrooms (Kopcha, 2012).

2.3 Online teaching placement during the COVID-19 pandemic

Schools across the globe had to close its doors and some of them either moved their teaching to an online setting (using technology as an asset) or stopped working completely.
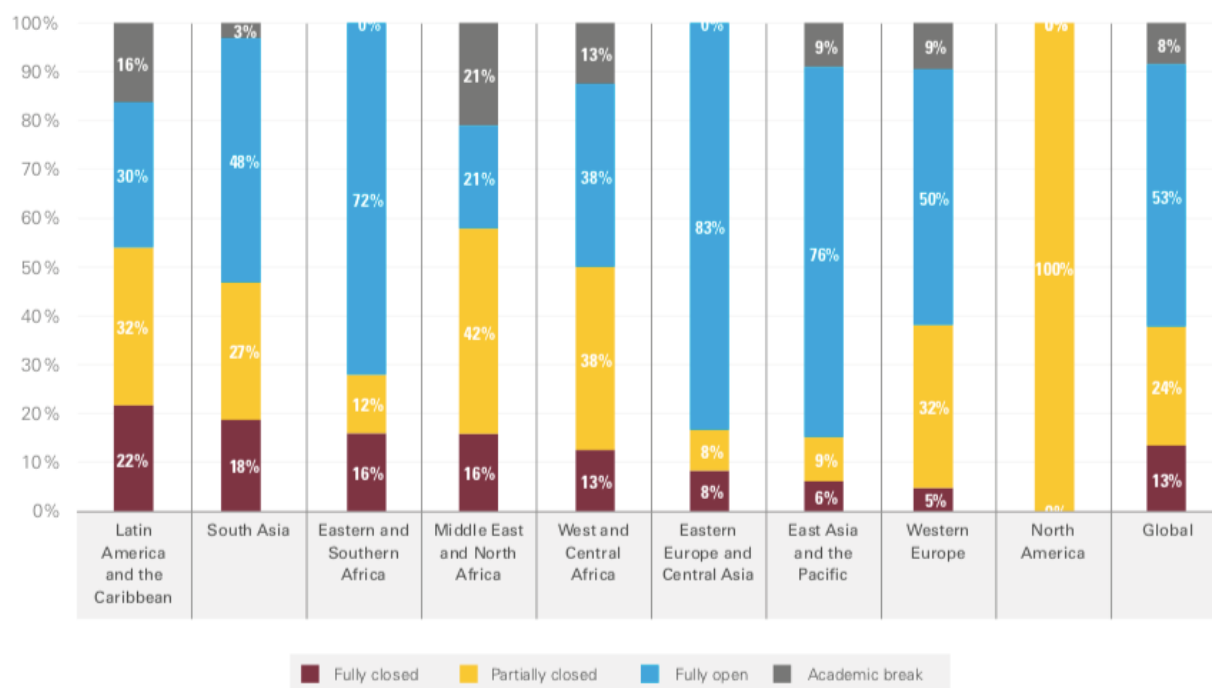
Figure 2. School closure status, by region as of February 2, 2021 (UNICEF, 2021, p. 11)

Source: UNESCO Global monitoring of school closures caused by COVID-19 (UNICEF, 2021).

Figure 2 shows that the regions of Latin American, the Caribbean and South Asia had more than 50% of their schools either fully or partially closed. UNESCO (2021) showed that a total of 173 countries faced school closures due to COVID-19. Countries like Chile, Indonesia and China closed their schools and universities in February-March 2020, moving all teaching to a virtual setting (Atmojo & Nugroho, 2020; Chang, & Yano, 2020; Moorhouse, 2020). For future teachers, this faced an unimaginable challenge as teacher education programmes were forced to put technology platforms at the heart of student teachers' placement process. As teaching practices had to be enabled by technology, these telecommunications became a focus of practice, opportunity and innovation (Kidd & Murray, 2020). However, this 'virtualisation' has given rise to issues of equity particularly related to the loss of time student teachers spend on school placement affecting the opportunities to practice their teaching competence (la Velle, Newman, Montgomery & Hyatt, 2020).

Van Nuland, Mandzuk, Petrick & Cooper (2020) expect that all this challenging situation will make student teachers stronger and more capable of adapting to change. Indeed, Rosenberg, Mason-Williams, Kimmel & Sindelar, (2021, p. 88) suggest that teacher candidates can help alleviate teacher shortages in some content areas "augment[ing] veteran teachers' efforts while successfully honing their own professional practices". In this way, they would bring knowledge of technology to support virtual instruction and would receive support and guidance from more experienced in-service teachers. Eventually, this experience of online teaching and learning could be perceived as an opportunity to continue learning how to teach and as an addition to student teachers' education (Ellis, Steadman &

Mao, 2020; Sepulveda-Escobar & Morrison, 2020). As there is a research gap in the examination of online teaching placements and the role of technology in the education of prospective teachers, the research question that guided this study is:

What role did technology play during Chilean EFL student teachers' online teaching placement caused by the COVID-19 outbreak?

3. Methodology

3.1. Design

A group of Chilean EFL student teachers undertaking their teaching placement remotely participated in this case study. This type of methodology enables the analysis of specific situations in their natural context offering a detailed picture of the studied phenomena (Hamilton & Corbett-Whittier, 2013). The experiences of teacher candidates using technological devices and applications as supportive tools to continue learning to teach were explored and analysed.

3.2. Context and participants

A total of 14 undergraduate student teachers of an ELT programme in a university in Chile responded to our invitation to take part in a semi-structured interview. The ages of the eight female and seven male participants ranged from 23 to 32, and all studied in either state or semi-private schools. All of them had been placed in either a semi-private or state school before the pandemic started to undertake teaching placements. After the school closure, they continued collaborating with cooperating teachers and schools delivering online lessons and completing a total of 20 hours of weekly work during a semester (18 weeks), in addition to being a headteacher (i.e., Homeroom teacher). This experience was the last practical stage of the ELT programme, after having undertaken a progressing school placement journey since the first year of the undergraduate degree.

3.3. Data collection methods

Data was collected in two stages. Firstly, all the students from the cohort were invited to participate via email, but 14 responded and were interviewed at the beginning of their one-term online teaching placement. The interviews, which were conducted for approximately 40 minutes each via Microsoft Teams, focused on this new scenario (see Appendix 1) and their experience of teaching through technology. At the end of the semester, participants were contacted again to hold a follow-up interview. Eight out of 14 participants responded and took part in a second online semi-structured interview (see Appendix 2) with similar technical characteristics to the previous one. For both data collection points, a set of questions was created and piloted with student teachers from other cohorts. All data collection

was conducted in Spanish, the participants' mother tongue, to enable them to share their answers easily and to avoid possible misunderstandings. To ensure the validity of translation, interviews extracts were translated by two English language teachers besides the authors. Translations were then revised by all, and an agreement was made.

This research project followed established ethical research procedures to collect data. Consent from the participants was sought and they voluntarily responded to the invitation to take part in this study. The researchers explained the objective of the research and presented participants with relevant information for ethical procedures to seek their consent. All interviews were recorded, and the files saved on a password-protected online storage. Pseudonyms for EFL student teachers and third-party institutions were used throughout the analysis of the findings.

3.4 Data analysis

Qualitative data was analysed following the approach developed by Clarke, Braun, Gareth, & Nikki (2019) wherein themes were developed through the reading and examination of data. Interviews were recorded, transcribed verbatim and transferred to Nvivo12. This package provided assistance in the coding process where the authors, individually, read the interview transcripts imported into Nvivo12 several times, highlighting interview extracts and allocating them into nodes/codes. After having a list of codes, they were arranged into themes using the same package. Thus, Nvivo12 supported the tagging, retrieval and arrangement of the interview transcripts and the consequent data analysis. Inter-rater reliability was assessed using Cohen's kappa coefficient which reached 0.66, meaning a substantial agreement between the researchers.

4. Findings

The thematic analysis of the two-stage interviews derived into two main themes which are presented in Table 2.

Table 2 *Main Themes Extracted from the Data*

Theme	Description	Example from data
An opportunity to learn about technology	Student teachers regarded this online teaching placement as a possibility to learn about technology and its use for EFL teaching.	"an opportunity to work in a different setting that has forced us to search for new online teaching strategies" male, 22 years old)
Limited technology and internet access	The lack of internet and technology access influenced student teachers' learning and learning to teach processes.	"this situation discriminates [among students]. There are some who do not have this benefit [of a proper internet connection]" (Female, 27 years old)

4.1. An opportunity to learn about technology

In this uncommon scenario, participants acknowledged that lack of training to use technology to teach was one of the main barriers. During their teaching programme, they only developed basic computer skills, such as using Microsoft Office. Nevertheless, they agreed that this scenario has forced them to learn 'on the go', looking for tutorials online and exploring the new websites and platforms to improve their technological skills. Thus, they recognised the contribution to their professional learning and its impact on their future teaching careers. As participant 10 (male, 24 years old) put it "I did not know any of the tools I am using right now and if it was not because of this online teaching placement, I would have not learnt about them". Indeed, participant 6 (male, 22 years old) sees this experience as "an opportunity to work in a different setting that has forced us to search for new online teaching strategies". Similarly, participant 13 (male, 27 years old) recognized that "my technological skills have improved 100%. Though, I am not saying that I am a complete expert in technology, but I have discovered so many useful things I did not know before this online placement".

Participants had to learn how to use platforms such as Kahoot®, Loom®, Zoom® and Google Classroom®, which triggered a significant improvement in their technological knowledge and technological pedagogical knowledge. Participant 13 stated that he "learnt a lot about teaching online and now I know I have the competence to continue teaching online and I feel confident about it". Here, it is important to reveal student teachers' attitude towards this remote teaching placement and how they regarded this experience as an opportunity to learn rather than as a detrimental stage in their professional learning. Participant 3 (male, 25 years old) declared that "as teachers, we need to be willing to learn and try new things, especially with technology. Our knowledge about it cannot stagnate". It seems that student teachers not only learnt about new online teaching strategies, but also seemed to be willing to incorporate technology as part of their future careers.

4.2. Limited technology and internet access

Access to technology was an issue that hindered the smooth development of student teachers' online teaching placement. Not only did participants have problems with their own internet connectivity, but also school learners had limited internet access, which restricted their online participation. In some cases, the challenge was related to the equipment student teachers needed to deliver an online lesson. Three of the participants shared that they had to purchase a new laptop, either because they did not own one before, or because the one they had was not enough for their daily work.

Because of the disparity in terms of technology access due to the socio-economic hurdles most public-school learners faced, the participants had to work asynchronously preparing worksheets and short video clips that could be shared through social media*1*. Participant 10 (female, 26 years old) shared

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1 In Chile, people who own a smartphone, either using Pay As You Go or a monthly-paid plan, usually receive unlimited access to social media apps, but not platforms such as Zoom or Meet.

after finishing the teaching practice process that:

Unfortunately, in the school I worked, the teacher could not teach live classes, because most of the kids at school did not have access to a computer. There are lots of them who live in rural areas, therefore they don't have a reliable internet connection, so the school decided not to have online classes since most of the students were not going to be able to join. (Participant 10)

5. Discussion

The aim of this study was to examine the role of technology during online teaching placements. Based on the data collected, it can be argued that technology was seen both as a hurdle and as an opportunity to keep learning, as can be seen in Figure 3.
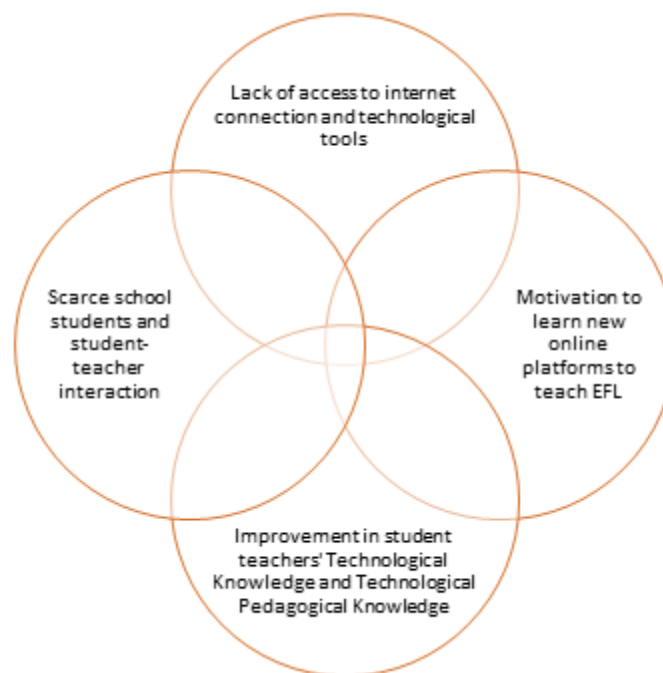

Figure 3. The online teaching placement in a nutshell

Based on the TPACK framework, participants expressed confidence in their pedagogical knowledge, though, they felt unsure about their technological competence to teach in a complete online setting. This scenario also uncovered student teachers' lack of technology knowledge and technological pedagogical content knowledge (TPACK), supporting previous research in the topic (e.g., Costley, 2014; Park & Son, 2020). The results of this study show that although student teachers were born in the digital era, this does not guarantee that they know how to use technology to teach. This new teaching context showed not only that they did not have proper access to technology, but also that they were not

taught how to use technology as a tool for teaching the subject matter (i.e., English as a foreign language). These issues suggest that student teachers need to be equipped with proper technological tools that support the teaching and learning process (Hew & Brush, 2007).

The call for more teacher preparation regarding technology adoption seems to be a relevant subject worldwide. The COVID-19 pandemic has greatly affected the education in mainly under-developed and developing areas where access to ICT is scarce (e.g., rural areas, which are common places for students to undertake their teaching placements in some Latin American and Asian countries) (Lim, Tinio, Smith & Bhowmik, 2018). We even venture to say that this online environment caused by the COVID-19 pandemic increased these inequalities even further, calling for a restructuring of the educational system that places technology at the heart of the process. Equal technology access should not be taken for granted.

In terms of the role and use of technology, student teachers regarded the limited access to technology as one of the main barriers to continue learning. Second-order barriers, particularly the one related to training (i.e., using technology with an educational purpose) also prevailed. Saudi EFL teachers faced similar challenges with lack of access to modern equipment and weak internet connection (Hakim, 2020). Despite this challenge, both Chilean EFL student teachers and Saudi EFL teachers acknowledged how this context provided an opportunity to enhance their technology knowledge and usage, contributing to their education wherein the pedagogical possibilities of technology are considered (Carrillo & Flores, 2020). The fact that participants were able to integrate technology into their lessons and to learn how to use different platforms and websites might also indicate the high value they place to technology and education (Tondeur et al., 2017).

Alike the Omani experience, this scenario enabled teacher candidates to sharpen their technological and instructional skills, preparing them for both face-to-face and online teaching (Osman, 2020). In this way, technology played a fundamental role in enabling student teachers to continue with their practical experience which encouraged them to search and discover new possibilities to teach using the affordances of technology. In this mater, research from the Israeli context, which was one of the first educational settings to adapt to online teaching and learning, suggests that teacher education programmes should equip student teachers with knowledge and skills that would prepare them to face imminent challenges (Donitsa-Schmidt & Ramot, 2020).

Kidd and Murray (2020) acknowledged the fact that technology offered a space to practice and introduce changes and new ideas to teaching. Hence, this remote teaching practicum prompted the interest to learn about new technological tools to teach the foreign language despite the school learners' lack of accessibility to internet connection. Because the use of technology was not an option (i.e., it was *the* one modeof delivery), student teachers seemed to have gone above and beyond trying to find alternatives to engage with their students, showing high levels of motivation that enabled them to overcome any difficulty.

6. Conclusion

Education in the past year has seen technology with different eyes as it has become, in many cases worldwide, the only option for schools and students to continue teaching and learning. The results show that barriers to technology integration, such as access or lack of teacher training, and student teachers' deficient technological pedagogical knowledge, were predominant in this unforeseen scenario. This 'virtualisation' of teaching and learning restricted the spaces for prospective teachers to bridge theory and practice and develop teaching competences they learned in university-based courses.

This study has reinforced the prevailing role that technology plays in education, especially in the current global context. Despite the challenges student teachers faced, this new scenario served as an opportunity to search and discover new online teaching techniques that they would have not learnt otherwise. Surprisingly, this health emergency contributed to raise awareness of student teachers' TPACK and the integration of ICT as a key aspect for their future teaching careers.

The results of this study resonate with other contexts where technology has also been regarded as an asset and a hurdle (Donitsa-Schmidt & Ramot, 2020; Hakim, 2020; Osman, 2020). These studies could serve as valuable input to raise awareness about the changes in language teaching programmes' curricula, their views on online teaching practicums and how technology could support the learning process of teachers-to-be. We recommend teacher education courses to revise their curricula and to prepare future teachers to teach *through* technology.

Future studies could also gain insights from other actors from the educational arena, such as school learners, cooperating teachers and university supervisors. As the current pandemic will most likely last longer, the impact of technology on education will certainly rise. Therefore, it is recommended that ITE programmes work on how to put technology at the centre of their teaching methodology educating. As the effects that this global pandemic will have in the educational sector are still unknown, institutions should educate professionals for the unexpected.

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Appendix 1: Semi-structured interview protocol

I.   **Information about the allocated school (e.g., Type of school, agreed online work and
       allocated classes).**

Please tell us about the school where you are currently doing your teaching placement. Where is it
located? Which grades are you currently teaching? What's your role at the school?

II. **Opportunities and challenges of online teaching placement**

1.   What are the learning aspects of this online placement?
2.   What are the aspects that need to be enhanced during this process?
3.   What are the benefits and drawbacks of undertaking this kind of experience?

III. **Technology as a tool to teach**

1.   Do you think you have learned how to teach using technology? Why? Why not?
2.   What are the challenges of teaching online using technology as a key tool?
3.   Were you prepared to teach online? Do you feel comfortable with this kind of
instruction?
4.   How would you rate your technology literacy?
5.   To what extent have you put into practice your technological knowledge and skills?
Did you have to learn how to use technology for teaching?

IV. **Supportive agents**

1.   Could you describe your work with the cooperating teacher in terms of communication,
support, ways of working, feedback and material creation)
2.   Could you describe your work with the university supervisor in terms of
communication, support, ways of working and feedback)

V. **Future implications**
1.   To what extent has this online teaching placement been considered as an opportunity
to continue learning?
2.   If you were given the opportunity to choose between undertaking an online or a
traditional teaching placement, which one would you choose? Why?
3.   Is there any other aspect you'd like to mention?

Appendix 2: Follow-up interview protocol

1. Could you briefly tell us which software/platforms you used the most last semester?

2. Which technology strategies were the ones you used the most in the online placement process?

3. To what extent did your technology skills improve during this virtual teaching placement?

4. Do you think this scenario motivated you to learn new technologies?

5. What were the biggest challenges you faced when working with technology last semester?

6. We would like to know about the experience of working 100% online in terms of the relationship with their students, who perhaps did not have access to a computer with stable connection. How was that 'engagement' process? How did you manage to stablish a connection with them through the screen?

7. Generally speaking, what would you say was the greatest thing you learnt regarding the use of technology and virtual platforms?

8. If you have had previous experience with teaching or online studies before, do you think that the previous experience helped you for this online teaching placement?

9. Do you think that what you learnt last semester in terms of the use of technology and virtual platforms will be useful to you in your future teaching role?

10. Now that you have finished your online teaching placement, do you maintain your position regarding the preference of online vs the face-to-face teaching?