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To cite this article:

Aslan, R. & Bekereci-Sahin, M. (2024). Preparing prospective English language teachers for ICT integration. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 12*(4), 899-918. https://doi.org/10.46328/ijemst.4069

International Journal of Education in Mathematics, Science and Technology

2024, Vol. 12, No. 4, 899-918 https://doi.org/10.46328/ijemst.4069

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Article Info

Article History

Received:
27 November 2023
Accepted:
20 June 2024

Keywords

ICT use
Technology integration
Teacher education
Pre-service English language teachers

Abstract

This paper reports on a case study of six prospective English language teachers' ICT training experiences and the connections between these experiences and their beliefs about how well their language teacher education program prepared them for effective technology integration in language classrooms. This study aimed at arguing the importance of the situational factors in the university coursework and fieldwork components of teacher education on future teachers' technology-related beliefs and technology use. Data were gathered through surveys and semi-structured face-to-face interviews. The results provided some implications for curriculum updates in teacher education programs and necessary improvements in relevant policies to prepare their graduates to teach with technology-integrated classrooms. The development of a practical and integrated knowledge base of ICT use should be a visible component in teacher education programs.

Introduction

The benefits of utilizing digital technology in second language (L2) learning have been widely recognized (Chen, 2022; Ewa & Golonka, 2014; Liu et al., 2016; Parmaxi, 2023). Consequently, the current generation of students in teacher education programs, often referred to as *digital natives* is expected to possess information and communications technology (ICT) skills and knowledge to be able to meet the learning preferences of digital learners (Farjon et al., 2019; Reinders, 2009). Moreover, they are also expected to incorporate technological and pedagogical knowledge into their teaching (Insook et al., 2017).

Despite these expectations, many pre-service language teacher education programs do not emphasize technology use (Andreasen et al., 2022; Tiede et al., 2015) and lag behind in preparing teachers for successful technology integration in teaching (Forkosh-Baruch, 2018). Research suggests that pre-service and novice teachers often fail to transfer their technological competence to real classroom practices, and they tend to make little or no use of technology while teaching (Insook et al, 2017; Nikolopoulou et al., 2023; Tondeur et al., 2017). Furthermore, future teachers do not feel adequately prepared to utilize ICT tools in their classroom instruction (Polly et al., 2023; Warschauer, 2012).

To address the challenges related to technology integration competencies and practices, the development of pre-service teachers' technology-related knowledge, beliefs and attitudes is extremely important (Nelson & Hawk,

2020). According to Ertmer (2005), pre-service teachers face complex and persistent internal barriers to using technology for teaching purposes.

To this end, both pre-service and in-service teachers' pedagogical and personal beliefs are reported to be among the most significant barriers to successful technology integration (Insook et al., 2017). These barriers must be directly addressed in teacher education programs to facilitate integration of technology in education and to create meaningful environments for pre-service teachers for pre-service teachers to practice technology-integrated teaching (Chand et al., 2020; Şahal & Ozdemir, 2020).

Literature Review

Teacher Pedagogical Beliefs and ICT Integration

Studies reveal that pre-service teachers' pedagogical beliefs are highly influential factors in how they plan and integrate technology into their classrooms (Farjon et al., 2019). These pedagogical beliefs (either student-centered or teacher-centered) are mostly built upon future teachers' prior experiences as students and are typically developed in traditional, teacher-centered contexts (Funkhouser & Mouza, 2013). In other words, many pre-service teachers do not have experiential learning in technology-rich environments during their early education (Insook et al., 2017); therefore, they may not attribute value to the pedagogical relevance and usefulness of technology for their teaching practice (Anne et al., 2010). When pre-service teachers do not recognize the importance of technology in education, they are more likely to utilize the teacher-centered methods they have experienced as students (Funkhouser & Mouza, 2013).

To address this challenge, teacher education programs can play a critical role in persuading prospective teachers about the role of technology in their future practices. Also, they can offer reflection opportunities on their early encounters and experiences of teaching with technology (Ertmer, 2013; Blaik Hourani, 2013; Baran & Cagiltay, 2010). Besides, pre-service teachers' beliefs about the perceived value of technology have been reported to correlate with their intentions to use technology and technology self-efficacy (Sadaf et al., 2012). Therefore, researchers continue to call for further studies that could contribute to our understanding of future teachers' conceptions of ICT integration during teacher training to effectively prepare them for teaching in digital learning environments (Polly et al., 2023; Valtonen et al, 2015; Fathi & Ebadi, 2020; Farjon et al., 2019).

Pre-service Teacher Education for ICT Integration

In addition to future teachers' internal barriers to technology use in classrooms, their experiences during their pre-service teacher education significantly impact how they implement technology in their education practices (Egoroy et al, 2007). Teacher education institutions are expected to offer essential ICT knowledge and skills for their future use of technology in their teaching (Forkosh-Baruch, 2018) so that prospective language teachers could develop integrated knowledge on using technology in specific content areas (Farjon et al., 2019), facilitate learners' acquisition of digital literacy skills (Akayoğlu et al., 2020), support not only the delivery of content but also the building of students' language skills (Reinders, 2009), and open up new possibilities in virtual

communities in their future classrooms (Habibi et al., 2018; Tondeur et al., 2012; Prasojo et al., 2019; Golonka et al., 2014).

For such preparation, most teacher education programs have adopted numerous strategies to develop the technological and pedagogical capabilities of pre-service teachers. (Tondeur et al., 2017). As an example, almost all programs have included a stand-alone technology course in their curriculum to typically introduce basic computer skills to all students (Polly et al., 2023). Besides, the development of an integrated knowledge about how to use technology, which Mishra and Koehler (2006) referred to as Technological Pedagogical Content Knowledge (TPACK), has received great attention (Funkhouser & Mouza, 2013).

In this respect, many researchers agree that an integrative knowledge base of technology integration should be offered throughout the teacher education curriculum to prepare them to teach in a content-specific area with a suitable pedagogical approach. (Insook et al., 2017). However, studies indicate that theory alone is insufficient; practical experiences to transfer pre-service teachers' theoretical knowledge about technology integration must also be provided (Funkhouser & Mouza, 2013). The literature emphasizes the important role of teacher educators acting as role models in motivating pre-service teachers for technology integration in their future classrooms (Andreasen et al, 2022; Admiraal et al., 2017).

Similarly, providing exemplary cases and models of technology use by their supervising teachers was also found to be effective for developing beliefs in pre-service teachers (Nelson & Hawk, 2020). Such learning opportunities, combined with technology-rich teaching practice experiences, help prospective teachers analyze and reflect on what is taught in university lectures (Insook et al., 2017) and alter their perceived self-efficacy and intentions to integrate technology in future practices (Liu et al, 2016; Nelson, 2017). In addition to the role models, efforts to provide collaborative environments wherein prospective teachers observe, discuss, and reflect on technology-centered instructional practices might also be helpful for their realization of the utility, value and feasibility of utilizing a specific technology (Ertmer, 2013; Tondeur et al, 2017).

Research indicates that pre-service teachers' training experiences strongly influence the establishment of their technology-related beliefs and determine the type and frequency of technology use in the classrooms (Liu, 2012). Therefore, exploring what they believe and how these beliefs are impacted by teacher education experiences needs further consideration. (Nelosn & Hwak, 2020). However, the literature shows that the impact of teacher education experiences including coursework and fieldwork, on future teachers' beliefs about technology integration is a neglected area in the pre-service teacher technology integration literature. Studies mostly investigate whether and why pre-service teachers intend to use technology in their future practices or influential factors hindering and facilitating their ICT integration (Nikolopoulou et al., 2023; Liu, 2012; Hsu, 2013; Baydas & Goktas, 2016; Sadaf et al., 2012; Aslan & Zhu, 2017). These studies found that teacher characteristics (i.e., pedagogical, and personal beliefs) and institutional characteristics (i.e., school culture, limited ICT infrastructure, financial limitations, unfavorable ICT policies) are possible factors impacting technology integration. In the Turkish context where the study was conducted, pre-service teachers' experiences with ICT integration play a crucial role in shaping pedagogical beliefs and preparedness for future technological integration. Studies (see Aslan & Zhu, 2015, 2017;

Cakir & Yildirim, 2015; Demirtaş & Mumcu, 2021) underscore the importance of exploring variables that predict Turkish prospective teachers' integration of ICT into teaching practices. Moreover, these studies emphasize the need to better understand the factors influencing pre-service teachers' readiness to integrate ICT effectively in educational settings. Additionally, these findings show that a variety of factors, involving beliefs and attitudes towards technology, teacher training programs, perceived ICT skills and the development of TPACK are at play in shaping pre-service teachers' experiences with ICT integration.

Purpose of the Study

The existing knowledge shows that pre-service teachers beliefs play a crucial role in their technology use and are influenced by their teacher education experiences, but there is a dearth of research on how these experiences related to technology influence prospective teachers' conceptualizations about the relevance and usefulness of technology for their future practices (Nelson & Hawk, 2020; Pozas & Letzel, 2023). To fill such a void in the literature, this study aims to identify and analyze (1) prospective language teachers' ICT training experiences and (2) the connections between these experiences and their beliefs about how the education they received prepared them for successful technology integration in L2 classrooms.

Based on these research aims; the following research questions guided this study:

1. What are the pre-service technology learning experiences and the meanings of these experiences for prospective teachers graduating from a language teacher education program in Turkey?
2. What were these prospective teachers' beliefs about how effectively language teacher education program prepared them to use technology in their teaching practice?

Understanding pre-service technology training experiences might contribute to the evaluation and development of teacher education programs, particularly language teacher education programs, to train future teachers who can utilize digital technologies pedagogically in meaningful and critical ways (Sutton, 2011). In other words, the findings of this study might provide teacher education programs with the necessary policy and practice insights for capacity building based on a well-established vision of ICT-integrated training (Forkosh-Baruch, 2018).

Methodology

The current study is designed as a qualitative case study to explore how prospective language teachers' beliefs are shaped by their ICT training experiences during their training study since case studies are conducted to examine a complex system of relations, incidents, and realities in a unique context with its own dynamics (Yin, 2015). Given the objective of the study, a case study is a suitable methodology to describe participants' social context in-depth and to investigate how they construct and interpret the phenomenon in their worlds (Creswell & Poth, 2016). The generalizability potential of the research findings could be constrained by the small number of participants involved in this study; however, it would provide useful insights into similar contexts through relatability (Bassey, 1981) and transferability (Lincoln & Guba, 1985).

Research Context and Participants

This study was conducted in Turkey, which has made significant investments in establishing ICT infrastructure and generalizing ICT use in schools similar to many developed and developing countries (Baydas & Goktas, 2016). According to Topuz and Goktas (2015), in Turkey, the importance of ICT was most emphasized around the 1980s, after the government reached a consensus on the need to promote technology integration in Turkey to enhance the quality of teaching and learning. To achieve this goal, various action plans for ICT integration have been implemented. Considering these developments, this study was designed as a case study and conducted in a pre-service English language teacher education program at one of the prestigious research-oriented universities in central Turkey. Since 1984, projects regarding infrastructure and digital learning content for educational purposes have been produced. In 2012, one such major project, also known as FATIH project was launched by the Republic of Turkey Ministry of Education (MoNE) to provide schools with multifunctional printers, interactive whiteboards, internet connections, and cameras. Undeniably, the popularity and prevalence of such technological tools in education require providing specific ICT training for students in pre-service teacher education programs (Baydas & Goktas, 2016). Considering Turkey's unique context where various ICT integration policies and projects are supported and implemented, pre-service teachers are expected to be effectively prepared with the necessary ICT knowledge and skills for integrating technology in their future classrooms.

This study was conducted in a pre-service language teacher education program at one of the major research universities in central Turkey. In the first semester of the program, students are required to enroll in an introductory course on the use of ICT. This course aims to introduce basic concepts related to computer-assisted education. In the third semester, students are expected to attend a separate technology course that focuses on teaching how to use ICT in the classroom.

All participants were senior year students during the data collection process. In undergraduate teacher education programs in Turkey, senior year students must attend school practicum for two semesters, where they carry out classroom observation and teaching tasks that they carry out in a primary or secondary school under the supervision of a mentor teacher. During the current study, all participants were about to complete their practicum in a secondary school where they found opportunities to use technology in well-equipped classrooms.

In this study, convenience sampling, a common strategy in qualitative research guided by pratical considerations and the availability of participants, was utilized (Suri, 2011). Since the researchers chose participants who were easily accessible and willing to participate, this may result in a lack of variety in the sample. In other words, the participants might not be representative of the broader population (Jager et al., 2017). There were 58 pre-service English language teachers in the fourth year of the teacher education program. 11 participants responded to the researchers' invitation via e-mail to complete the survey; however, six of them accepted to be interviewed. Therefore, five of them were excluded from the study. The selected participants' age (two males and four females), namely Deniz, Selin, Simge, Merve, Sinan and Demir (pseudonyms), ranged from 21 to 23. In order to ensure the protection of participants' rights, the researchers gave informed consent forms to participants to get their permission and provide necessary information about the study.

Data Collection and Analysis

Data were collected using a survey and semi-structured interviews. The survey included questions regarding background information such as age and gender, followed by opinion questions that aimed at understanding the technology training experiences, their confidence and intentions to use ICT in their future classrooms. After administering the survey, the researchers conducted in-depth interviews consisting of open-ended questions regarding (a) beliefs of ICT use (b) the perceived impact of their ICT training experiences, including coursework and field placements, on their preparation for ICT integration (see Table 1 below for sample interview questions). The interviews were conducted one-on-one in the participants' mother tongue, Turkish, and were audio-recorded. Each interview lasted approximately 30 minutes for each participant.

Table 1. Sample Interview Questions

Focal Points	Sample Interview Questions
(a) Beliefs of ICT use in future teaching	How useful do you think the use of ICT in language education? How could you and your students benefit from the ICT tools in language learning and teaching? How do you generally feel about using ICT in your future language teaching? Having completed the four-year teacher education program, in what areas do you feel adequately prepared in the use of ICT?
(b) The perceived impact of ICT training experiences (including coursework and practice teaching)	Do you think that pre-service language teacher education provided you with the essential knowledge and skills that you might need in your future classrooms? How did both coursework and practice teaching experiences influence your confidence and beliefs of ICT use? During your student teaching, did you use ICT in your teaching? If yes, how did you use it and what for? What aspects of the pre-service language teacher education program need to be improved?

Considering the interactive constructions of meanings in the interviewing procedure, it is crucial to consider the relationship between the researchers and the researched. At the time of data collection, all the interviewees had already known the two researchers who worked as the research/teaching assistants at the target language teacher education program. However, neither of them taught or assisted the courses taken by the participants. Inevitably, the acquaintance might lead to the issue of power imbalance in the interview situations because of the hierarchy difference between the researcher and the participant. To address this, the second author who conducted the interviews consistently emphasized her role as a researcher, not as a program member. As we shared similar socio-cultural and educational experiences with the participants, the second researcher could establish a rapport with them so that they could share their experiences voluntarily.

The interviews were audio-recorded and transcribed verbatim for analysis based on qualitative data analysis procedures (Creswell & Poth, 2016). The analysis of the data was an iterative process. Each transcription was read multiple times and data reduction strategy was employed to develop initial codes, and this step was followed by looking for connections between codes and grouping similar codes into categories. In this step of the analysis, the relevant literature helped to refine the patterns in the coded data (Strauss & Corbin, 2008). For the analysis of survey, the researchers did not aim to generate new codes. They read participants' responses on the survey to draw meanings from them. The researchers marked the important parts and used their direct interpretations (Stake, 2013). The interview data from the same participant were coded by two coders independently. Based on a detailed discussion of the findings, the researchers focused on the identified themes and connections among them. To ensure the trustworthiness of the study, the analyses and interpretations of the data were also confirmed by the participant through a member-checking procedure (Marshall & Rossman, 2011).

Findings

After the analysis and interpretation of the data, the following categories emerged*: (a) Positive Perceptions and Pedagogical Benefits of ICT in Language Teaching, (b) Recognizing the Limits of ICT Skills: Realizations and Reflections, (c) Building Confidence through Peer Collaboration in ICT Practices, (d) Vulnerability to Upcoming Challenges of ICT Use in Classrooms, and (e) Perceived Inadequacies in ICT Training for Pre-Service Teachers.*

Positive Perceptions and Pedagogical Benefits of ICT in Language Teaching

The data revealed that all the participants hold positive views on ICT use in English teaching. In the interviews, they regarded ICT as a professional requirement expected of a language teacher in the twenty-first century. The participants also commented positively on some of the pedagogical utility of ICT integration in the L2 classroom. For instance, Merve and Simge remarked:

> Technology makes my L2 classes more enjoyable because I can integrate a wide range of new cultural and linguistic elements into my teaching. It becomes easier to connect with the pupils when I use digital tools. For example, I like to utilize the interactive whiteboard (IWB) especially with those who can actually learn better and more easily by visual and auditory aids.

> Digital tools make students more active than our traditional classes that mostly rely on the standard textbook. They also help teachers provide a purposeful learning environment … through much richer content. Technology perfectly complements English classes, and it was easier to capture students' attention when I used interactive multimedia exercises, etc.

As suggested, the participants recognized that ICT use can motivate students in L2 learning by bringing new cultural and linguistic elements, as well as capturing students' attention with the help of visual and auditory modalities. However, they did not signal high levels of confidence in using ICT in teaching as graduating pre-service teachers. As such, there were comments on the need for the improvement in the participants' ICT

competence and the aspects of teacher education program that affect their confidence and intentions to use technology in future teaching.

Recognizing the Limits of ICT Skills: Realizations and Reflections

It emerged from the analysis that the participants realized that they did not feel confident and adequately prepared in using or integrating ICT applications into their instructions after facing a variety of classroom contexts at the placement schools. Sinan expressed this sentiment:

> Becoming familiar with the technological tools doesn't mean you can use them well in the classroom. They [teacher educators and supervising teachers] expected me to be fluent in using ICT tools, for example, IWB, but I failed because I was inexperienced in using the IWB.

Sinan was not the only participant who thought that they were unaware of their incompetence in using digital tools in actual teaching. Demir also believed that the difficulties he encountered during the internship made him recognize the limits of his ICT integration skills. Deniz similarly pointed out that "I didn't know the limits of my technological abilities. All the struggles, failures, mistakes during my internship showed me that I wasn't that much competent as I had assumed". From the participants' statements, it was clear that their negative clinical experiences with technology use allowed them to realize their lack of necessary ICT skills. Therefore, the participants' recognition of their poor performance during fieldwork appeared to lead them to make an inflated negative self-assessment about their ICT competence. Based on the findings, the participants mostly tended to put themselves in an inferior position and constructed a self-image as incompetent (future) teachers when using ICT applications during the internship period. They evaluate their ICT skills negatively and possessed "a fear of being judged for not being able to use technological tools" (Selin). Furthermore, such positionalities also appear to impact the participants' desire and intentions for ICT integration in future practices. One participant shared his concerns about using technology in his future classes as follows: "If I do not feel confident while using technology, I do not have to integrate it into my teaching. When I become a teacher, I can teach my lesson by means of a well-designed coursebook and a whiteboard" (Demir).

The participants at least once during the interview, participants also pointed to the struggles they had in using ICT tools during their field placements. They all attributed these difficulties to their lack of prior experience learning through technology. Due to the limited focus on ICT-supported training in the teacher education curriculum, the pre-service teachers found themselves "struggling to understand and make themselves understood" (Deniz) in implementing technology in the L2 classroom. Deniz also recalled her placement experiences:

> There were many times when I felt nervous and afraid of losing face in front of pupils just because I could not use the digital board … Therefore, I switched to the traditional teaching based on the textbook where I felt more comfortable.

As indicated, Deniz found it challenging to appropriate a particular ICT tool in the L2 classroom during her

internship, which prevented her from experiencing a positive technology-supported teaching experience. There was much evidence of less positive fieldwork experiences characterized by the participants' failures to implement digital tools in their practicum classes and their frustration with not being able to exhibit ICT skills "as expected from a teacher of digital natives" (Merve). These experiences seemed to negatively impact their self-confidence to use specific technologies, which might also influence the prospective teachers' intention for technology integration in future practice.

The ineffectiveness of ICT courses was also cited as one of the major reasons by the participants for their failures and feelings of inadequate preparation for ICT integration in teaching. The participants expressed dissatisfaction with the pre-service teacher education curriculum, noting that most ICT integration was intended to be achieved in two specific courses. Particularly during their internship, they realized these technology courses detached from the pedagogical practices failed to prepare them for the complexities of teaching language learners. Simge exemplified this sentiment:

> I felt pressure when I was using the digital tools in the classroom because I felt I was, of course, able to use them as a student teacher who is almost graduating. However, just taking two courses on technology didn't help me with anything during my field placement.

With this statement, Simge treated her ICT learning process in the program as insufficient and irrelevant to transfer what they have learned to their practicum and future instruction, which was a prevalent attitude among the participants. The interview data also highlighted two particular disconnections among specific components of pre-service education. First, on the whole, all the participants tended to believe that the method courses and education courses were disconnected from the ICT courses which seemed to prevent them from developing an integrated knowledge base of technology use in their subject matter. Thus, some of them expressed their worries about losing control in the classroom and the need "to be trained on how to teach pupils of diverse individual differences" (Selin) concerning addressing the potential challenges of classroom settings. As an example, Merve described one disappointing incident when she lost her control during the placement in some detail:

> I just wanted the e-textbook … well I tried to attach our portable device to the IWB, but there were some technical problems that I had never expected. Then, my portable device got infected with a computer virus. I was very well-prepared for the class, but I had no control over it at all. It's a shame really… so disappointing because I couldn't manage it.

This extract exemplified the participants' sense of disappointment with their self-perceived low ability to connect content and pedagogy when integrating technology. When invited to think about the challenges they faced during their internship, they referred to the strong emphasis on technological proficiency rather than concentration on pedagogical expertise in using ICT in pre-service teacher education. According to them, the ICT training the participants received in the program was simply reduced to "the use of popular digital applications, using learning management systems or preparing PowerPoint presentations" (Merve).

The six case pre-service teachers also attributed the challenges of ICT use in practicum classrooms to the lack of continuous and comprehensive instruction on teaching with technology in the pre-service teacher education. The limited focus on ICT-supported teacher training also appeared to prevent them from gaining access to observe and practice authentic learning experiences, consequently leading to struggles in creating relevant content areas and applicable uses of ICT in their teaching at placement schools. Sinan shared his thoughts:

> As far as I observed, our instructors are not very interested in using ICT in teacher education and their focus on technology is limited to PowerPoint presentations. It is not possible for us to experience the use of ICT before practicum. The only platform I use during practicum is Kahoot.

Building Confidence through Peer Collaboration in ICT Practices

The participants also considered that the collaboration with their peers was highly beneficial during the internship. The data showed that the support provided by their peers seemed to reduce their anxiety and contribute to building their self-confidence. In parallel, the participants also stated that observing and receiving feedback from their peers were influential in learning how to manage the challenges of using ICT in particular situations. In this respect, Deniz shared her placement experiences as follows:

> We were required to video record our teaching episodes to review and critique the recordings with peers and to make self-evaluations. Watching these video recordings was very helpful for me because I learned from my mistakes. When we discussed these episodes with my peers, we had a chance to see the areas where we felt most lacking.

In a similar vein, Merve pointed out the importance of peer collaboration in reducing the anxiety while being observed by her supervisor. She said:

> While observing my peer, I learned about new platforms and tools as he is more interested in technology than me. What I mean is he tries to use new tools in the classroom. I used some online platforms that I had learned from him when our supervisor visited our school to observe me. It drew my students' attention to the class and they became more motivated. But for my peer's help, my lesson would have been a little bit boring and I might have felt anxious.

Vulnerability to Upcoming Challenges of ICT Use in Classrooms

In that regard, the second disconnection in the pre-service education concerned the detachment of academic ICT courses with their fieldwork experiences. The participants felt that adequate exposure to the appropriate uses of particular ICT tools in their specific subject area was missing in their pre-service teacher education. Therefore, the participants believed that they could not come up with concrete strategies to handle the challenges when using technology despite their beliefs in the pedagogical value of ICT use in L2 teaching. Demir reflected on his time at the practicum school:

> Using the IWB makes me more nervous rather than teaching itself. Most of the time, it was challenging for me to control the classroom when using technological tools. I was at the very basic level and how to use technology in a purposeful and planned manner was a big problem for me…therefore, I gave up using these tools in case of an unexpected situation.

As revealed, Demir, in a sense, believed that he was vulnerable to upcoming challenges due to their inadequate preparation for teaching with ICT tools, a common belief among the participants. They were less likely to be fully prepared for using a wide range of possibilities when integrating ICT in lesson planning and their teaching practice. In that regard, they appeared to be influenced by disconnected, irrelevant, and non-transferable technology courses, which prevented them from having technology-centered field experiences. The ICT courses received by the participants arguably did not prepare well for developing an integrated knowledge base of technology use in a specific content area. Sinan said: "We took a compulsory ICT course during our freshman year; however, we were taught very basic information about using technology in education. It is not efficient to be adapted to the changing needs of students." Therefore, developing an integrated disciplinary and pedagogical knowledge base of ICT use in their specific content area might contribute to the prospective teachers' innovative, conscious, and purposeful use of ICT in teaching.

Perceived Inadequacies in ICT Training for Pre-Service Teachers

Despite their appreciation of the pedagogical value of ICT in L2 teaching, the six pre-service teachers were not certain about their ability to possess sufficient ICT knowledge and skills to create ICT-integrated language teaching. The interview highlighted the impact of coursework and fieldwork experiences on the prospective English teachers' self-confidence and intentions for implementing technology in their future classrooms. First, the participants noted their ICT use during fieldwork was primarily influenced by their coursework experiences. More specifically, they tended to use the ICT applications the instructors demonstrated and utilized during the internship. The participants pointed to a popular understanding of ICT utilization during their training which mostly consisted of utilizing PowerPoint presentations, learning management systems, popular websites, or software, as indicated in this excerpt from the interview with Deniz:

> We were, for instance, only taught with some basic educational soft wares or websites such as PowToon or Online Survey … None of the instructors used the IWB during my undergraduate education although we had access to and opportunities to use it.

From the participants' statements, it was clear that the limited and traditional utilization of digital tools was apparent in university coursework and the instructors did not actively use different ICT applications in their lectures. For instance, Selin thought that the pre-service training did not motivate her to experiment and explore different ICT applications for specific purposes, which consequently prevented her from building her confidence in the ability to create digital learning environments: "It was nice to have technological facilities in the university classroom and I could have the possibility to experiment technology with it, but the instructors rarely used them. When they used, we just watched them." Simge also believed that the instructors could have provided very close

experiential opportunities with various types of technologies for "creativity or to let pupils think critically" rather than "using technology at the most basic level".

According to the participants, the concentration on the popular ICT applications in university lectures as well as lack of authentic learning experiences made a restricting impact on their ICT use during fieldwork. Furthermore, inadequate exposure to the appropriate implementation of specific ICT tools in their subject areas was considered to influence their intentions for ICT integration. Deniz, for example, reported that she would probably prefer to use "familiar technological tools" in her future practice because she failed to address the issues when using the interactive tools during her internship. On the other hand, the participants thought that the university coursework failed to prepare them to adequately cope with the realities of the language classroom contexts because the courses in particular the technology courses only provided them with an idealistic view of the L2 classrooms. More specifically, these participants did not believe that they would exhibit ICT skills as anticipated when confronted with limited infrastructure and support in particular local contexts. Demir, for example, expressed his worries about using technology at disadvantaged schools in rural areas. Thus, all the participants acknowledged the role of their pre-service training experiences in acquiring the ICT competencies to use technology in flexible and diverse ways to support student learning in specific contexts.

Apart from the university instructors, the influence of supervising teachers was also highlighted, and they were perceived as role models in indicating the appropriate uses of technology in the classroom. According to the participants, the supervising teachers had limited understandings of ICT and their technology use was mostly confined to the conservative teaching modes with the use of basic digital tools. The most prevalent utilization of ICT during their placements was with a projector and IWB for showing the desktop publishing of the coursebook, PowerPoint presentations, music playback, and video demonstration. The following comment with Demir is indicative of the situation:

> In the practicum school, we mostly used the IWB for basic things, for example, to exercise activities in the textbook. Our supervising teacher preferred to use it for demonstrative purposes, too. It was just a question-and-answer routine. Everyone in the classroom knew what would happen next. I think it was just using technology for the sake of technology.

Likewise, Sinan who was in a similar situation concerning the basic usage of ICT tools in a practicum school recalled his placement memories and told:

> [T]he students didn't bring their textbooks to English classes because most of them were accustomed to being taught with the digital one. It was just an ordinary learning tool for them. The IWB was at the center of the teacher's instruction, and I think they didn't find it interesting.

On the other hand, the participants claimed that some of the supervising teachers were not willing to use the digital tools in their instruction due to their perceived lack of essential ICT knowledge and skills. Therefore, the participants stated that it would have been interesting to observe and experiment with different ICT applications

during their practicum. They believed that observing the uses of new technological tools in the real classroom atmosphere and practicing with ICT integration in the field would support the development of their ICT competencies. Influenced by the supervising teachers, the participants reported that they also remained limited with the use of technology to coursebook exercises during their internship. Simge considered this as "detrimental to her own professional development as a teacher candidate". Similarly, Deniz believed that the supervising teachers could have been proactive to differentiate the uses of technological applications and have provided more encouragement and support to take their ICT use further during their internship.

As revealed in the data, the six participants appeared to emphasize the need for adequate support, encouragement and modeling from both teacher educators and supervising teachers. The data also revealed that the participants considered that they did not take full advantage of the potential of ICT due to the limited ICT knowledge and skills and the adoption of conservative pedagogy in the classroom contexts where they were positioned as student and teacher candidates. The following figure further the relationships and interactions among the themes in Pre-Service Teacher ICT Preparation:

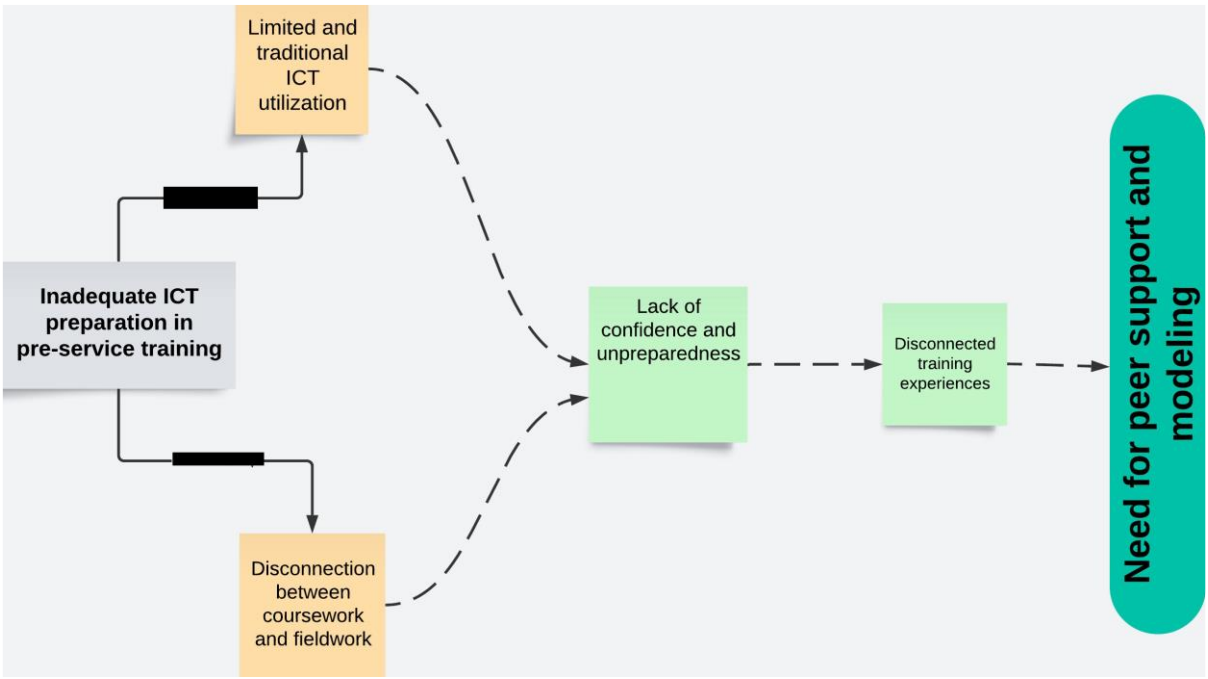

Figure 1. Relationships among Themes in Pre-Service Teacher ICT Preparation

Discussion and Conclusion

The present inquiry sought to describe ICT training experiences of a cohort that consisted of six prospective English teachers who studied at a Turkish university with a specific focus on the links between these experiences and their beliefs about how the pre-service training prepared them for effective ICT integration in the classroom. This study was conducted with the common caveat in previous studies that pre-service ICT training experiences during coursework and field placements might significantly influence the establishment of prospective teachers' technology-centered beliefs and their technology integration (Şahal & Ozdemir, 2020; Aslan & Zhu, 2015). Based

on the examination of the findings, this study clearly supported the general view in the literature on the impact of teacher education experiences on future teachers' ICT-related beliefs and technology use (Insook et al., 2017; Forkosh-Baruch, 2018; Pozas & Letzel, 2013).

Pre-service teachers' beliefs have been considered as a significant factor that impacts their decision to implement ICT in their teaching (Andreasen et al., 2022; Insook et al., 2017; Polly et al., 2023). It was found that all the participants displayed favorable attitudes towards ICT use and believed in the pedagogical utility of technology in L2 classrooms. However, the prospective language teachers thought that the current pre-service language teacher education program did not prepare them adequately for effective use of technology in their content areas, which is a concern shared by most other pre-service teachers (Demirtaş & Mumcu, 2021; Insook et al., 2017; Polly et al., 2023, Tondeur et al., 2017). It seems that the quality of how ICT integration is addressed in the teacher education program and placement schools is one of the important conditions for how they utilize technology in their teaching during the practicum. In other words, this study affirmed the influence of the situational factors in both the university and field placement on prospective teachers' technology use (Egoroy et al., 2007).

One of the main problems reported by the pre-service teachers for this current teacher education program was the lack of prior experience of learning through technology. In other words, the prospective teachers experienced the need to be equipped with pedagogical expertise in using ICT rather than merely technological proficiency (Farjon et al., 2019) which indicates that the development of an integrated knowledge base of technology use in their subject matter (i.e., TPACK) was underemphasized in the teacher education program where participants studied. Considering the participants' struggles in appropriating the ICT tools in the real classrooms during their placement and their worries and frustration with their ICT competencies, the development of a practical and integrated knowledge base of technology use should have a visible place in teacher education programs (Chen, 2022) as stand-alone educational technology courses detached from methods and content courses do not have the potential to provide teacher candidates with adequate preparation for effectively integrate technology into their teaching (Kay, 2006).

The participants in this study reported many struggles and less positive clinical experiences characterized by low self-confidence and a vulnerable, deficit self-image as incompetent future teachers when implementing ICT tools in their instruction. In that regard, the quality of fieldwork experiences seems to be a crucial factor that impacts the pre-service teachers' actual ICT use in their teaching practices (Andreasen et al., 2022; Tondeur et al., 2017). To provide technology-centered field experiences that could increase the pre-service teachers' self-efficacy, teacher education programs should not treat the coursework and fieldwork component as dichotomous in ICT training and should diffuse technology into their curriculum (Forkosh-Baruch, 2018; Pozas & Letzel, 2023).

On the other hand, another reason for the failures in using technology is the teacher educators who adopted the traditional and limited use of digital tools in their lectures (Forkosh-Baruch, 2018). These prospective teachers also stated that the teacher educators did not motivate them to explore and experiment with innovative ways of ICT integration with various types of technologies. Thus, the participants in this case study felt that the limited

and conservative modes of teaching with technology in the university coursework restricted their technology use during their practicum and made them feel vulnerable to the challenging realities of classroom contexts. This addressed the value of teacher educators as pedagogical role models in influencing technology use during the pre-service teachers' teaching practices (Admiraal et al., 2017).

Moreover, the participants in this study consistently reported that they tended to adopt the teaching modes with technology the instructors demonstrated or used at placement schools and complained about not being able to use different technologies in innovative ways. In this sense, restricted opportunities to develop the necessary ICT competence and inadequate attention on ICT-pedagogy integration training that could contribute to preparing digitally literate teachers seems to be an important issue in the field of language teacher education (Akayoğlu et al, 2020; Tiede et al., 2015). Thus, both academic and practical courses focusing on the development of 'up-to-date technology-enabled curriculum design skills' and 'digital curation and customization of existing resources' should be offered to prospective language teachers (Forkosh-Brauch, 2018).

In addition, considering the participants' reports on the influence of supervising teachers' limited understandings and technology use on their teaching practices during fieldwork (Hsu, 2013), more support and encouragement to practice and observe specific ICT tools in their subject areas should be provided in pre-service ICT training since supervising teachers as the role models are of great value to pre-service teachers because their modeling can help future teachers internalize positive beliefs about the utility of technology in classrooms (Nelson & Hawk, 2020). In that matter, a sound pre-planning and careful assigning of supervising teachers who are digitally literate and innovators in their ICT use could be useful for better preparation of prospective teachers (Forkosh-Baruch, 2018).

This study also reports that collaboration on ICT use during the practicum was helpful for the pre-service teachers since feedback and peer support give them opportunities to observe, discuss and reflect on different types of ICT use (Nikolopoulou et al., 2023). Teacher education programs should provide adequate support for these students to maximize their reflection opportunities through self-observation or observation of others when using diverse technologies (Blaik Hourani, 2013; Cakir & Yildirim, 2015). Online resources (e.g., student teaching portfolios) and online communities of practice to experientially reflect on the authentic teaching with technology situations can be of significant benefit (Baran & Cagiltay, 2010) as they help future teachers understand the link between the theories and teaching practices (Tondeur et al., 2017).

Based on the findings, some important implications can be made for pre-service teacher education. First, pre-service language teachers want to use ICT tools and believe in the pedagogical value of technology in language teaching. However, they do not feel adequately prepared and struggle when integrating digital tools into their teaching. The participants should not be blamed for their failures or low self-confidence, rather preparation for digital environments seems to be a systemic concern that might include field instructors, student teachers, supervising teachers, teacher education programs and placement schools, and broader national institutions. Teacher education programs need to make efforts and investments to provide well-defined and sound technology training for pre-service teachers. Through creating a holistic pedagogical master plan which links academic courses to fieldwork experiences, future teachers can optimize and maximize the outcomes of the pre-service ICT

training in terms of the development of the TPACK and their digital literacies (Forkosh-Baruch, 2018). ICT integration is a complex and multidimensional process that cannot be accomplished just in single-semester courses. Therefore, the long-term nurturing of behaviors to intrinsically motivate prospective teachers to utilize technology and sustain ICT use is required and should take place throughout their pre-service teacher education (Warschauer, 2012).

Although this study offers valuable perspectives into the ICT training experiences of prospective English language teachers and their beliefs about technology integration, it is not without limitations. First, the findings in the present study were based on a case study that limits the generalizability of the data to other contexts. However, it could contribute to our understanding of the ICT training experiences of pre-service English teachers and provide insights into the complexity of technology integration in a Turkish context where many efforts have been made to bring ICT into classroom environments and particular challenges have been experienced. Moreover, the use of self-reported surveys and interviews may not fully capture the complex nature of participants' experiences. Therefore, further studies could triangulate the self-reports of prospective teachers with teacher educators, supervising teachers, IT coordinators and administrators to provide a holistic picture of preparation for technology integration. Further studies can also complement interview data with other types of data sources, including documents or observations to shed further light on preparing teacher candidates for effective ICT integration into education.

Notes

The two authors contributed to the article equally. This study does not include any potential conflict of interest.

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