T.C.

AKDENİZ UNIVERSITY

INSTITUTE OF EDUCATIONAL SCIENCES

FOREIGN LANGUAGE TEACHING DEPARTMENT

MASTER'S THESIS

TECHNOLOGICAL READINESS OF PRE-SERVICE ENGLISH LANGUAGE TEACHERS

Gizem UZUNDURDU

Antalya, 2022

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SUPERVISOR

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Uzundurdu, Gizem

Master's Thesis, Foreign Languages Teaching Department

Supervisor: Assoc. Prof. Dr. Mustafa Caner

January 2022

DOĞRULUK BEYANI

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Gizem Uzundurdu

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EĞİTİM BİLİMLERİ ENSTİTÜSÜ MÜDÜRLÜĞÜNE

Gizem Uzundurdu ‘nun bu çalışması **24/01/2022** tarihinde jürimiz tarafından **Yabancı Diller Eğitimi** Ana Bilim Dalı **İngiliz Dili Eğitimi** Tezli Yüksek Lisans Programında **Yüksek Lisans Tezi** olarak **oy birliği/oy çokluğu** ile kabul edilmiştir.

	İmza
Başkan : (Unvan) Adı Soyadı (Çalıştığı Kurum, Fakülte, Bölüm)	……
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Doç. Dr. Güçlü ŞEKERCİOĞLU

Enstitü Müdürü

ACKNOWLEDGEMENTS

I would like to first express my sincerest gratitude to my thesis supervisor Assoc. Prof. Dr. Mustafa Caner, for his precious guidance and support throughout the study. Without his expertise and patience, this thesis would not have been completed. It is an honor to be one of his students.

A dept of gratitude is also owed to the members of my thesis committee Dr. Gonca Subaşı and Assoc. Prof. Dr. Hüseyin Kafes not only for their time and patience, but for their intellectual contributions to my professional development.

I would like to thank to pre-service language teachers who participated in the study and my colleagues who has given me feedback in the preparation of the questionnaire. Additionally, I wish to express my thank to my previous instructors Prof. Dr. Cem Balçıkanlı, Lect. Burcu Arslaner, R.A. Dr. Sibel Kahraman Özkurt, Doç Dr. Nazlı Güngör for sharing my questionnaire.

Last but not least, I express my sincere thanks to my parents Sema and Muharrem Uzundurdu, my siblings İlayda and Ufuk Uzundurdu for their support and understanding during my study. Also, I sincerely appreciate Muhammed Demirdibek, who is always there for me whenever I need, for his great contribution to the study, Olcay Çağlar, Seda Erdem Cavdan and Mehtap Kaplan for encouraging and supporting me during my study.

ÖZET

Teknolojinin eğitim uygulamaları üzerindeki etkisi her geçen gün artmaktadır. Diğer branşlarda olduğu gibi, İngilizce öğretiminde de yaygın bir biçimde dijital araç ve gereçler kullanılmaya başlanmıştır. Dil öğretiminde teknoloji kullanımının hem öğretmene hem de öğrenciye büyük olanaklar sağladığı bilinmektedir. 21.yy becerileri içerisinde yer alan bilgi ve iletişim teknolojileri yetkinliği yeni nesil öğretmenlerde ve öğrencilerde geliştirilmelidir. Bu sebeple, öğretmen yetiştirme programlarında öğretim teknolojileri eğitimi oldukça önemlidir. Bu çalışma, Türkiye'deki İngilizce Öğretmen Yetiştirme programlarını gelişmiş ülkelerdeki programlar ile karşılaştırarak ve İngilizce öğretmen adaylarının görüşlerini alarak Türkiye'de İngilizce öğretmen adaylarının derslerine teknolojiyi entegre etme konusundaki hazırbulunuşluklarını ortaya koymayı ve İngilizce Öğretmen Yetiştirme programlarına katkı sağlamayı hedeflemiştir. Bu amaçla, nicel bir araştırma modeli kullanılmıştır. Veri toplamak için araç olarak ilgili literatürden ve uzmanların görüşlerinden yararlanılarak bir anket geliştirilmiştir. Anket Türkiye'deki farklı üniversitelerde okuyan İngilizce öğretmen adaylarına (n=108) online olarak gönderilmiştir. Elde edilen veriler SPSS 20.0 programı kullanılarak analiz edilmiştir ve betimsel istatistik ile veriler incelenmiştir. Çalışmanın sonucunda, öğretmen adaylarının derslerde teknoloji kullanımı konusunda kendilerini hazır hissettiği ancak öğretmen yetiştirme programlarının genel olarak teknoloji entegrasyonu eğitimi konusunda yetersiz kaldığı, öğrencilerin İngilizce öğretimi ve öğretim teknolojilerini harmanlayan dersler almak istediği ve üniversitede eğitim aldıkları öğretim görevlilerinin yeterince modelleme yapmadığı sonucu ortaya çıkmıştır.

Anahtar Kelimeler: Teknoloji, Öğretmen Yetiştirme Programı, Öğretim Teknolojileri, İngilizce Öğretimi, İngilizce Öğretmen Adaylarının Teknolojik Hazırbulunuşlukları

ABSTRACT

The impact of technology on educational practices is increasing day by day. As in other branches, digital tools and equipment have been widely used in English teaching. It is known that the use of technology in language teaching provides great opportunities for both the teacher and the student. Information and communication technologies competence, which is included in the 21st century skills, needs to be improved in new generation teachers and students. For this reason, instructional technology education in teacher training programs plays a key role. This study intends to illustrate the professional digital competency levels of pre-service English language teachers and efficacy of English language teacher training programs (ELLTP) in Turkey in terms of educational Technologies integration to language teaching. For this purpose, a quantitative research model was used. A questionnaire was developed by using the relevant literature and expert opinions as a tool to collect data. The questionnaire was sent online to prospective English language teachers (n=108) studying at different universities in Turkey. The obtained data were analyzed using SPSS 20.0 program and reported using descriptive statistics. As a result of the study, it was concluded that pre-service teachers felt ready to use technology in lessons, but teacher training programs were generally insufficient in technology integration education, students wanted to take courses that blended teaching English and instructional technologies, and the instructors they studied at the university did not do enough modeling.

Key Words: Technology, Teacher Training Program, Instructional Technologies, English Language Teaching, Technological readiness of preservice English teachers

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ABBREVIATIONS

TPACK: Technological Pedagogical Content Knowledge

ELT: English Language Teaching

EFL: English as a Foreign Language

ICT: Information and Communication Technology

CALL: Computer Assisted Language Learning

MALL: Mobile Assisted Language Learning

EBA: Education Information Network

UZEM: Distance Education Research and Application Center

ERT: Emergency Remote Teaching

MoNE: Ministry of National Education Republic of Turkey

PCK: Pedagogical Content Knowledge

DNAS: Digital Nativity Assessment Scale

ITE: Initial Teacher Education

LMS: Learning Management System

ELLs: English Language Learners

PDC: Professional Digital Competence

TTI: Teacher Training Institutes

ISTE: The International Society for Technology in Education

NCATE: National Council for Accreditation of Teacher Education

PT3: Preparing Tomorrow's Teachers to Use Technology

TUBITAK: Turkish Scientific and Technological Research Council

HEC: The Higher Education Council's

NEDP: National Education Development Project

ITMD: Instructional Technology and Material Development

ELTTP: English Language Teacher Training Programs

CHAPTER I

INTRODUCTION

1.1 Background to the Problem

Early education which is called Education 1.0 was to meet the needs of agricultural society. Knowledge was transferred from teacher to student, and students focused on only the instructor's explanations. Education 2.0 which aimed to meet the needs of industrial society was based on acquiring technologies that will be utilized in work life. Education 3.0 has developed to fulfill the requirements of society by promoting innovation. Recently, education 4.0, which was established at the beginning of the twenty-first century, is intended to satisfy the demands of the innovation age. Students are required to create and adopt new technologies that will aid in the growth of civilizations (Puncreobutr, 2016, p.93-94). According to Harkins (2008), Education 4.0 is a process that generates innovation by redefining ideas such as technology, education, schools, and teachers. Education is always changing as a result of the inputs provided by students, who play an important part in the innovation production process. With the development of technology, the use of technological tools in education is getting more and more widespread. Technological tools have caused paradigm changes in education. According to Arokiasamy (2012), traditional authoritative learning may be transitioned into more transparent learning using digital resources, with the instructor acting as a facilitator rather than an expert.. Through technology, learning can become more active rather than passive, more conversational as opposed to publication. Information technology has transformed learning from traditional formal schooling to lifelong learning. The concept of a library has evolved to an online virtual location where learners can access different databases in different formats. Considering the recent paradigm shift which bases quality of education on the use of technology, new implementations have also been integrated into the language teaching policies.

It has been determined that technology in foreign language teaching provides many benefits. These benefits include increased student motivation and class participation (Genç İlter, 2015; Tomlinson, 2009) increased language proficiency, the transition from a teacher-centred classroom to a student-centred classroom which leads student autonomy (Pourhosein Gilakjani,

2017), preparing students for the digital world, providing original language-learning materials access (Larsen-Freeman & Anderson, 2011) and equal opportunities for all students, increasing cooperation and interaction, supporting lifelong learning (Harmandaoğlu Baz, Balçıkanlı & Cephe, 2018). All these advances and benefits have led many educational institutions to go through changes in language teaching methods and techniques. New concepts like computer-assisted instruction, internet-assisted instruction, web-based instruction, blended learning, e-learning, internet-based distance education, online education have replaced the traditional teaching. By providing time and location flexibility, concepts like e-learning and online education have started to become popular all around the globe.

In fact, the real popularization of online learning has become overnight as an emergency in December 2019. Due to the CoronaVirus (COVID19) outbreak, which has been followed by shutting down buildings involving schools, all levels of educational institutions have to operate remotely and put emergency remote teaching into practice. It is reported that more than 1.5 billion learners of all ages from around the globe are affected due to school and university closures which means almost 90% of students have to continue their education remotely (Bozkurt & Sharma, 2020). This overnight transition to emergency online education, which is defined as a temporary teaching solution to an emergent problem aiming to provide reliably available instruction during an emergency or crisis (Hodges, Moore, Lockee, Trust & Bond, 2020), has once again revealed the importance of having educational technology competencies.

For technology to be used efficiently in education, teachers and teacher candidates should be able to adapt technological competencies to teaching, as they are vital players in any initiative aimed at improving teaching and learning processes. In many studies, it is suggested that in-service and pre-service teachers need to be competent in using educational technologies in order to meet the needs of 21st century (Akbulut, Kuzu & Odabaşı, 2011; Altun, 2007; Baran, Canbazoğlu, Albayrak Sarı & Tondeur, 2017; Bozdoğan & Özen, 2014; Cuhadar, 2018; Jeffery, 2019; Kabakçı Yurdakul, Odabaşı, Kılıçer, Çoklar, Birinci & Kurt, 2012;). In addition, it was stated in studies that pre-service teachers should receive training not only on technical computer training but also on how to adapt technology to language teaching (Dudeney & Hockly, 2016).

1.2 Statement of the Problem

In the reviewed literature, there are some studies (Aydın & Caner, 2021; Bozdoğan & Özen, 2014; Jeffery, 2019) examining the technological competence of pre-service and in-service teachers. These studies strongly suggest that in-service and pre-service teachers should be able to use educational technologies appropriately. However, Roland (2015) concluded in his study that 60% of teachers feel technologically inadequate and need training on how to adapt technology to their lessons. Similarly, Bolkan and Griffin (2017) found that 78% of teachers did not receive training to use technology effectively in lessons.

Analyzing studies conducted in Turkey, it is found that in most English Language Teacher Training programs, basic level of computer usage education is given, but educational technology course integrated into language teaching is included in programs of only a few universities. Altmışdört (2016), examined the English Language Teaching curricula of 15 universities and found that only 1 university included a course on combining technology and language education. For this reason, it has been revealed by the researches that the teacher candidates generally consider themselves technologically sufficient but insufficient in integrating with the lessons. Harmandaoğlu Baz et al., (2018) have argued that in Turkey, neither pre-service teachers nor faculty members are benefiting enough from information and communication technologies throughout the four years of foreign language training program.

A study conducted with pre-service English Language teachers (ELT) suggested that although the majority of students define themselves as "Digital Native" and consider themselves technologically sufficient, the curricula should include courses for the use of online platforms in language teaching (Akayoğlu, Satar, Dikilitaş, Javelin, & Korkmazgil, 2020). After giving 14-week computer-assisted language teaching to pre-service English Language teachers, Akayoğlu (2017), observed that the students developed positive views towards technology usage in language teaching and their anxiety levels greatly decreased. In all these studies, the necessity of a course that blends technology and language teaching in ELT programs is stated. Even though there are studies (Akayoğlu 2017, Akayoğlu et al.,2020) examining the technological competency of pre-service English Language teachers in Turkey, the changing circumstances forcing educators to develop online education systems emergently have created a need to discover current readiness of teacher candidates, their technological self-efficacy, and the relation between these two.

For developing the ELT education programs to meet the needs of today's changing world, it is crucial to look at not only teacher candidates' technological competence but also their confidence in themselves and belief in the efficacy of the education they received at university.

In accessible literature, there are some studies examining pre-service English language teachers' technological pedagogical content knowledge (TPACK) (Baser, Kopcha & Özden, 2015; Çakır & Solak, 2014). However, there are a few studies studying pre-service English language teachers' technological readiness to use educational technologies in their language classes. Thus, the recent problem in the teacher education is to appraise the qualifications of pre-service EFL (English as a Foreign Language) teachers in terms of their technological readiness that they will use in their professional life.

1.3 Significance and Purpose of The Study

Studying the views of teachers and their perceptions towards their technological preparedness is expected to provide constructive feedback to the educational technology usage in the curriculum at the English language teacher training programs of universities

Teachers' attitudes towards technology integration have been a fashionable research topic investigated in many studies in the last decade. However, there are a few studies on pre-service EFL teachers' attitudes towards technology integration in Turkey. These studies (Aydın, 2013; Hismanoğlu, 2012; Çelik, 2013, Sağın Şimşek, 2008; Şad & Göktaş, 2014) conducted on Turkish pre-service teachers' perceptions about using digital tools in teaching English as a foreign language have shown mixed results.

Hismanoglu (2012) found that pre-service teachers had negative attitudes toward the usage of technological tools since they felt less competent in using technology due to lack of knowledge and experience. On the other hand, there are some studies indicating that the attitudes of students were found to be positive even though they have little knowledge about certain software and experience difficulties using the software programs and that they suffer from a lack of technical and instructional support (Aydın, 2013; Çelik, 2013; Sağın Şimşek, 2008).

Since the studies provided mixed results and technological readiness of pre-service teachers was not focused, there is a need to examine the current perceptions and readiness of pre-service teachers. The study is significant as it aims to reveal the current level of readiness and perceptions of pre-service teachers who are expected to start teaching next year after getting one year of online education. It's an undeniable fact that online education or the use of technology is going to stay as a part of education therefore it is crucial to investigate the readiness of future teachers and the efficacy of educational technology training in teacher education programs.

The purpose of this study is to reveal the technological readiness of English language pre-service teachers to teach online or to integrate digital tools to language teaching and their self-efficacy beliefs on using technology effectively in language teaching classes. By revealing that, the study aims to contribute to the efficacy of English Language Teaching programs in Turkey for training teachers to meet 21st century needs. This study differs from other studies in the field in terms of both examining the technological readiness levels of pre-service English language teachers and including their self-efficacy and opinions on readiness.

1.4 Research Questions

Regarding abovementioned aim, the present study intended to discover pre-service teachers' perceptions and readiness to teach online and integrate educational technologies into the lessons. Thus, the present study attempted to find answers to the following research questions;

1- How familiar are pre-service English language teachers with the educational technologies commonly used in language teaching?
2- How do pre-service EFL teachers perceive their levels of technology readiness?
   2a- Is there any relationship between preservice EFL teachers' familiarity with educational technologies and their readiness beliefs?
3- How confident do pre-service EFL teachers feel in using educational technologies during their teaching practice?
4- What kinds of technological courses had pre-service EFL teachers received, and what are their opinion on these courses they received?

CHAPTER II

LITERATURE REVIEW

In this chapter, firstly the role of digital technologies in language education is discussed. Next, online education, types of online education, advantages and disadvantages of online education and the difference between emergency education and online education are explained. Lastly, educational technologies and teacher training especially language teacher training are focused.

2.1 The Role of Digital Technologies in Language Education

With the introduction of computer and especially the internet, noticeable changes have occurred in various fields from science to education. The way of our reaching, keeping and transferring information has altered. In the field of educational sciences, new concepts like e-learning, e-book, computer-assisted learning, internet assisted learning, mobile assisted learning, blended learning, online learning etc. have emerged with the advent of technology. The emerged new concepts have also influenced the methods of language teaching.

The use of the computers in language teaching is not new. Since the 1960s, computers have been effectively used in the teaching and learning foreign languages as they provide authentic study materials, greater interaction and student motivation, individualization, independence from a single source and global understanding (Lee, 2000). According to Becker (2000), computers are regarded as an important instructional instrument in language classes where teachers have convenient access, are sufficiently prepared, and have some freedom in the curriculum. In recent years, not only computers but also all the technologies such as internet, e-mail, web, chat programs, mobile phones have become widespread. The use of digital tools in language teaching has revealed a lot of benefits. Some of these are facilitating learner motivation and engagement (Günüç & Kuzu 2014), improving language proficiency of the learners (Kabilan,Ahmad & Abidin, 2010), a paradigm shift from teacher-centered to learner centered learning environments (Liton, 2015), preparing learners for the digital world and providing authentic materials for language (Bena & James, 2001), equal opportunity for each learner, improving learner autonomy, promoting collaboration and interaction and raising life-

long learners (Liton, 2015). According to Arifah (2014), using the internet enhances the motivation of students. The usage of film in the classroom encourages students to get enthusiastic about the subject and expand their knowledge. With the true combination of multimedia and teaching methodology, students can learn more effectively and they are able to acquire higher-order abilities.

According to UNESCO (2018), technology can enable students to become (1) capable information technology users, (2) information seekers, analyzers, and evaluators, (3) problem solvers and decision makers, (3) creative and effective users of productivity tools, (4) communicators, collaborators, publishers, and producers, (5) informed, responsible, and contributing citizens.

Schrooten (2006) also states that the benefits of integration of information and communication technology (ICT) into language education seem vast and lists the potential of ICT in language classroom as follows:

> 1. Digital tools allows a high degree of differentiation. Individual needs and abilities can easily be accommodated.
>
> 2. Working with digital tools elicits a high degree of learner motivation and involvement.
>
> 3. Digital tools offer enriched content and allows a more intense, multisensory learning process.
>
> 4. Digital tools make teaching more efficient, since the teacher can focus more on supporting learners rather than having to focus on providing content.

There are many other studies which claim that the use of digital tools facilitates language learning by offering unlimited resources, rapid information and authentic social context if the teacher uses suitable technological materials and encourage learners to find appropriate activities (Ahmadi, 2018; Genç İlter, 2015; Harmer, 2007; Tomlinson, 2009).

For raising individuals with appropriate skills to the requirements of the age and improving the quality of learning, innovation in education is inevitable. Schools are driven to develop traditional teaching and learning techniques because of the transformation that the current digital generation will eventually cause in society (Green & Hannon, 2007). The current generation surrounded by technologies and media like smart phones, social networks, instant messages and games is called as digital natives in the literature. According to Prensky (2001),

individuals born after 1980, with ability at using digital technologies are digital natives. On the other hand, other studies define it as "someone who multitasks, has access to a variety of new technologies, is confident in their use of technology, utilizes the Internet as a first port of call for information, and uses the Internet for education as well as other activities" (Helsper & Eynon, 2009, p. 5) The terms "digital native" and "net generation," "google generation," and "millennial" are commonly interchanged, leading to a misunderstanding of the term's meaning. In this research, digital natives term is going to be used for "the youngest generation who has grown up with technology and does not know any other context".

According to Kabakçı Yurdakul (2018), individuals of the digital native generation have advanced skills and knowledge concerning information and communication technologies. In addition, among the attributes of this generation is their ability to integrate the Internet into their lives in all aspects, regardless of their ages and backgrounds. The use of digital tools is completely normalized and integrated into daily life by digital natives. 21st century students simply use new media as tools for making their lives easier, strengthening their friendship and even for creative production such as uploading and editing photos, building and maintaining websites.

According to Green and Hannon (2007), having their own hierarchy of digital activities they are able to assess for potential learning and use the ones more worthwhile in contrast to their parents and teachers. It is obvious that individuals that are so intertwined with digital tools are needed to receive an up-to-date education. As traditional teaching methods are not appealing to them and digital tools have become a great part of their lives, the use of digital in lessons has the power to motivate students.

In literature, there are many studies claiming that the use of technology positively affects the motivation, teaching and learning process (Barak, Watted & Haick, 2016; Balçıkanlı, Harmanoğlu Baz & Cephe, 2018; Hung, 2015; Martín- SanJosé, Juan, Seguí & García-García, 2015). Technology incorporation into lessons is not only important to increase students' motivation, but also to prepare them for their future internet-age lives. Koehler and Mishra (2009), suggests that educational pedagogy must modify to assure that students of the information age are well-prepared for their future careers. Similarly, The USA Common Core State Standards Initiative (NGA Center & CCSSO, 2010) has determined the ways of 21st

century students must use digital tools and texts and by noting the role of technology integration it has reflected the view that strong digital skills are crucial to university and career success.

As the use of technology becomes widespread in all sectors, the need for technology literate individuals is increasing. According to Zhang, Zhao, Zhou and Nunamaker (2004), the knowledge-based economy has increased the growing demand for innovative ways of education and for people equipped with new knowledge and skills related to the advancement of computer and networking technologies. Thus, it can be clearly foreseen that strong digital skills will take well-prepared students and teachers one step further in their careers. Students to become digitally literate and productive citizens requires student access to digital tools and apps, both inside and outside of school (Sahlberg, 2015). Therefore, integrating digital tools to education is crucial in terms of student motivation and preparedness to the future career.

The use of digital tools in education not only benefits students, but also helps teachers in lesson planning, material preparing, classroom management, assessment, and professional development. Krishnan (2011) found that most teachers believed that technology enables them to become facilitators and it helps them to integrate language skills (reading, writing, speaking, and listening) rather than teaching these skills separately. For instance, Dashtestani (2012) conducted a study and found that teachers regarded the use of digital tools as an important, facilitative, and interactive tool in EFL teaching. Dashtestani (2012) said that digital tools promote access to information, professional development, the use of different teaching approaches, and EFL assessment and evaluation. Similarly, Park and Son's (2009) study revealed that the use of digital tools in classrooms is perceived as essential and desirable by all teachers as they create an attractive environment for the students of the internet era. Park and Son (2009) also added that the use of technology-enhanced pedagogical approach provided teachers with rich information resources and authentic materials, as well as different ways of presentation.

According to Ed & Pattimura, (2020), use of technology in classes provides a great number of sources such as videos, handbooks, pictures etc. for English language teaching which teachers can easily reach and use in their lessons and it helps monitoring language learning via teleconferencing and social networks. Similarly, Hidayati (2016) asserts that Computer Assisted Language Learning (CALL) allows for direct individual guidance to learners by grammar and spelling checkers for writing, pronunciation correctors in automated speech

recognition, and error detection while evaluating learners' work using computers. As for Turkish context, Aydın (2013) indicated that most Turkish EFL teachers believe that the digital tools are useful as they help their students more easily understand concepts.

Considering all the benefits technology usage provides, many promising language teaching methods such as CALL, Mobile Assisted Language Learning (MALL), Blended Language Learning, Online Language Learning etc. have become critical parts of language teaching programs. Thus, in the following section, online education is explained in line with its historical development in the Turkish context.

2.2 Online Education

2.2.1 Bases of Online Education

The foundations of online education are based on distance education. In Turkey, even though there were some initiatives in different levels of education, distance education applications in higher education are dated to the 1980s and it has become a system incorporating a huge number of students in four decades. In Turkey's distance higher education system, instruction was focused on textbooks, television, CD-ROMs, and radio broadcasts, all of which were one-way, non-interactive delivery methods (Hismanoglu, 2012).

With the developments in technology and digital tools, the number of distance education practices have increased and by 2000s it has become a popular system serving millions of students (Caner, 2019). Thanks to digital tools, the interaction problem in distance education has been eliminated. Overcoming the problems, many institutions providing web-based distance education have been established in many countries of the world including Turkey. From the 1980s to the present, the ever-changing environment that online learning created for schooling resulted in accelerated innovation in the educational fields of developed countries.

The National Web-Based Education Commission in Africa, which advocated for the rapid growth of online learning in developed countries, was one of the first to call for effective online learning choices (Stevens, 2001). Online learning also necessitated university or private-sector support, as well as various technology and funding for expenses such as assisting online instructors. These conditions required significant time, money, and resource investments. If colleges did not have the capacity to host online classrooms, students in “developed countries”

had other choices, such as private companies or charities. Students' experiences varied depending on the hosts and/or producers of online learning. Observations such as students motivations for participating in discussion forums guided some online learning systems used today (Baker & Heather, 2020).

In addition to convenience of online education to the changing student profile, who is naturally accustomed to the digital world, the opportunity to be independent of the place and time, affordability and availability provided by technology mediated distance education contributed to popularization of online education. As Caner (2019) claims, over the years, correspondence-based distance education has improved in many ways including computer based, internet or web-based, self-paced, a/synchronous, hybrid, blended and online courses. As a result, numerous educational institutions have begun to adopt and offer distance learning courses for those who were unable to attend face-to-face or campus-based courses. One of latest and common methods of providing instruction within the scope of distance education is online education.

The term "online learning" is commonly used, but it has several different definitions. Horton (2000) describes online learning as an intentional web-based technology application that involves learning restricted to activities contained in a web browser without the need of a learning resource or additional software. According to Rapanta et al., (2020), online learning encompasses more than just "networked learning"; while networked learning focuses on human-to-human connections, online learning does not. It is more limited than ‘eLearning' and ‘digital education,' which include a wide variety of digital tools and services, not just the Internet, as well as an emphasis on the creation of digital competencies. On the other hand, for many researchers (Bates & Poole, 2003; Bullen & Janes 2007; Bach, Haynes & Smith 2007), online learning and teaching entail a wide variety of methods, materials, pedagogical techniques, responsibilities, organizational structures, and modes of engagement, tracking, and support with numerous replacement and adaptation possibilities Similarly, online learning, according to Balçıkanlı (2010), is a model of teaching that incorporates the use of computer technologies to enhance and support pedagogy. Teaching, studying, and evaluation, all essential pedagogical elements have benefited greatly as a result of its introduction.

For the purposes of this thesis, online learning refers to a kind of teaching and learning situation in which (1) the learner is at a distance from the instructor, (2) the learner uses internet

to access the learning materials and (3) to communicate with the instructor and other learners, and (4) learners receive some kind of help (Anderson, 2011) .

2.2.2 Types of Online Education

In reference to the literature reviewed (Baker & Heather, 2020; Şener, Ertem & Meç, 2020), online education has had three popular designs so far: Blended, Synchronous, and Asynchronous teaching and learning.

Baker and Heather (2020), define blended learning as a mixture of online and face-to-face elements in which teachers perform online exercises to improve students' understanding of a competence in parallel with similar practice in physical classrooms.

On the other hand, synchronous and asynchronous learning models are entirely dependent on online learning. Synchronous teaching occurs in real time with a community of learners via live webinars, interactive office hours, instant messages through the chat box, and digital classrooms. Its live session functionality allows a collaborative, engaging, and feedback-friendly learning environment. Although synchronous learning provides these "real-time" opportunities, none of them are as real as face-to-face classes as the learner have to wait for others to type or turn on the microphone and camera to communicate which affects the quality of interaction.

In the same study (Baker & Heather, 2020), asynchronous learning is described as a more student-centered approach that allows users complete classes on their own time and speed by watching pre-recorded videos, webinars, or online courses, as well as joining in discussion boards, writing emails, and blogging.

2.2.3 Advantages of Online Education

Most of what is taught and learned in an online setting is close to the one in any other structured educational context. Online learning and teaching entail a wide variety of methods, materials, pedagogical techniques, responsibilities, organizational structures, and modes of interaction, monitoring, and support—with numerous alternative and adaptation possibilities. (Bach, Haynes & Smith 2007; Bates & Poole, 2003; Bullen & Janes 2007). Strengths of online education defined by Kumar (2010) are divided into four categories as convenience, inexpensiveness, technology usage, additional benefits.

According to Kumar (2010), it offers flexibility of location, time, course duration for the learners' and teachers' convenience. For example, before reacting or moving on to the next subject, the learners are able to carefully represent his/her view on each comment from others; course work and guidelines can be highly tailored to a specific field and subject area; students are required to read all of their classmates' contributions, but they may actively participate in only those sections that appeal to them; it is simple to invite guest experts or students from other universities, as well as global access to resources and information. In the study of Rapanta et al., (2020), it is stated that online learning is more student-centered as the student's duty is to take ownership of his or her learning process and become more self-sufficient. Self-paced learning and reflection are possible with online learning. Learners can revisit the learning opportunities and refine activities as many times as they want, and teachers can monitor their progress in the process. Online learning caused shifts away from instructor-centered, content facilitation in classrooms to student-centered modes of learning (Anderson, 2011).

Although some studies (Brown et al., 2020) claim that online education brings additional costs, Kumar (2010) and Thi et al., (2017) claim that online education costs less than regular classroom academic or traditional school course as there are no travel or housing expenses to the school, and class attendees can continue to work while attending classes. The online education has made it possible to provide training at a lower cost than in face-to-face environments, offering more options for learners to enroll in courses (Murday, Ushida, & Chenoweth, 2008)

As for technology, online courses allow students to learn new technology and practice using office apps, the Internet, and other tools. Students' specific communication abilities can develop as they socialize through chat or video platforms (Tella, Orim, Ibrahim, & Memudu, 2018) and enhanced multimedia tools for online education enable learners to choose resources which fit their learning preferences (Khamparia & Pandey, 2017).

Among positive outcomes, Kumar (2010) mentions some additional benefits such as equal participation, heterogeneous classes and creative teaching. In their study Karim, Mohamed, Ismail, Shahed, Rahman and Haque (2018), share the same opinion and add that online education is learner-centered and self- paced, cost-effective for learners, potentially available to global audience and provides unlimited access to knowledge, time and location flexibility, archival capability knowledge reuse and sharing.

Last but not least, in extraordinary situations like natural disasters, pandemics, wars etc. online education can be a lifesaver. According to Rapanta et al., (2020), an advantage of online learning over face-to-face learning is the approach's accessibility, which seeks, particularly in the pandemic COVID-19 scenario, the opportunity of providing an effective education, in terms of inclusiveness, ensuring every person has a chance to grow their skills and to feel part of a shared future. In 2020 and 2021, whole world was affected by the COVID-19 pandemic and the situation would have been much worse if we did not have an option like online education. The most recent UNESCO (2021) reports monitoring global school closures caused by COVID-19 show that 174,240,920 learners are affected by school closures all over the world and many schools that have the resources to do so have shifted to an emergency remote teaching approach. While some of the schools are having academic break, some are partially open or totally closed. According to reports, Turkey is among the countries where schools are partly open and the number of affected learners is 24,901,925. Total duration of school closures around the world ranges from 11 weeks to more than 40 weeks, however, in most of the countries, it is more than 40 weeks.

In Turkey, after the pandemic, while other levels started to receive education through EBA (Education Information Network) and online classes provided by their schools, universities with UZEM (Distance Education Research and Application Center) have adapted to this process more easily. In addition, applications such as Zoom, Google Classroom, Skype, Microsoft Teams have started to be used in the universities for synchronous classes(EKEN et al., 2020).

Given the current situation, it is an undeniable fact that education would be severely damaged if there was no online education option. This pandemic showed the world how the world can change overnight and why the current education systems should be strengthened by looking for alternative ways of instruction. As it is stated in the study of Rapanta et al., (2020) complicated scenarios are on the way; thus, an online model that can cover all learners' training needs should be ready to solve existing and new problems.

2.2.4 Limitations of Online Education

Despite the positive outcomes aforementioned, reviewed literature revealed that online education has some shortcomings. These are technological and financial limitations, problems in evaluation, challenges in supporting learners and teachers emotionally, communication and interaction problems, necessity for more learner autonomy, being uncomfortable for some people, causing potentially more anxiety and confusion. In addition, lack of immediate feedback in asynchronous e-learning, increased preparation time meaning more workload for the instructor and requiring instructors with specific competences and abilities such as virtual management techniques, the ability to engage students through virtual communication are some other disadvantages (Baker, Heather J, 2020; Cobanoglu, 2019; Karim et al., 2019; Kumar, 2010; Şener et al., 2020; Thi et al., 2017)

Technical issues, especially in synchronous online education, are the most common problems faced by many learners and teachers (Olt & Teman, 2018; Şener et al., 2020). Infrastructure failures, such as listening issues, video or sound quality, have a significant negative impact on both learners' and teachers' attitudes toward online education, resulting in a drop in motivation for learning and teaching (Olt & Teman, 2018). Requirement for a training in the use of online library resources in a university, audio quality and internet connectivity problems (Webb et al.,2017), necessity to learn new or enhanced computer skills and additional cost of high-speed internet and poor technological literacy (Kumar, 2010, Brown et al., 2020), students' unwillingness to share their video or audio (Şener et al., 2020), some students' lacking resources for proper online education due to social inequality and financial issues (Bozkurt & Sharma, 2020) are among other technical issues affecting the quality of online education.

In the case of online education evaluation, William, Cameron & Morgan (2012) claim that the diversity and modes in which assessment practices are allocated in the online world are restricted. In addition, examining students in an unobservable environment likely results in unreliable results.

Study of Şener et al., (2020) revealed that another common problem in online education is that it lacks emotional well-being and support. According to the study, teachers have faced financial difficulties as a result of administrative personnel policies in the transition process from face-to-face education to online education, which has a negative impact on their mental

well-being. The same study found out that teachers perceive online education to be more labor intensive than face-to-face teaching.

As software is getting more and more advanced, instructors are constantly trying to learn how to keep up meaning more workload for instructors (Kumar, 2010). Similar findings are seen in the research of Tynan, Ryan and Lamont-Mills (2015), that finds a rise in workload owing to technical issues, extended speaking hours with pupils, and the moderation of online platforms. According to Mamun, Rahman and Danaher (2015), online teaching raises teachers' work-related commitments, which also increases their anxiety level.

The increased workload in online education requires well-educated instructors with specific competences and abilities such as virtual management techniques, the ability to engage students through virtual communication, managing time despite all the technical issues, getting feedback equally, choosing proper activities, adapting them to online environment and sequencing to avoid complexity. Poor technological literacy of teachers not having prior experiences or not getting any training in using apps that can be used in online is one of the challenges (Brown et al.,2020). Kumar (2010) claims that instructors believing in lectures and handouts may have tough time in adopting the online education system and software. Similarly according to Cobanoglu (2019), when instructors who have previously taught face-to-face have to transfer to online tutoring and adapt their teaching methods to the conditions of an technology mediated learning environment, they encounter a wide range of technological issues that affect their performance, motivation to participate in such activities, and, as a result, the overall quality of online tutoring and students. Many instructors who are new to online teaching, without relevant background or experience of online pedagogy are asked to contribute to the development and delivery of online courses (Vlachopoulos, 2008), which means that these instructor are being expected to run before they can walk without a good understanding of what the job entails and whether it is significantly different from what they have previously encountered (Sheena O'Hare, 2010). In the light of these studies, educational technology inclusion in teacher training, specifically in language teacher training, will be deeply analyzed in the following chapter.

2.2.5 Emergency Remote Teaching

Online education is a major phenomenon among scholars, educators, and students all over the world. Especially following the outbreak of the Covid-19 pandemic in early 2020, almost all universities around the world consider it necessary to provide such immediate online education to their students, apparently without enough planning. In reaction to the infectious virus, the world has undergone drastic lockdown measures such as school, university, and office closures, as well as cancellations of events and conferences. Because of these sudden precautions taken around the world, online education has grown to an unprecedented scale due to the complete absence of physical classroom settings (Bozkurt & Sharma, 2020).

Similarly, after completing plans for online learning platforms and resources, universities in Turkey have moved to online teaching. Although online instruction is not a new method of distribution for certain universities, many faculty members and students did not have enough time or chance to become acquainted with the sites and online education policies that universities have implemented individually. However, online distance education is a dynamic process that necessitates proper planning, designing, and goal determination to construct an efficient learning ecology. It involves not only simply uploading educational content, rather, it is a learning experience that gives students agency, responsibility, flexibility and choice (Bozkurt & Sharma, 2020). Therefore, according to Bozkurt and Sharma (2020) we are currently engaging in what appears to be online distance education, but in fact, this is a temporary solution, better referred to as emergency remote teaching (ERT). Nonetheless, time and circumstances will reveal whether the current ERT emphasis will result in a transition toward positioning online teaching and learning as the sole, or at least dominant, education paradigm.

Even if this online teaching cycle can be considered ERT, recent experiences of stakeholders can serve as guidelines for future online education legislation and improvements. Since the current research reflects on prospective teachers' readiness to transition to online learning, we can presume that conditions in emergency remote teaching will improve over time, which allows us to call it as online education. In the rest of the article, “online teaching” will be used as an umbrella term to cover ERT.

2.3. Educational Technology and Teacher Training

2.3.1 Educational Technology

Educational technology is the systemic and organized use of new technology to increase educational efficiency. It is a comprehensive approach to conceptualizing, executing, and evaluating the instructional method, i.e. learning and teaching, and it aids in the implementation of new educational teaching strategies. It covers teaching aids, work processes, as well as the actions of all participants in the educational phase (Pedagoški Leksikon, 1996). Stošić (2015) adds that educational technology must inevitably be integrated into classrooms and curricula and the study necessities first a basic teacher training on educational technologies, then further professional training through a variety of conferences, courses, professional literature, seminars etc. in order to get better knowledge in the use of educational technology.

Xu et al. (2019), described educational technology as a set of electronic tools and applications that aid in the delivery of learning material and the facilitation of the learning process. According to the study, computer-assisted teaching, advanced learning programs, and technology-based curricula are some examples of these technology implementations. Educational technology solutions may also come in the form of classroom-based innovations such as course management systems, digital white boards, e-Portfolios, individual study aids like electronic dictionaries, electronic glossaries, or annotations, intelligent tutoring systems, grammar checkers, predictive speech recognition, and pronunciation programs. In addition, Xu et al. (2019) mentioned that network-based social computing in educational technology applications. Digital worlds or games, chat, social networks, blogs, internet forums or message boards, and Wiki are a few examples. Mobile media tools, such as a notebook, a laptop, an iPod, a cell phone, or a smartphone are also examples of technological applications used in school.

2.3.1.1. Common Educational Technology Applications in ELT

Some ELT technology applications have been examined especially for their impact on English as a second language learning. Abraham (2008), for example, analyzed computer-mediated glosses and their impact on second-language learners in depth. iPods and iPads, likewise, have been studied and found successful in developing language skills (Liu, Navarrete, & Wivagg, 2014). Coryell and Chlup (2007) analyzed distance education technologies and

online learning instructional components for adult English language learners (ELLs), and their findings justify the use of these components for ELLs (as cited in Xu et al., 2019).

According to Yuyun (2018), educational technologies can be integrated to EFL for many different purposes such as exploring students' creativity, improving problem solving skills, sharpening critical thinking, analyzing needs, enhancing discussion skills, preparing presentations and classroom materials, managing the class, creating an interactive book and assessing students' performance and knowledge. Yuyun (2018) adds that to understand and support creativity apps like Canva and Padlet, to sharpen students' thinking skills by solving a problem or case apps like SurveyMonkey and Quizlet, to improve critical thinking skills journal websites, to analyze students' needs SurveyMonkey, GoogleForms, SurveyGizmo and SurveyPlanet, to prepare presentations and classroom materials Microsoft PowerPoint, Prezi, Canva, LessonWriter, Glogster, Popplet, LyricsTraining, MovieClips, BreakingNewsEnglish, Script-O-Rama and Tagxedo, to create an interactive book or module PressBooks, Pubhtml5, Fliphtml5, Anyflip, Flipsnack and Yumpu, to assess students' knowledge Quibblo, QuizStar, Kahoot, Quizlet and ClassMarker, to manage the class Edmodo, GoogleClassroom, Schoology and Moodle can be used.

The researcher of the present study examined the current educational applications that are commonly used in EFL and cited in the related literature and presented them in Table 2.3.1.1.

Table 2.3.1.1. *Educational Applications Used in ELT*

Purpose	**Applications**
Educational gaming apps	Kahoot, Prodigy, ABCya, Fun English, Words with Friends, Heads Up, Verb Dive, BattleText, Boogle with Friends, Bamboozle, Cram
Learning Management System (LMS)	Edmodo, Class Dojo, Schoology, Google Classroom, Moodle, TalentLMS
Video conferencing apps for synchronous online classes	Zoom, Microsoft Teams, Google Meet, Skype, Cisco, GoToMeeting, Hangouts Meet
Presentation apps	Microsoft PowerPoint, Prezzi, Google Slides
Creating quizzes for assessment and surveys for needs analysis	Quizlet, Quizzes, SurveyMonkey, GoogleForms, SurveyGizmo, SurveyPlanet, Quibblo, QuizStar, ClassMarker, Socrative, Plicker, GoSoapBox, Secretive
Language Instruction apps	Rosetta Stone, StudySync, Voxy, Duolingo, Memrise, Babbel
Material preparation apps	Cram, Chegg, Wordwall, Nearpod, Anki, Microsoft Word, Google Sheets, PressBooks, Anyflip, Flipsnack,Yumpu,
News apps or websites for authentic materials and sharpening critical thinking	BBC, The Guardian, CNN, Forbes, Business Inside
Lesson planner apps	Google Classroom, Daily Lesson Planner, OnCourse
Student monitoring apps	GoGurardian, LightSource
Storage apps	Google Drive, One Drive, DropBox,
Teaching aid apps	Scholastic, Edpuzzle, Scratch, MobyMax, Kids A-Z, Discovery Education, ReadWorks, Spelling City,
Self-study aid apps	Study Island, Grammarly, Soft School, Renaissance
Apps for sharpening creativity	Storybird, Wordle, Inkspace, Powtoon
Social networking apps to enhance communication in foreign language	Busuu, Interpals, Instagram, Twitter, Facebook, SnapChat,

Table 2.3.1.1. *Educational Applications Used in ELT*

Apps for student collaboration	Padlet, Mindmapping, Twiddla, Bubbl.us, Yammer, Vyew, Wikispaces, Cacoo
Video platforms	YouTube, FluentU, Voscreen, LearnEnglish Videos, NationalGeographic.com, ESLvideo, VoaNews, WordUp
Apps for listening practice	English Podcasts, BBC Learning English, Lyrics Training, ESL Pod, Business English Pod
Apps for speaking and pronunciation	Speak English, Duolingo, Memrise, Busuu, Cambly, Hello Talk, Elsa Speak, Accent Training, English Pronunciation Tutor
Apps for project work	Padlet, Canva, Tour Creator
Apps for writing improvement	Nitro Type, TypingClub, Grammarly, Hemingway, Airstory, Interpals
Apps for reading improvement	Reading Comprehension, Kids Reading Comprehension, Story Builder, BBC Learning English, Beelingu, Wattpad
Apps for vocabulary development	Thesarus,dictionary.cambridge, oxfordlearnersdictionaries, Lexico, Scrabble, Words With Friends, OneLook, CodyCross, BattleText, Little Words, Word of the Day, Boogle with Friends, 6,000 Words, WordUp

The Table 2.3.1.1 just shows a limited range of applications for EFL. There are many of them that can be useful in virtual or face-to-face classes. All the applications in this field certainly cannot be known and used by teachers. However, teachers and pre-service teachers should be digitally competent enough to find, choose and use the most suitable and useful applications according to teaching aims. In the next section, digital competency of teachers and pre-service teachers, educational technology in teacher training will be discussed.

2.3.2 Educational Technology Standards for Teachers and Teachers' Readiness Beliefs

As stated in previous sections, the use of technology in education is a necessity of the era that we live in since it positively affects the teaching and learning process in addition to that it is sometimes a must in case of an emergency education. It's undeniable that the use of

technology in education is greatly based on the teacher sufficiency in technology and the teacher education which endows pre-service teachers with the knowledge of recent technologies.

Technology plays a vital role in encouraging learners to participate in events and has a direct impact on teachers' teaching practices. Teachers would never be able to keep up with technology if they cannot have it in their classrooms. As a result, it is important for teachers to have a thorough understanding of these innovations when teaching language skills (Gilakjani, 2017).

As it is said Tondeur et al. (2017), to train teachers who can efficiently use digital tools in the classroom, teacher training programs require a systematic collection of techniques and practices. Similarly, Göktaş, Yıldırım and Yıldırım (2009) emphasizes the importance of the educational technology integration to teacher education for the technology integration to schools.

According to Jeffery (2019), educators around the world are recognizing that to prepare students to become digitally literate and productive citizens requires pedagogical shifts at the institutions that prepare pre-service teachers to enter classrooms. Digitally literate term is used interchangeably in the reviewed literature, therefore there is a need to be analyze it deeply under the following title.

2.3.2.1. Digital Literacy, Digital Skills and Digital Competency Standards for Teachers

Today, concerning the premising goal of education that equips children with the necessary basic skills and knowledge in using technology for better opportunities, the teaching profession comes under pressure and becomes even more difficult. Recent education system requires teachers to determine how to make proper pedagogical use of digital tools in the classroom and enhance their skills and knowledge in technology in addition to other subject areas. (Altun, 2007).

According to Altun (1997), even though teachers could take a computer class or attend an ICT workshop in a conference, neither of these would familiarize them with how to use technology for teaching. Therefore, they need to be educated in effective use of digital tools in the classroom starting from the pre-service education. Altun (1997) adds that teachers need to be trained in following areas: a) personal skills in use of technology, b) professional skills and competence in technology, such as understanding the relevance of technology in education,

understanding the importance of technology in teaching and learning, understanding how to plan technology for teaching and learning across the curriculum, and managing technology in the classroom.

Maeers, Browne and Cooper (1999) assert that pre-service teachers must be familiar with educational technology and the benefits it may give. They must also be able to analyze and distinguish between which technological resource to employ and if one should be used at all. They must be able to comprehend how, where, and why to employ computer-related tools theoretically and in pedagogically acceptable ways.

While the importance of strengthening language learners' and teachers' digital literacy skills is widely acknowledged, it appears that the phrases “digitally literate”, “digital skills” and “digital competencies” are used interchangeably. This shows a need to be explicit about exactly what is meant by the phrases “digital literacy”, “digital skills” and “digital competencies”.

Although digital skills and competencies have almost same meanings, there are different definitions of digital literacy in the related literature; however, there is still a lack of agreement on what it means to be digitally literate. In most of the sources the digital literacies are defined conceptually and operationally, where standardized operational definitions focus on the activities, performances, or talents, the conceptual definitions give an ideal framework. Lankshear and Knobel (2008) proposed digital literacy as a framework that pulls together various sub-literacies and abilities, acknowledging the great variation in considerations and meanings of the term. They argue that any attempt to form an umbrella definition or overarching frame of digital literacy would inevitably require reconciling the claims of a whole legion of digital literacies. Dudeney and Hockly (2016) defined digital literacies as “the ability of people to know how to operate digital technologies, and to use them safely, wisely and productively”. In line with the abovementioned definitions being digitally literate means the ability to effectively make use of the technologies at our disposal. This encompasses not only technical abilities, but also, and perhaps more crucially, an understanding of the social norms that surround the proper application of new technologies. In this thesis, we utilize this definition of digital literacies because it is presented by Dudeney and Hockly (2016) in the context of foreign language acquisition. Dudeney and Hockly (2016) presented a taxonomy of digital literacies that is separated into four key areas: language, information, relationships, and (re)design. The following are the sub-categories for each of these four basic areas:

1-Language: print literacy, texting literacy, hypertext literacy, visual media and multimedia literacy, gaming literacy, mobile literacy, code and technological literacy

2-Information: search literacy, information literacy, tagging literacy

3-Connections: personal literacy, network literacy, participatory literacy, cultural and intercultural literacy

4-(Re)design: remix literacy

Contrary to popular belief, digital skills may be limited to technical skills or competence in utilizing information and communication technology. The taxonomy of Dudeney and Hockly (2016) emphasizes the concept that digital literacies or new media literacies go beyond technical knowledge to adaptability in fulfilling one's aims. To be more specific, Dudeney and Hockly (2016) state that "Knowing how to use Facebook is a skill; knowing how to use it to build a community of like-minded individuals and use it for professional and personal development is a literacy". Similarly, Tang and Chaw (2016), referencing Gilster's (1997) study, offer another illustration of the contrast between digital literacy and technological competence as follows:

> To be digitally literate, one must not only know how to obtain information on the internet, but also analyze and combine data from many print and digital sources. Digital literacy is more than simply knowing how to use technology; it also entails mastering ideas. (56)

In their study Janssen, Stoyanov, Ferrari, Punie, Pannekeet and Sloep (2013), requested experts to define digital competence in light of the distinction between digital literacy and digital competence. and concluded that literacy was tied to reading and writing, and that this was true in the early 1990s, when reading hyperlinked materials was considered literacy for users. As a result, while discussing the capacities of users, they preferred to use the term "digital competence." As Janssen, et.al. (2013) stated "competence refers to the categorizing of a discipline in a sequence of interrelated knowledge, abilities, and attitudes," (p. 474). In the present thesis, digital competence or digital skills are used as umbrella terms referring the capacity of users. In addition, as we aim to examine prospective teachers' technological capacity and readiness, digital competencies (skills) are focused rather than digital literacy.

Janssen et al., (2013), classified twelve digital competency categories at the end of their research, ranging from general knowledge and abilities to privacy and security concerns which was summarized in Table 2.3.2.1.

Table 2.3.2.1. *Twelve digital competence areas*

Digital Competence Area	**Description**
General knowledge and functional skills	*The digitally competent person knows the basics (terminology, navigation, functionality) of digital devices and can use them for elementary purposes.*
Use in everyday life	*The digitally competent person is able to integrate technologies into the activities of everyday life.*
Specialized and advanced competence for work and creative expression	*The digitally competent person is able to use ICT to express his/her creativity and to improve his/her professional performance.*
Technology mediated communication and collaboration	*The digitally competent person is able to connect, share, communicate, and collaborate with others effectively in digital environments*
Information processing and management	*The digitally competent person uses technology to improve his/her ability to gather, organize, analyze and judge the relevance and purpose of digital information.*
Privacy and security Description	*The digitally competent person has the capacity to protect personal data and take appropriate security measures.*
Legal and ethical aspects	*The digitally competent person behaves appropriately and in a socially responsible way in digital environments, demonstrating awareness and knowledge of legal and ethical aspects on the use of ICT and digital content.*
Balanced attitude towards technology	*The digitally competent person demonstrates an informed, open-minded, and balanced attitude towards Information Society and the use of digital technology. The digitally competent person is curious, aware of opportunities and new developments, and is comfortable to explore and exploit them.*

Table 2.3.2.1. *Twelve digital competence areas*

Informed decisions on appropriate digital technologies	*The digitally competent person understands the broader context of use and development of information and communication technology.*
Seamless use demonstrating self-efficacy	*The digitally competent person actively and constantly explores emerging technologies, integrates them in his/her environment and uses them for lifelong learning.*
Understanding and awareness of role of ICT in society	*The digitally competent person is aware of most relevant or common technologies and is able to decide upon the most appropriate technology according to the purpose or need at hand.*
Learning about and with digital technologies	*The digitally competent person confidently and creatively applies digital technologies to increase personal and professional effectiveness and efficiency.*

Figuring out these twelve competence areas, Janssen et al., (2013) concluded that digital competence, according to experts in their study, is a collection of knowledge, skills, and attitudes related to a variety of purposes (communication, creative expression, information management, personal development, and so on), domains (daily life, work, privacy & security, legal aspects), and levels. Digital competence clearly entails more than just understanding how to utilize devices and programs; it is inextricably linked to abilities in ICT management.

As for digital competency areas for teachers, Roll and Ifenthaler (2020), define the seven dimensions of multidisciplinary digital competencies that teachers need to have as:

> (1) Attitude towards digitization (a positive attitude towards learning and working with digital devices), (2) handling of digital devices (handling of physical devices and the efficient use of corresponding software), (3) Information Literacy (accessing, analysing, evaluating and adequately communicating information), (4) application of digital security (the simple securing of digital devices and networks), (5) collaboration due to digital communication (communicating via digital devices, exchanging information and negotiating with mutual respect), (6) solving of digital problems and (structuring and planning a strategy to solve digital problems), (7) reflection on the interconnected and digital environment (understanding

the consequences of ones' own digital actions and self- reflect about one's actions in the interconnected and digital environment).

To be successful in integrating technology in the classroom, teachers should embrace the seven skills proposed by Hampel and Stickler (2005), which include basic ICT competence, specific technical competence for the software, dealing with medium constraints and possibilities, online socialization, facilitating communicative competence, creativity and choice, and own style. Hampel and Stickler (2005) identify an influential model of abilities required by individuals teaching language online as seen in Figure 2.3.2.1.

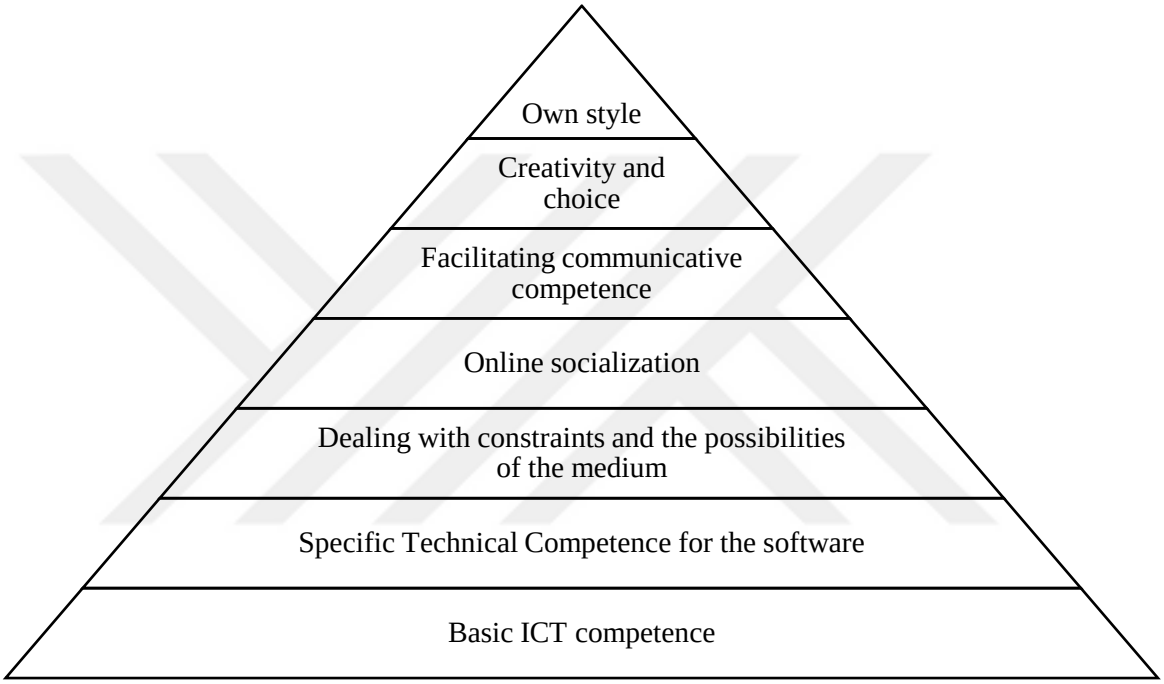


Figure 2.3.2.1. *Pyramid of Real-Time Online Teacher Skills (Adopted from Hampel and Stickler, 2005)*

Similarly, UNESCO (2008) sets some digital competency standards for teachers stating that today's teachers must be prepared to give their pupils with technology-enhanced learning possibilities. Being ready to use technology and understanding how technology may help students learn have become essential skills in every teacher's professional repertoire. That is, teachers should be equipped with the necessary background to endow kids with the benefits that technology may provide. Furthermore, today's schools and classrooms, both physical and virtual, require teachers who are equipped with technology resources and skills and who can effectively teach subject matter content while incorporating technology concepts and capabilities. Along with the recent developments in ICT teachers may implement and use a

plenty of digital tools that enhance their teaching atmosphere. For instance, interactive computer simulations, digital and open educational resources, sophisticated data collection and analysis tools are just a few of the tools that allow teachers to deliver previously unthinkable options for conceptual learning (UNESCO, 2008).

According to UNESCO (2013), teacher digital competencies include basic digital literacy skills as well as the ability to select and use relevant off-the-shelf instructional tutorials, games, drill-and-practice software, and web content. Teachers must also be able to handle classroom data and support their own career development using technological tools. In addition, teachers need to have the ability to handle information, organize problem tasks, and connect open-ended and subject-specific apps and software tools with student-centered teaching techniques and collaborative projects. Teachers should employ networked and web-based resources to assist students collaborate, access knowledge, and communicate with external experts to assess and solve their specified problems in order to encourage collaborative projects. Being able to utilize technological tools to construct and monitor individual and group project plans for students is also required as well as accessing information, consulting with experts, and communicating with other teachers and experts to promote professional development.

In a similar vein, TESOL (2008), sets technology standards for language teachers to provide guidance. These standards are stated below:

1. Language teachers demonstrate knowledge and skills in basic technological concepts and operational competence.
2. Language teachers demonstrate an understanding of a wide range of technology supports for language learning and options for using them in a given setting.
3. Language teachers actively strive to expand their skill and knowledge base to evaluate, adopt, and adapt emerging technologies throughout their careers.
4. Language teachers use technology in socially and culturally appropriate, legal, and ethical ways.
5. Language teachers identify and evaluate technological resources and environments for suitability to their teaching context.
6. Language teachers coherently integrate technology into their pedagogical approaches.
7. Language teachers design and manage language learning activities and tasks using technology appropriately to meet curricular goals and objectives.
8. Language teachers use relevant research findings to inform the planning of language learning activities and tasks that involve technology.
9. Language teachers evaluate and implement relevant technology to aid in effective learner assessment.

10. Language teachers use technological resources to collect and analyze information in order to enhance language instruction and learning.
11. Language teachers evaluate the effectiveness of specific student uses of technology to enhance teaching and learning.
12. Language teachers use communication technologies to maintain effective contact and collaboration with peers, students, administration, and other stakeholders.
13. Language teachers regularly reflect on the intersection of professional practice and technological developments so that they can make informed decisions regarding the use of technology to support language learning and communication.
14. Language teachers apply technology to improve efficiency in preparing for class, grading, and maintaining records.

These 14 standards are set by TESOL (2008) to guide learners, parents, material writers, institutional administrators, educational policy groups, in-service and pre-service language teachers and language teacher education programs. The present study benefited from the framework to determine the technological preparedness level of pre-service teachers.

Ministry of National Education of Republic of Turkey (MoNE) also gives importance to technology use in education and developing teachers' digital competency. According to general competencies for teaching profession defined by MoNE (2017) a competent teacher makes use the information and communication technologies effectively in the teaching and learning process. In 9th-12th Grades English Curriculum prepared by MoNE (2018), the importance of using technology in language classes was explained to guide the teachers. In this program, adolescents in the twenty-first century were considered as digital natives and it was stated that if technology is used meaningfully in language teaching, it can be a tool to develop students' thinking and learning; it has the potential to reduce cultural barriers and promote multicultural awareness among adolescents; and the use of the Internet allows adolescents to conduct current-events research and collaborate with mentors, experts, and peers. According to MoNE (2018), language learners may access authentic language, foreign communities, and multicultural environments with the use of instructional technology, which allows them to engage in genuine communication opportunities. The program suggested that the use of chat rooms, virtual worlds, e-portfolio, electronic discussions and video conferencing done with native speakers can help learners practice language skills as well as learn the culture of others. additionally, podcasts, digital brochures, virtual environments, Vlogs, e-mails, online newspapers, Wikis, PowerPoint presentations etc. are among the suggested digital tools that can be used in language classrooms. In addition to materials and tasks suggested for each grade

and unit in the curriculum, a set of strongly recommended tasks which was named as Tech-Pack for all grades/units was included in the program. Tech-pack covers video blog entry and e-portfolio entry. MoNE (2018) stated that materials should be supported with multimedia and instructional technology tools as much as possible to immerse students in authentic use of language, which undoubtedly requires teachers to be competent in use of digital tools and educational technology.

Another framework TPACK, which is commonly used to determine standards for pre-service and in-service teachers' technological knowledge integration to pedagogical and content knowledge, will be studied in the following section.

2.3.2.2. TPACK- Technological Pedagogical Content Knowledge

All the teacher technology requirements mentioned in previous section necessitate a well-planned in-service and pre-service teacher education. To be able to define standards for technology training in teacher education, some frameworks were created and one of them is Technological Pedagogical Content Knowledge (TPACK).

Koehler and Mishra (2009) proposed that teacher education should not only rely on how to use technology, but also on how technology intersects with pedagogical and content information, as directed by the principle of TPACK. TPACK is a teacher knowledge framework that was created by incorporating technology knowledge into the teacher knowledge framework described by Shulman (1986) as "pedagogical content knowledge." This framework was developed as a part of a five-year research initiative that centered on teacher professional development and faculty development and used a design-based experimental study method. TPACK is a philosophical approach to technology integration that uses Pedagogical Content Knowledge (PCK) as a foundation. Examining the idea of PCK, Koehler and Mishra (2009) proposed the framework of Technological Pedagogical Content Knowledge (TPACK), which takes technology into account along with PCK. TPACK is described by Koehler and Mishra (2008) as a framework of teacher knowledge for technology integration. Within the framework of TPACK, teacher knowledge is characterized as a complex interaction and intersection of three bodies of knowledge: material, pedagogy, and technology.

TPACK is a pedagogy-centered model of technology integration since it includes the entire technology integration process while stressing teachers' experience, skills, and

competencies. Thus, the review of available literature revealed that the studies dealing with the TPACK (Kabakçı Yurdakul, Odabaşı, Kılıçer, Çoklar, Birinci & Kurt, 2012; Koehler et al., 2009) is often used to assess pre-service teachers' technology integration awareness. For instance, Kabakçı Yurdakul, et al., (2012) adapted TPACK scale and developed the TPACK-deep scale to assess Turkish pre-service teachers' TPACK competency. Their scale includes items like developing educational tools, using these tools, leading students to reliable digital sources, using technology to find solutions to problems in teaching etc. In another study, Kabakçı Yurdakul (2018), examined Turkish pre-service teachers' TPACK self-efficacy and found that the Turkish pre-service teachers regarded themselves as highly competent in all dimensions of TPACK and had positive attitudes towards technology integration. Additionally, Kabakçı Yurdakul (2018), claimed that it is reasonable to regard the current generation of pre-service teachers as digital natives. Although the arguments about the digital nativeness are ongoing in the recent literature, there are various studies that examined its relationship with the pre-service teachers and provide a framework for the concept in various angles. For instance in Teo's (2013) four-factor structure, digital nativity consists of four dimensions; (1) GrewT- grew up with technology, which refers that individuals surrounded by and interacting with technologies and media, such as cell phones, social networks, gaming, instant messaging, texting and smart phones as they grow up, (2) ComfortM- comfortable with multitasking, which refers that digital natives can handle more than one task simultaneously while using technology, (3) ReliantG- reliant on graphics for communication, which refers the tendency of digital natives to use graphical means of communication and (4) InstantGR- thrive on instant gratification and rewards, which refers that when communicating with others and accessing knowledge, digital natives seek immediate feedback. The abovementioned frameworks are considered useful to assess pre-service teacher's technology skills, that's why, the items in these frameworks inspired some survey items of the present study as well.

As for the relationship between digital nativity and pre-service teachers, Teo et al.'s (2014) study which employed Digital Nativity Assessment Scale (DNAS)found that the majority of pre-service teachers consider themselves to be digital natives, (. Taking the results of these two studies (Kabakçı Yurdakul, 2018; Teo, 2014) it is fair to consider today's pre-service teachers to be digital natives.

On the other hand, some studies put forward some contradicting arguments in terms of the relationship between technology use of teachers and implementing the technology in their

classes. For instance, Russell, Bebell, O'Dwyer, and O'Connor (2003) claim that although new-generation teachers may be skilled in personal technology usage, they still need to be trained and assisted in the use of educational technology. Similarly, Jeffery, (2019) stated that pre-service teachers' personal technology usage doesn't necessarily mean that they are ready to teach and there is no correlation between social media usage and instructional tools usage. In addition, considering such claims, the researcher reviewed the studies examining technological readiness beliefs of in-service and pre-service teachers in the following part.

2.3.3 Technological Readiness Beliefs of In-Service and Pre-Service Teachers

2.3.3.1 Technological Readiness Beliefs of In-Service Teachers

Teacher quality is one of the most critical contributors to student learning in the traditional classroom (Darling-Hammond, 2000), and as technology usage in education has grown in popularity, the quality of virtual classes has become a top priority for educators, administrators, students, and parents. Teachers are increasingly expected to be able to create virtual course materials and engage students through the use of communicative technology (Davis & Roblyer, 2005; Kennedy & Archambault, 2012). As interaction and communication are fundamental to language acquisition (Hampel & Stickler, 2005), these new teaching abilities are especially important for online language teachers (Compton, 2009).

Given the growing need for technologically competent language instructors, it is worth asking how teachers and pre-service teachers feel ready to teach using educational technologies.

Examining teaching practices of online language teachers and their adjustments towards online teaching, Lin and Zheng (2015) found that teachers had little knowledge on subject-based technology integration and they demanded more training on how to use content related technology in their classes.

Another study showed that while 90% of teachers believed that technology is crucial for student achievement, 60% felt unprepared and required adequate training on how to utilize and incorporate technology in their courses (Roland, 2015). In another survey, roughly 78 percent of instructors believed that they had not received training to utilize technology successfully (Bolkan & Griffin 2017). Similarly, examining online instructors' technological readiness, Gay

(2016), found that 27 percent of instructors were identified as having deficiencies in technological readiness skills such as maintaining connectivity to and interacting in the electronic learning systems.

Aldred (2020), observed some teachers in USA and found that educators lack utilizing technology for 21st century skills even though they could use it for content teaching, therefore she emphasized that it is important to provide teachers with the another study examining Iranian EFL students' views on teachers' technological competence showed that students believed that, despite having adequate knowledge of the English language, language teaching strategies, and technology, Iranian teachers were not proficient enough to use technological devices in their instructional practices or to improve students' learning by effectively integrating technology into their language teaching instruction (Fathi & Yousefifard, 2019). Furthermore, based on their findings, Li and Walsh (2011) claimed that, computer use in EFL was primarily limited to PowerPoint presentations of graphics, grammar, and sentence structure.

Akça-Saklavacı (2010) investigating Turkish high school EFL teachers' level of internet use for instructional purposes indicated levels of internet use for specialized instructional applications were low despite the high levels of internet use for mainstream internet application, which means the internet usage for personal and professional purposes were more frequent than the instructional purposes. In another study, Turkish teachers' usage of information and communication technology was also examined by Kuskaya Mumcu and Kocak Usluel (2010), who found that teachers primarily utilize computers for administrative rather than instructional objectives.

Aydın (2013), examined Turkish EFL teachers' knowledge of software, their reasons for personal computer use, the perceptions of self-confidence in integrating computers. The findings of Aydın's (2013) study revealed that Turkish EFL teachers had minimal understanding of specific software and have difficulty utilizing the software packages, as well as a lack of technical and instructional assistance, while having good opinions of computer integration and attitudes toward computer use. According to findings of the study, even though Turkish EFL teachers were quite self-assured in their computer use, their computer software skills was confined to the use of the Internet, email, word processing, and presentations.

English language instructors, according to Ozel and Arıkan (2015), used digital tools such as blogs, podcasts, wikis, and social networking in their personal lives but not in their

classrooms effectively, despite believing that these tools should be used in their classrooms as instructional tools.

Technological readiness of language teachers in Turkey was also examined by Çalışkan (2017). His study revealed that most of the participants (63.6%) stated that they have positive attitudes towards technology usage in language classrooms, however, a significant percentage (42.4%) do not feel ready to use technology in their classroom as they do not find themselves competent enough in utilizing technology. Additionally, he found that most of the participants demanded more in-service training and coaching in technology use and adaption in the classroom.

Overviewing the studies researching teachers' technological readiness, it is obvious that teachers' readiness levels are insufficient to keep up with the requirements of the 21st century and to guide students growing up in the age of technology. This leads to a need to further research on pre-service teachers' readiness in technology use. Therefore, we reviewed the studies examining pre-service teachers' technological self-efficacy beliefs and digital competency levels in the following section.

2.3.3.2 Technological Readiness Beliefs of Pre-Service Teachers

According to research on teachers' technology use, instructors must be educated and motivated to use technology in their classrooms before beginning their careers (Hall & Trespalacios, 2019; Wang, Ertmer and Newby, 2004). Therefore, strengthening self-efficacy beliefs of pre-service teachers will help integrating technology successfully and may increase teachers' acceptance and usage of current technologies in the school system (Holden & Rada, 2011). Taking this into consideration, studies examining pre-service teachers' technological readiness to teach are worth mentioning.

Examining pre-service teachers' perceptions of technological readiness to teach, Jeffery (2019), found that 73% of the pre-service teachers expressed an optimism about their readiness to teach with technology as they prepared to enter their first classes. According to the study, pre-service teachers claimed they were ready to choose technology to utilize in their classrooms that improve what they teach, how they teach, and what their students learn, however, the results showed that levels of technological proficiency were much lower than their perceptions

regarding their readiness to use technology to teach. Pre-service teachers were less likely to receive training on integrating software apps as part of their coursework, and they lacked significant understanding of software apps. The study suggests that pre-service teachers' levels of readiness for teaching were insufficient and they needed to improve their technological competency, both hardware and software, to enhance student accomplishment and prepare their future learners.

According to Haydn (2014, 455), studies from England demonstrate significant differences in the extent to which new teachers are able to effectively use new technology in their teaching. Other studies (Gill, Dalgarno, and Carlson 2015; Tondeur et al. 2017) asserted that pre-service teachers are required to be competent in their use of information and communication technology for teaching and learning; still, the use of technology in schools remains below expectations. Usun (2009) gave a comparative evaluation of how instructional technologies are used in global teacher education, emphasizing the necessity for support and training to successfully integrate technology into classroom practices. In addition, the value of effective role models and instructors' ICT learning experiences in initial teacher education (ITE) programs was emphasized (Valtonen, Kukkonen, Kontkanen, Sormunen, Dillon & Sointu, 2015).

Some claimed that student teachers and new instructors do not use ICT in a variety of ways (Tondeur et al. 2017). Likewise a study (Brenner & Brill, 2016) discovered that, despite their positive attitudes toward using technology in their classrooms, pre-service teachers lacked experience with the technology in activities integrated in project-based and problem-based learning; evaluating educational technology resources for student usage; demonstrating student proficiencies in non-traditional methods; and employing a variety of technology tools to promote learning.

Gudmundsdottir and Hatlevik (2018), focused on technological self-efficacy of newly qualified or pre-service teachers and found that they report inadequate quality of and contribution from ICT training during ITE, highlighting the vitality of teacher educators serving as positive role models by demonstrating exemplary ICT use and critically evaluating the appropriateness of ICT. In a similar vein, another study (Tomte, Karstein & Olsen 2013), which found that acquiring professional digital competence was a low priority in Norwegian teacher education, despite being designated as a basic ability for all primary and secondary school

students. Professional digital competence has a low priority in Norwegian teacher education, which is consistent with findings of studies on ICT in ITE in other countries (Arstorp 2015; Tondeur et al. 2016; Usun 2009).

As for the Turkish context, a review of the studies conducted in the last decade (Keser, Karaolan-Yılmaz & Yılmaz, 2015; Aslan & Zhu; 2015) has revealed that most of Turkish pre-service teachers perceive themselves as proficient technology users, however, these studies suggest more training on how to integrate technology to language teaching.

Keser, Karaolan-Yılmaz, and Yılmaz (2015) discovered that prospective teachers had a high level of self-efficacy perception for technology integration. Similarly, Murat & Erten (2017) found that incorporating ICT into the teaching process benefits pre-service teachers by giving them more time, making their work easier, and increasing student interest. Additionally, Baka's (2018) study revealed that pre-service teachers believe that technology has a beneficial impact on their learning and they have seen themselves proficient enough to prepare the course materials by using the technology. On the other side, according to Erdemir, Bakırcı, and Erduran (2009), pre-service teachers can develop simple teaching materials using technology but not complicated and multi-purpose teaching materials.

Interviewing Turkish pre-service teachers, Aslan and Zhu (2015), found that pre-service teachers consider ICT to be vital in their teaching processes and have a positive attitude toward its incorporation into education. However, they perceive that just having ICT competence is not adequate for ICT integration and pedagogical knowledge. In the study, it was also found that the participants used ICT with a basic level. They mostly used it for presentation in their teaching practices, not for facilitating.

To gain a deeper understanding of perspectives and technological readiness of pre-service language teachers, the present study has reviewed the studies examining perceptions of them as well.

According to Kabakçı-Yurdakul (2011), Turkish pre-service language teachers have high levels of techno-pedagogical knowledge competences, implying that they have very optimistic views toward technology integration in their future teaching.

Caner and Aydın (2021), investigated pre-service teachers' technology integration self-efficacy in various ITE programs at a state university, finding that pre-service teachers have a

high level of self-efficacy in integrating technology into their teaching environments. They discovered that, while pre-service teachers' total ratings on technology integration self-efficacy appear to be quite high, their self-efficacy in utilizing computer technologies is slightly below average, and their self-efficacy in getting others to use computer technologies is rather low. In terms of integrating technologies, the senior pre-service teachers had stronger self-efficacy views than the others, according to their findings. The rationale for this finding could be due to pre-service teachers' experience utilizing and requiring others to use computer technology during their teaching practice courses, in which pre-service teachers practiced teaching in real-world settings. Their results additionally showed that teaching experiences during practice lessons significantly affected the pre-service teachers' self-efficacy in technology integration.

Another study (Akayoğlu, Cirit, Dikilitaş, Korkmazgil & Satar, 2020), focused on how Turkish pre-service language teachers perceive digital literacy and for which purposes they preferred to use digital tools. Their findings revealed that they were aware of a wide range of digital technologies and believed they were proficient enough to utilize them for personal, educational, and professional objectives. While some pre-service teachers just claimed to be familiar with and use digital tools, others claimed to be able to use them for meaningful communication with others and in their teaching. Some also displayed an overconfidence in their abilities as well as a lack of awareness of the risks associated with internet safety. Additionally, an examination of the digital tools utilized by pre-service teachers revealed that they mostly used social media platforms in their personal and professional lives for several purposes, including communication, fun and pleasure, academic, and language learning purposes. They also claimed that they could utilize digital technologies such as LMSs and quizzes in their education as resources to improve input and skill development, or as tools to improve motivation, autonomy, creativity, group work, and engagement.

Similarly, İşler and Yıldırım (2018) investigated pre-service language teachers' perceptions of their technological pedagogical content knowledge, the factors affecting their perceptions of TPACK, and their beliefs related to technology integration into language classrooms. Most of the participants were found to be in the 'high level of TPACK'. Pre-service language teachers mostly used technology for listening activities, finding authentic and visual materials, preparing lesson plan, sharing their ideas with colleagues. As for self-efficacy, almost all of them seemed to be knowledgeable of how to use technology in language teaching and learning environments, highlighting their technological expertise. On the other hand,

participants believed that technology integration can be difficult and time consuming for teachers. They also reported that their university instructors did not adequately model appropriate technology integration into teaching or encourage pre-service teachers to use technology during practice teaching.

Concerning the findings of the abovementioned studies, it can be claimed that pre-service language teachers require more guidance and training on technology integration to language teaching. These results have arisen a need to investigate educational technology training in ITE programs in the world and Turkey. For that purpose, the curricula of ITE programs -specifically language teacher education programs- of some universities in the developed countries and Turkey and their inclusion of technology related courses were examined in the following part.

2.3.4 Technology Training in Teacher Education

According to Teo (2015), instructors are critical to successful technology integration in teaching and learning. Similarly, Fisher (2006) asserts that the simple existence of technology may not be conducive to learning. Considering teachers' role in technology integration to education, it is obvious that effective technology training in ITE is crucial. In various research (Gudmundsdottir & Hatlevik, 2018; Hall & Trespalacios, 2019; Hermans, Tondeur et al., 2016; Teo, 2009), it is revealed that acceptance and success of ICT-based educational devices to improve the learning process are often rooted in teacher training.

The professional digital abilities that preservice teachers are exposed to during their teacher preparation programs will have a substantial influence on their future practice since new teachers are likely to deliver instruction that coincides with the modeling they got from their faculty (Dassa & Vaughan, 2018; Gudmundsdottir & Hatlevik, 2018).

Gudmund and Hatlevik (2018) discovered a link between professional digital competence (PDC) development -presumably ICT related activities- during ITE and technological self-efficacy of newly qualified teachers. This is consistent with research demonstrating that student teachers' perceptions of their own competence during ITE are strongly linked to their perceptions of their professional competence as newly certified teachers (Hatlevik, 2017).

Examining pre-reservice teachers' self-efficacy for technology integration, Wang, Ertmer, and Newby (2004) discovered that educating pre-service teachers on computer usage in the classroom through observation of outstanding technology-using instructors raised their self-efficacy for technology integration. This is in line with studies (Abbitt & Klett, 2007; Al-Awidi & Alghazo, 2012) showing that pre-service teachers' teaching experiences and computer comfort level help them foster their self-efficacy in technology integration as they can put what they learned in teacher education into practice. Similarly, Abbitt (2011) discovered that pre-service teachers' self-efficacy beliefs in future technology integration improved when they were educated on several specific areas in technology usage.

As research shows, pre-service teachers' exposure to professional digital competencies during their teacher education programs will have a substantial influence on their future teaching practice. In this respect, teacher training institutes (TTIs) are required to offer pre-service teachers with the skills to incorporate technology into the classroom and to prepare students to be ICT proficient (Abbitt & Klett, 2007; Brun & Hinostroza, 2014; ISTE, 2012; Kaufman, 2015; Tomte, Enochsson, Buskqvist & Kårstein, 2015).

There are several studies in the related literature that engaged in attempts to formalize standards that could guide teacher training programs of the educational sciences faculties to support the development of technology integration to education. For instance, Dudeney and Hockly (2016) claimed that pre-service and in-service teacher education programs should aim to give teachers with not just the technical skills they need, but also an understanding of technology, its worth, and how to apply it in language instruction.

Various studies (Bell, 2001; Çuhadar, 2018; Fulton, Glenn, & Valdez, 2003) suggested that rather than generalizing all ICT uses in schools, realistically designed applications of integration components such as technological infrastructure, in-service teacher training, leadership, and vision may generate more successful outcomes. Since some pre-service teachers may have graduated with advanced skills for integrating technology into the classroom, but were placed in schools with limited access to technology, which slows the integration.

As Baran et al. (2017) claimed teacher training programs require a structured set of methods and practices to prepare instructors to utilize technological tools effectively in the classroom. Accordingly, Brenner and Brill (2016), reviewed literature and identified nine

factors in preservice teacher training that will help early career instructors transfer technology integration knowledge and abilities to their classrooms. These factors were summarized as:

> (1) Meaningful activities, (2) expert guidance, (3) knowledge building guidance, (4) authentic and hands-on activities, (5) authentic contexts, (6) professors' modelling effective use of technology in content specific areas, (7) opportunities for collaboration with others (peers, faculty, teachers, etc.), (8) opportunities for practice and experimentation with technology and (9) pre-service teachers' reflection upon learning activities that utilize technology.

Similarly, Kirschner (2003) proposed six benchmarks that may be incorporated into a teacher education curriculum that modeled excellent pedagogy. The six benchmarks of good practice identified for teacher education programs were that teachers become:

> (1) Competent personal users of ICT, (2) competent to make use of ICT as a mind tool, (3) master a range of educational paradigms that make use of ICT, and (4) competent to make use of ICT as a tool for teaching, (5) master a range of assessment paradigms which make use of ICT, (6) understand the policy dimension of the use of ICT for teaching and learning.

The study also suggested that preparing pre-service and in-service teachers to be skilled personal users of ICT should be a priority for teacher training programs. They should train pre-service teachers to use ICT as mindtools in a variety of educational and pedagogical situations. In other words, the goal should be to adapt ICT to their education by integrating into school curricula in order to accomplish educational objectives, rather than adapting their education to ICT.

Following the implications of research on this field, it can be claimed that the TTIs all around the world have reshaped their curriculum in various ways (Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010; Tomte, Enochsson, Buskqvist, & Krstein, 2015). According to Tondeur et al. (2016), and Polly Mims, Shepherd, and Inan (2010) TTIs have explicitly included technology throughout the whole curriculum, allowing pre-service teachers to have a better understanding of the pedagogical reasons for adopting technology by seeing firsthand how it may help teaching and learning in a variety of areas.

To have a deeper understanding of technology integration in current teacher education programs, the study has also examined some teacher education programs in several developed countries and Turkey in the following parts.

2.3.4.1 Technology Training in Teacher Education Programs in Developed Countries

With the advent of educational technologies, many countries started to give importance to technology-related skills for future and practicing teachers. In the United States, computers and other information technology have been employed in teacher education for almost two decades in a variety of ways to enhance teaching and learning. At teacher education level, teacher-training institutes in the United States have addressed the demand for professional development in the area of technology through in-service training programs since 1957, however, there was a need for better ICT use rather than ICT provision (Altun, 2007). With the requirement of the national standards for the integration of ICT in teacher preparation programs, in 1995, The International Society for Technology in Education (ISTE) produced the key ICT standards for ICT in teacher education in the USA, which were adopted by the National Council for Accreditation of Teacher Education (NCATE) (Usun, 2009). The ISTE standards for teachers have been approved as a mandated requirement by most US states and the US Council for Accreditation of Teacher Education (Kirschner, 2003). Last revised in 2017, the areas in ISTE accreditation standards are as it follows:

1. **Learner:** Educators constantly enhance their profession through learning from and with others, as well as by investigating proven and promising techniques that use technology to promote student learning.
2. **Leader**: Educators seek leadership opportunities to encourage student empowerment and achievement, as well as to improve teaching and learning.
3. **Citizen:** Educators encourage learners to contribute positively and ethically to the digital world.
4. **Collaborator:** Educators set aside time to work with colleagues and students to enhance practice, find and share resources and ideas, and solve challenges.
5. **Designer:** Educators use technology to create realistic, student-driven activities and settings that take into account and accommodate learner variety.
6. **Facilitator:** Educators assist technology-enhanced learning to help students meet the 2016 ISTE Standards for Students.
7. **Analyst:** Educators comprehend and utilize data to guide their education and help students achieve their learning objectives.

In short, candidates must design, organize, and evaluate learning experiences to engage students and improve their learning, as well as to deepen professional practice and serve as good role models for students, colleagues, and the community (ISTE, 2008). According to a study, ISTE standards have an influence on technology integration in teacher training programs, especially in terms of assessment and improvement (Crompton, 2014).

In addition, the Preparing Tomorrow's Teachers to Use Technology (PT3) effort of the United States Department of Education (Hall, Fisher, Musanti & Halquist, 2006) and the "Tomorrow 98" program encouraged the use of technology in educational activities in the USA.

Initiatives such as the PT3-funded projects and ISTE-sponsored standards appear to have influenced teacher education programs (Brenner & Brill, 2016). Despite these initiatives, research has revealed that impediments such as a lack of administrative support and a lack of alignment between teacher education programs and schools remain, making it less likely for instructors to integrate ICT into their classrooms (Polly, Mims, Shepherd, & Fethi, 2010). To discover if the ISTE standards influenced technology integration practices in early career teachers, Brenner and Brill (2016) surveyed early career teachers who completed a teacher education program in a US university. Their findings revealed that even while pre-service teachers indicated optimistic views about using technology in their education, they felt relatively proficient with basic technologies but lacked experience with more complex technologies. Additionally, they found that pre-service teachers reported having only one instructional technology-related course; and limited opportunities to practice with technology in content- specific and methods.

Similarly, Shamanur (2017) examined the attitudes and perceptions of program preparation to use and integrate technology during teaching practices in a US university. Results revealed that even though pre-service teachers have positive attitudes towards technology integration and feel prepared to integrate technology in their classes, the teacher-training program doesn’t provide adequate skills and competencies to teach with technology in the classroom. Furthermore, the pre-service teachers in this survey stated that they primarily utilize technology to develop instructional materials (e.g., handouts, quizzes), collect data for lesson planning and administrative record keeping, and connect with colleagues and other professionals. Students, on the other hand, reported limited use of technology for developing a website or a blog, modifying pages using WIKI, participating in synchronous online meetings, generating or using a digital portfolio, or using content-specific software tools. Furthermore, Shamanur (2017) compared these results with the views of pre-service teachers studying at a university in Israel and found that in US pre-service teachers feel more prepared to use technology in their classes as they are exposed to more training and modelling.

Jeffery (2019), who examined technological competency levels and readiness beliefs of pre-service teachers, found that although many of the preservice teachers who will enter America's classrooms in the next years have grown up with computers, they may lack the digital abilities necessary to make the greatest influence on their students' learning outcomes. In the study, it was found that pre-service teachers' proficiency levels were much lower than their readiness beliefs. Additionally, the findings of the study revealed that pre-service teachers expressed limited exposure to modeling of technology in their content area coursework and software for educational purposes by their faculty.

Many European countries have formal guidelines for ICT-related skills for pre-service teachers and active teachers. Over half of all European countries now require ICT as part of the basic teacher training curriculum for either primary or secondary education. However, official guidelines on the issue of ICT training are usually basic, and in certain countries, the organization, content, and amount of time to be given to it are the responsibilities of specific teacher training institutions (Balcon, 2003).

According to Eurydice report (2019), the content of initial teacher education programs is frequently developed with a great deal of autonomy by higher education institutions. Nonetheless, European educational systems have been gradually mapping required competencies in terms of what a teacher should know and be able to perform. Therefore, to specify learning outcomes in ITE programs, teacher competence frameworks are developed and often employed. These teacher competence frameworks issued by top-level education authorities were deeply analyzed in Eurydice (2019). The report revealed that teacher competence frameworks – mostly a general framework- in around two-thirds of European education systems include digital capabilities among those considered important for all teachers. In contrast, existing teacher competence frameworks in certain countries, including Turkey, do not recognize digital capabilities.

In European education system, various teacher competence frameworks are used, however all of them provide a complete mapping of teacher-specific digital competences. The competences connected to the educational use of technology are included in all teacher competency frameworks. This is defined as " the ability to utilize digital information and communication technologies, multimedia, tools, resources, and facilities for teaching in a functional, critical, and creative manner" (Eurydice, 2019).

In most European countries, the use of teacher competence frameworks are obligatory and top-level regulations or recommendations on the inclusion of teacher-specific digital competences in initial education for teachers exist, however, ITE providers have complete control over subject material, delivery methods and amount of teaching to be set aside for ICT (Eurydice, 2019).

The report (Eurydice, 2019) has also revealed that less than a quarter of European education systems test the competencies during ITE, although in Italy and Slovenia, teacher-specific digital competences are assessed after finishing ITE.

According to Usun (2009), in Germany, one of the core curriculum alternatives is instruction in the teaching of ICT. As a result, teacher education institutions are required to offer the subject, but it is up to the trainees to determine whether or not to include it in their total curriculum. Usun (2009) also added that the United Kingdom (UK) is the only developed country to incorporate ICT in its National Curriculum, as well as the only country with at least one computer in every primary school and the best pupil-to-computer ratio in secondary schools. In addition, a complete curriculum for the use of ICTs in teaching certain topics is available. Nevertheless, teachers' professional growth in the use of ICT in teaching and learning, remains remarkably low.

2.3.4.2. Technology Training in Teacher Education Programs in Turkey

In the information era, teacher education in Turkey, like in the rest of the globe, may not be regarded without ICT. Based on this vision, it has been aimed to establish a computer-literate society since the 1960s, due to advancements in the public and private sectors, universities, the Ministry of National Education (MoNE), and TUBITAK (Turkish Scientific and Technological Research Council) (Keser, 2011).

The dynamic process that began in 1984 with the use of computers in school teaching and learning processes (Demiraslan & Usluel, 2008) has continued with serious initiatives for ICT integration, including the nation-wide, comprehensive FATIH Project (Movement of Enhancing Opportunities and Improving Technology), launched in 2010, as an integration project based on advanced ICT. FATIH Project, which is a large-scale project supported by top-level education authorities, aims to increase digital competence and the pedagogical use of

technology in education and it provides digital education resources and tools that allow teachers to create and share their own e-content with other teachers (Eurydice, 2019).

Within the scope of the project, equiping 42.000 schools and 570.000 courses with latest information technology and turning into computerized classrooms was aimed (Mone). Each school received software substructre and equipment such as multifunctional photocopiers, document cameras, interactive whiteboards, and wired Internet connections for each class; tablets for teachers and students; and each cith is provided at least one distance in-service training center (Çalıskan, 2017). The Fatih Project has also stressed the importance of digital competence training in teacher education and supported in-service teacher education with some trainings.

According to Usun (2009), in 1998, education institutes gave IT equipment and essential hardware and software facilities as part of the National Education Development Project (NEDP), which was financed by the Turkish government and the World Bank. The Higher Education Council's (HEC) Restructuring Attempt in Education Faculties in 1998 resulted in the revision of teacher training curricula and the establishment of a new department in education faculties. Courses on information and communication technology and its applications in teaching and learning have been included in the new programs in order to increase teacher quality. In summary, each ITE program's curriculum was revised, shifting from theory-heavy courses to more practice-based courses (Alev, 2003). Two courses which are 1. Computer 2. Instructional Technologies and Material Development have been offered in teacher education programs as well.

According to European Schoolnet Country Report Turkey (2017), in the field of basic teacher education, digital technologies are being used. In Turkey, universities are in charge of beginning teacher education. Each university's education faculty develops its own curriculum for digital technology instruction for student teachers. Most colleges require student teachers to take a course in digital technologies. HEC teacher training programs (2018) support this claim by including “Educational Technologies” course on the obligatory courses list.

Aslan and Zhu (2015), analyzed ITE programs of three Turkish state universities and perceptions of pre-service teachers on integration of ICT in their courses. They found that in Turkey, pre-service teachers are taught in ICT courses such as Computer I and II, Instructional Technology and Material Development (ITMD). While the "Computer I" course aims to

provide pre-service teachers with an understanding of ICT, basic concepts in hardware and software, operating systems in general, word processing, spreadsheets, presentations, and the use of the Internet in education, the "Computer II" course aims to provide pre-service teachers with an understanding of basic concepts, elements, theoretical foundations, advantages, limitations, and application methods in computer assisted education. On the other hand, the objectives of the ITMD course are to learn how to use instructional technologies in the classroom, plan and implement instructional technologies in the classroom, create two and three-dimensional materials using instructional technologies, examine educational software, and evaluate a variety of instructional technologies (HEC,1998). In short, Computer I and II focus on fundamental personal skills for student teachers, whereas the ITMD, which must be taken by pre-service teachers to gain gain proficiency in using existing technology in the teaching-learning process. According to Aslan and Zhu (2015), inclusion of such courses to the programs appears to be more focused on professional ICT skills. However, it is necessary to note that these courses only provide a framework to teacher trainers about what should be taught regarding to ICT, not how it should be taught to utilize ICT for pedagogical purposes in the classrooms (Altun, 2007).

On the other hand, the Eurydice (2019) claims that the existing teacher competence frameworks do not acknowledge digital competences and teachers' professional development by combining different approaches is not supported by top-level education authorities in Turkey. Similarly, a report on the Turkish educational system evidenced that the content of teacher education programs is insufficient in terms of providing instructors with information on how to integrate technology into teaching (TEDMEM, 2015).

According to Uzun (2015), despite a desire to follow global trends, teacher training programs in Turkey have had major difficulty bridging the gap between theory and practice. The trend has been toward technology-assisted education, which has been attempted using traditional methods and resources. Buildings and classrooms have been equipped with the required cutting-edge technology, but the mentality of the stakeholders have stayed constant over time. However, the thought should stimulate innovations and transformations as a natural process.

As Çuhadar (2018) stated, the ICT-based courses given in Turkish faculties of education dedicated to teacher education are insufficient to enable pre-service teachers to acquire the

necessary skills. Similarly, some other studies (Akayoğlu, 2017; Altun, 2007; Baran et al., 2017; Usun, 2019) claim that Turkish pre-service teachers are not effectively taught in teaching-related ICT use during their pre-service term, they must gain the necessary information, skills, and experience during their education

2.3.4.3. Technology Training in English Language Teacher Education Programs of Turkish Universities

Language instructors' responsibilities are expanding beyond teaching linguistic abilities as global communication becomes increasingly digitally mediated. They must also stimulate students' digital abilities in order to communicate effectively in a technologically linked society. Because of this reason, the pre-service language teachers, who are expected to integrate ICT tools in their classroom activities, need to be trained on integrating and using these tools in their classes effectively. Otherwise, the investments on technological devices by the government would be worthless without efficient training of pre-service teachers.

It might be claimed that, the two state establishments in charge of education - the MoNE and the HEC- do not cooperate in harmony in Turkey. MoNE certainly aims for modern education by surrounding schools with the necessary equipment, but HEC does not train language teachers in such a way that they can use the equipment efficiently (Uzun; 2016). To have a deeper understanding, it is needed to overview technology training courses in English Language Education programs in Turkey.

The Council of Higher Education in Turkey developed the most recent English Language Teacher Training Programs (ELTTP) in the 2006–2007 academic year. Although there may be some variations in the names, content, and technique for delivering the courses at different universities, the package program is executed consistently in ELT Departments across Turkey (Uzun, 2016).

In the standardized ELT curriculum developed by the Council of Higher Education, there is a course titled Instructional Technologies and Material Design in the teacher education programs in Turkey (HEC, 2018); nevertheless, the course was determined as basic principles of teaching, the use of electronic devices in the classroom, such as overhead projectors or smartboards. When the course content is examined, it is observed that the use of Web 2.0

capabilities that allow students to engage with one another, as well as the use of the Internet to produce materials, were overlooked. This could be due to the fact that the course description was created in 2006, when Web 2.0 tools were still relatively unknown. Furthermore, the course's material is applicable to various fields of education, not just language teachers. Apparently, that course does not suit the demands of pre-service teachers (Akayoğlu, 2017).

The standardized ELT curriculum by HEC (2018) doesn't include any obligatory technology related course except "Educational Technologies" course. Language teacher training intitutes are free to determine whether to include any additional courses and the course contents.

Various studies in the Turkish context have examined the ELT programs in terms of their inclusiveness of technology courses. For instance Altmışdört (2016), examined ELT programs of 15 state universities and found that only 1 university has "Technology and Language Teaching" course. Also, teacher trainees in these universities were interviewed and most of them stated their departments do not have enough technological instruments.

In addition, Uzun (2016) analyzed the ELT programs in Turkey and results reveled that there in the programs revised, only Computer I and II exist, which is far behind what is expected by students teachers.

When the teacher education programs of universities in Turkey is scrutinized, it can be clearly seen that despite the initiatives by MoNE and HEC, ELTTP only include basic computer training, not a course related to ICT integration to language teaching.

Furthermore, Uzun (2016) 's study revealed that the majority of the pre-service teachers expressed that the courses, including basic computer training, contributed very little to their ICT skills and abilities. Likewise, the trainees emphasized that they felt unconfident about their readiness to employ ICT in their classes since they are usually taught by traditional methods, they only use computers and projectors as technologic tools, and classes are generally held in laboratories with old computers. They also stated that their teacher trainers did not advocate technology integration to any great extend and did not exemplify any educational use of ICTs.

In the reviewed literature, it is obvious that technology isn't integrated effectively enough to ELT programs in Turkey, causing pre-service teachers' feeling unconfident. On the other hand, some studies (Akayoğlu, 2017) show that if English Language pre-service teachers

are educated effectively on technology integration, their confidency level will increase. Akayoğlu (2017), worked with 69 pre-service teachers of English and analyzed their perspectives towards ICT usage before and after taking a 14-week CALL course. Results revealed that before the training, the participants were nervous; however, by the end of the course, they were more confident in using ICT tools. Furthermore, the participants felt that this course should have been available earlier in the undergraduate curriculum.

Based on the literature reviewed, even though it is possible to increase pre-service teachers' readiness belief by providing them enough training and modelling, teacher training institutes are falling behind the educational trends. However, in 2020 and 2021, during the COVID pandemic, emergency remote teaching has been conducted, which inreases the importance of ICT tools in education and consequently teacher education on effective technology usage. That's why, there is a need to examine current readiness beliefs of pre-service English language teachers and their perspectives on the training offered by their insitutes.

Thus, regarding the abovementioned gaps in the literature as well as the need for further examination of the current phenomenon, the present study intends to illustrate the professional digital competency levels of pre-service English language teachers and efficacy of English language teacher training programs (ELLTP) in Turkey in terms of educational Technologies integration to language teaching.

CHAPTER III

METHOD

This chapter explains the research methodology of the study which aimed to investigate pre-service EFL teachers' technological readiness to integrate current educational technologies to their classes. The research model, study group, data gathering instrument, and data analysis are described in this chapter.

A quantitative survey research approach was adopted in order to find research questions. Gay, Mills and Airasian (2009) describes quantitative research as the research relying on the collection and analysis of numerical data to explain, describe, predict or control variables and phenomena of interest. The study aimed to describe and explain current technological readiness levels of pre-service language teachers and to reach as many pre-service teachers as possible from various universitiyes, for this reasons the quantitative technique is supposed to provide a better comprehension of research questions.

3.1 Research Design

The overall purpose of the present study was to collect and report the perceptions of pre-service English language teachers on their technological readiness to integrate educational technologies to language teaching. Regarding this aim, a quantitative descriptive research design is used to find satisfactory answers to its research questions. Quantitative research, according to Creswell (2002), is the process of gathering, evaluating, interpreting, and writing a study's findings. Through providing an overview of the case in the focus of the study, the descriptive design enables researchers acquiring a better overall knowledge of the data set (Mackey & Gass, 2005). In descriptive research, relationships between variables are examined as part of the general descriptions rather than the degrees of correlations. Therefore, the current study, which is a descriptive, will look at the variables in a specific setting with a single sample of people.

The survey technique of descriptive research designs was used in this research. The survey is a quantitative way of collecting information from a sample of the population such that the findings are representative of the population within a given margin of error (Cresswell,

2002). Thus, the purpose of employing a survey in this descriptive study is to provide a precise assessment of a specific phenomenon, namely, pre-service language teachers' technological preparedness.

3.2 Participants

A convenience sampling approach was used in the selection of the participants. Convenience sampling is defined by Cohen, Manion, and Morrison (2007) as "accidental or opportunity sampling using the nearest individuals to serve as respondents." In this study, convenience sampling is used since it was difficult to reach and meet pre-service teachers to collect data due to the COVID-19 pandemic and ERT during pandemic.

Participants were contacted either through their e-mail addresses or through social media. Additionaly, the researcher e-mailed some teacher trainers in various universities and asked them to share the questionnaire. To encourage pre-service teachers to fill in the online survey, gift cards were given to some participants who were selected in a raffle. As a result, 108 pre-service language teachers from 18 different universites participated in the questionnaire. The universities are Akdeniz University, Marmara University, Burdur Mehmet Akif Ersoy University, Ondokuz Mayıs University, Sakarya University, Anadolu University, Gazi University, Çanakkale Onsekiz Mart University, İzmir Democracy University, Süleyman Demirel University, Çukurova University, Hatay Mustafa Kemal University, Hacettepe University, Middle East Technical University, Aksaray University, Eskişehir Osman Gazi University, Mersin University.

Due to the limitations caused by COVID-19, the researcher could reach a limited number of participants. In addition, only 4th grade students participated in the study since one of the research questions was investigating teaching practice experiences and only 4th grade students have teaching practice experiences. A concent form was shared with participants and they accepted that they participated in the study volunteerly.

3.3 Data Gathering Instrument

In order to collect data from pre-service language teachers concerning their perspectives towards their technological readiness, an online survey, which has been the basic form of

research data for the current study, was used. The data gathering instrument "Technological Readiness of Pre-service English Language Teachers" (Appendix 1) was developed by the researcher through a comprehensive review of the related literature. In its development process the similar questionnaires used in previously (Gay, 2016; Jeffery, 2019b; Kabakçı Yurdakul et al., 2012) for the similar purpose was examined in detail and the items that serve for the purpose of the present study were adopted. Additionally, the standards and requirements for teachers in terms of technology use in their classes that were already offered by various authorities (MoNE, 2017, UNESCO, 2012 , ISTE, 2013 & TESOL, 2008) were scrutinized for the present study. That is, an item pool was created and the items in the final version of the questionnaire is formed through the items in the questionnaire.

The after this phase the first draft of the questionnaire was examined by two experts in ELT in terms of their scope and coverage. After taking their suggestions and opinions into account, the final draft of the questionnaire was prepared.

It was a self-administered questionnaire and consisted of four parts. Part A examined the participants' demographic features such as gender, university, technological devices owned, and technology related courses provided by their university. Part B was designed to find out the self-efficacy of the pre-service language teachers in using most commonly utilized educational technology applications. In this section, the participants were asked to answer 23 items on a 5-point Likert-type scale with options ranging from "strongly disagree" to "strongly agree". Part C aimed to learn about participants' teaching experiences on integrating technology to language classes during their teaching practice. Lastly part D inquired ideas of the participants on the education they received at university. This part has 10 items and a 5-point Likert-type scale options ranging from "strongly disagree" to "strongly agree". Finally, part four was designed to determine participants' perceptions on the sufficiency of technological education provided by their universities. In this section, participants were asked to answer 7 questions on a 5-point Likert-type scale with options ranging from "Strongly Disagree" to "Strongly Agree".

3.4 Reliability and Validity

Since the questionnaire was created by the researcher, reliability and validity of the scale need to be checked to interpret the results correctly. Validity refers to whether measuring instrument measures the behavior or quality it is intend to measure (Anastasia and Urbina, 1997). The use of a validated measuring instrument ensures that the data gathered as a result of the analyses are valid. Reliability refers to the stability of measuring instrument used and its consistency over time (Bowling, 2014). Among the methods used for determining reliability, the most common is to determine the internal consistency according to Cronbach's Alpha value. Since the researcher did not have enough time and chance to use test-retest method, Cronbach Alpha method was preferred. Validity and reliability values were presented in the following section (3.4.1.).

Additionally, as the data gathering instrument online questionnaire was created by the researcher, it was needed to check the clarity of the items in the questionnaire. For this purpose, the questionnaire was examined by six English language teachers and five pre-service language teachers and they were asked if there were any unclarity. As a result, some items were changed and improved.

3.4.1. Exploratory Factor Analysis

Exploratory factor analysis was performed to determine the construct validity of the scales used in the study. KMO and Bartlett tests were performed in order to understand whether the scale was suitable for factor analysis. While the KMO coefficient is calculated to test the sample size, the normal distribution condition is examined with the Bartlett test. In this context, the KMO test measurement result should be 0.50 and above, and the Bartlett sphericity test result should be statistically significant (Jeong, 2004: 70). In the factor analysis process, factor load values were examined in the process of assigning or removing scale items from the scale.

Cronbach's alpha coefficient gives the reliability level of the scale. The coefficient ranges from 0 to 1. Depending on the alpha (α) coefficient, the reliability of the scale is interpreted as follows (Nunnally, 1967, 248).

• If .00 ≤ α < .40, the scale is not reliable,

• If .40 ≤ α < .60, the reliability of the scale is low,

• If .60 ≤ α < .80, the scale is quite reliable,

• If .80 ≤ α < 1.00, the scale is highly reliable.

KMO and Bartlett tests were performed in order to understand whether the scale was suitable for factor analysis and the results were presented in Table 3.4.1.

Table 3.4.1. *KMO and Bartlett Values*

KMO		0,783
Bartlett Test	X^2	857,124
	Sd	253
	P	0,000

In the factor analysis for the scale, the KMO value was calculated as 0.783. Accordingly, the sample size is suitable for factor analysis (KMO>0.500). Within the scope of Bartlett test, X2 value was calculated as 857,124 and it was found to be statistically significant (p<0.05). Accordingly, the normal distribution condition was met. According to the results of the KMO and Bartlett test, it was concluded that the data were suitable for factor analysis.

In order to determine the factor structure of the scale, the Scree Plot graph showing the scattering of the eigenvalues was examined, and its finding is illustrated in figure 3.4.1.

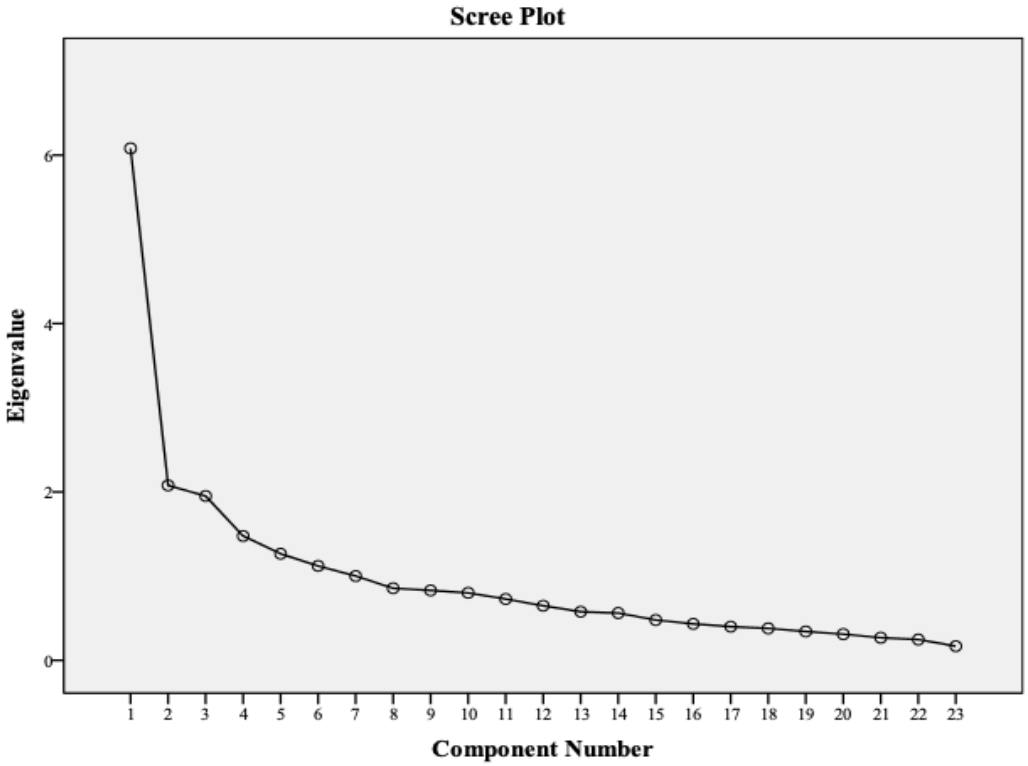


Figure 3.4.1. Scree Plot

3.4.2. Factor Analysis of the Scale

Results regarding the factors of scale showed a 2-factor structure. In order to determine the distribution of the questions to the factors in the 2-factor structure, the analysis was done with the varimax rotation process as the number of factors and the distribution of the questions and factor loads are given in the Table 3.4.2. As a result of the analysis, 7th and 20th questions, removed from the scale and it was determined that the scale consisted of 21 questions and 2 factors.

Table 3.4.2. *Analysis Results Regarding the Factors of the Scale*

	Factor 1	Factor 2	Explained Variance	Cronbach's Alpha
Part B item 17	0,801			
Part B item 21	0,688			
Part B item 22	0,676			
Part B item 8	0,658			
Part B item 16	0,639			
Part B item 23	0,635		26,187	0,837
Part B item 2	0,576			
Part B item 5	0,521			
Part B item 1	0,521			
Part B item 15	0,448			
Part B item 18	0,409			
Part B item 12		0,709		
Part B item 14		0,625		
Part B item 13		0,593		
Part B item 11		0,587		
Part B item 19		0,496	9,800	0,730
Part B item 6		0,479		
Part B item 3		0,469		
Part B item 10		0,450		
Part B item 4		0,435		
Part B item 9		0,361		

The first factor of the scale consists of 11 questions with factor loads ranging from 0.409 to 0.801. The total variance explanation rate of the factor was calculated as 26.19% and the Cronbach's Alpha coefficient was calculated as 0.837.

The second factor of the scale consists of 10 questions with factor loads ranging from 0.361 to 0.709. Total variance explanation rate of the factor was calculated as 9.80% and Cronbach's Alpha coefficient was calculated as 0.730. According to Nunnally (1967), a score between 0.6 and 0.7 indicates an acceptable level of reliability. Therefore, second factor of scale

Table 3.4.2. *KMO and Bartlett Values*

KMO		0,661
Bartlett Test	X^2	169,422
	Sd	45
	P	0,000

In the factor analysis for the scale, the KMO value was calculated as 0.661. Accordingly, the sample size is suitable for factor analysis (KMO>0.500). The X2 value was calculated as 169,422 within the scope of the Bartlett test and was found to be statistically significant (p<0.05). Accordingly, the normal distribution condition was met. According to the results of the KMO and Bartlett test, it was concluded that the data were suitable for factor analysis.

In order to determine the factor structure of the scale, the Scree Plot graph (Figure 3.4.2.) showing the scattering of the eigen values was examined.

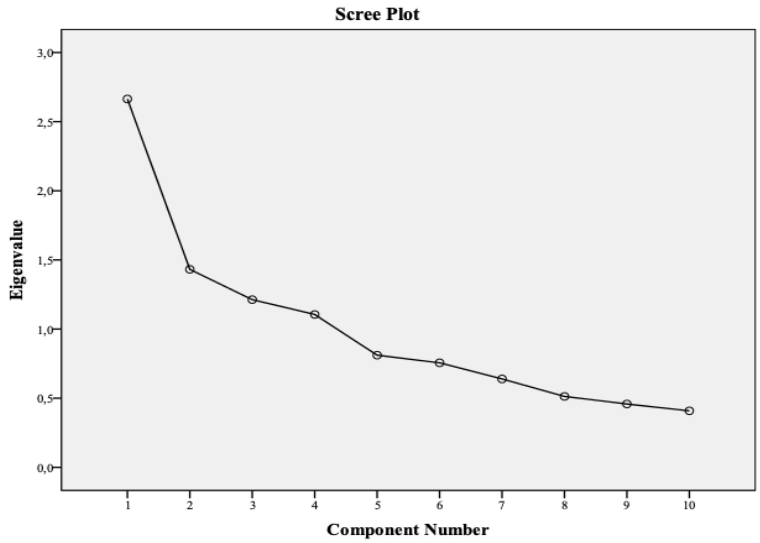


Figure 3.4.2. Scree Plot

It was decided that the scale showed a 1-factor structure; analysis was done and the distribution of the questions and their factor loads are given in the Table 3.4.2. As a result of the analysis, the 4th question was removed from the scale and it was determined that the scale consisted of 9 questions and a single factor.

Table 3.4.2. *Analysis Results Regarding the Factors of the Scale*

	Factor 1	Explained Variance	Cronbach's Alpha
Part C item 7	0,681		
Part C item 1	0,636		
Part C item 8	0,633		
Part C item 6	0,630		
Part C item 5	0,593	29,472	0,675
Part C item 9	0,497		
Part C item 10	0,433		
Part C item 3	0,332		
Part C item 2	0,301		

The factor of the scale consists of 9 questions with factor loads varying between 0.301 and 0.681. Total variance explanation rate of the factor was calculated as 29.47% and Cronbach's Alpha coefficient was calculated as 0.675, which is an acceptable score.

Table 3.4.2. *KMO and Bartlett Values*

KMO		0,615
Bartlett Test	X^2	83,484
	Sd	21
	P	0,000

In the factor analysis for the scale, the KMO value was calculated as 0.615. Accordingly, the sample size is suitable for factor analysis (KMO>0.500). Within the scope of Bartlett test,

X2 value was calculated as 83,484 and it was found to be statistically significant ($p<0.05$). Accordingly, the normal distribution condition was met. According to the results of the KMO and Bartlett test, it was concluded that the data were suitable for factor analysis.

In order to determine the factor structure of the scale, the Scree Plot graph (Figure 3.4.2.) showing the scattering of the eigenvalues was examined.

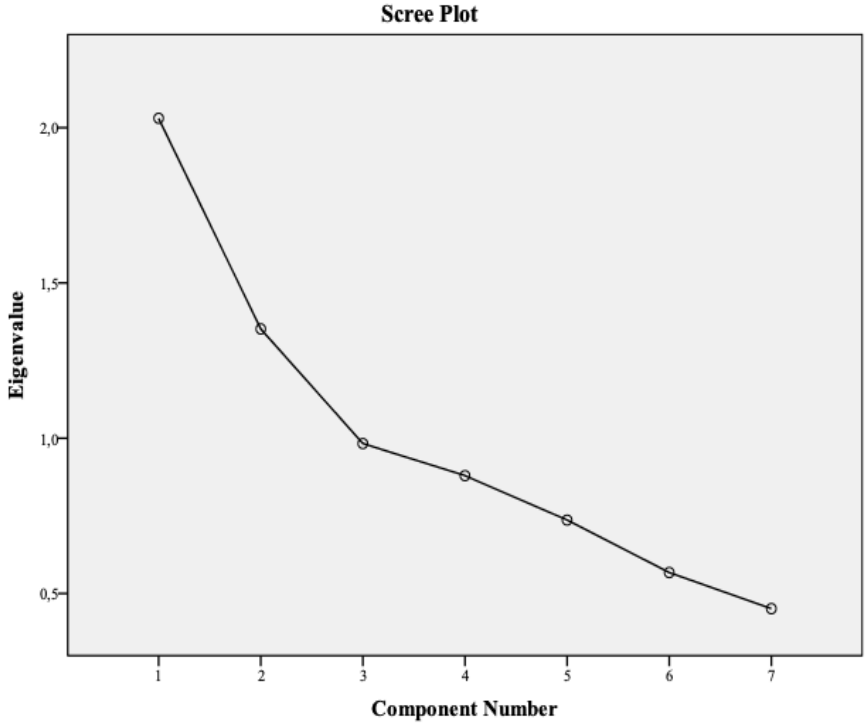


Figure 3.4.2. Scree Plot

It was decided that the scale showed a 1-factor structure; analysis was done and the distribution of the questions and their factor loads are given in the Table 3.4.2. As a result of the analysis, 2 questions, 6th and 7th questions, removed from the scale and it was determined that the scale consisted of 5 questions and a single factor.

Table 3.4.2. *Analysis Results Regarding the Factors of the Scale*

	Factor 1	Explained Variance	Cronbach's Alpha
Part D item 1	0,775		
Part D item 2	0,769		
Part D item 4	0,681	39,919	0,616
Part D item 3	0,437		
Part D item 5	0,387		

The factor of the scale consists of 5 questions with factor loads varying between 0.387 and 0.775. Total variance explanation rate of the factor was calculated as 39.92% and Cronbach's Alpha coefficient was calculated as 0.616, which is regarded as an acceptable score.

3.5 Data Collection

Only quantitative data collection approaches were used in this study. In May and June of 2021, data collection processes were carried out. The questionnaire was created online using Google Docs prior to data collection. Participants were sent a link to the questionnaire by e-mail and social media platforms. Because of the online tool, the researcher was able to contact the respondents simply and immediately at the same time that they were submitting their responses. To encourage pre-service teachers to participate, at the beginning of the questionnaire, it was noted that some of the participants would win gift cards as incentive.

As the first step of data collection, heads of English Language Teaching departments in Turkey were e-mailed and requested to share the questionnaire. Next, the questionnaire was shared on social media groups of pre-service language teachers. Therefore, 108 participants could be reached.

3.6 Data Analysis

Data analysis was done with statistical software for social sciences. In the study, the scale scores were calculated and the kurtosis and skewness coefficients were examined to determine the conformity of the scores to the normal distribution. The kurtosis and skewness

values obtained from the scales are found to be between +3 and -3 for normal distribution (De Carlo, 1997; Groeneveld and Meeden, 1984; Hopkins and Weeks, 1990; Moors, 1986). The kurtosis and skewness values were presented in Table 3.6.

Table 3.6. *Kurtosis and Skewness Values and Confidence Coefficient*

	n	Skewness	Kurtosis
S1.F1	108	-0,849	0,448
S1.F2	108	0,070	-0,524
S1.SUM	108	-0,092	-0,070
S2.SUM	108	0,069	1,768
S3.SUM	108	0,120	-0,187

When the values are examined, it is seen that the kurtosis and skewness coefficients of each score are between -3 and +3 which showed a normal distribution (De Carlo, 1997; Groeneveld and Meeden, 1984; Hopkins and Weeks, 1990; Moors, 1986). The findings of the data analysis are presented in the following chapter.

CHAPTER IV

FINDINGS

4.1 Findings of Demographic Information

The present study intended to discover pre-service language teachers' familarity with digital tools and educational technologies (RQ 1) and to what extent they use these tools in their classes (RQ 3). The digital tools that the pre-service teachers have and use in their daily life are most probably the ones that they tend to use in their classes. For this purpose, the participants were asked what type of digital tools they have. The results are presented in the table 4.1.

Table 4.1. *Digital Devices Owned*

		n	%
Laptop	1	105	97,2
	2	3	2,8
Smart Phone	1	107	99,1
	2	1	0,9
Tablet	1	31	28,7
	2	77	71,3
Ipad	2	108	100,0
Speaker	1	38	35,2
	2	70	64,8
Printer	1	30	27,8
	2	78	72,2
Gaming Console	1	14	13,0
	2	94	87,0

As seen in Table 4.1, most of the participants (97.2%) had a laptop and almost all of them (99.1%) had a smart phone. It is also found that a great amount (71.3%) of the participants did not have a tablet, a speaker (64.8%), a printer (72.2%) , or a game console (87%).

Additionally, the study intended to discover pre-service language teachers' readiness to use digital tools and educational technologies in their classes. Therefore, pre-service teachers' previous knowledge on educational technologies and the technology related courses that they did at university was analyzed (RQ 3). The results are presented in Table 4.1.

Table 4.1. *Technology Courses Attended at University and Technology Courses Attended Selectively*

		n	%
Basic Computer Training	1	82	75,9
	2	26	24,1
Educational Technology Courses (Integrating technology and English Language Teaching)	1	54	50,0
	2	54	50,0
Other Technology Related Courses Attended Selectively	1	32	29,6
	2	76	70,4

As seen in Table 4.1., it is found that while a majority (75.9%) of the participants have basic computer education, only half (%50) of them reported that they had educational technology courses that were directly related to integrating technology into ELT during their language teacher education programs.

4.2 Findings on Pre-service Language Teachers' Competency at Using Digital Applications Commonly Used in Language Teaching

The RQ 1 is related to pre-service EFL teachers' familiarity with commonly used educational applications in language teaching. To answer this question, 23 items were created and asked pre-service language teachers. This part intended to discover their familiarity with

the most commonly used educational technology applications. The results are presented in Table 4.2.

Table 4.2. *Pre-service Language Teachers' Competency at Using Digital Applications Commonly Used in Language Teaching*

	Neutral		Strongly Disagree		Disagree		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
Part B item 1	9	8,3	0	0,0	3	2,8	30	27,8	66	61,1
Part B item 2	11	10,2	0	0,0	2	1,9	42	38,9	53	49,1
Part B item 3	2	1,9	0	0,0	0	0,0	30	27,8	76	70,4
Part B item 4	1	0,9	0	0,0	2	1,9	30	27,8	75	69,4
Part B item 5	17	15,7	0	0,0	3	2,8	39	36,1	49	45,4
Part B item 6	47	43,5	2	1,9	24	22,2	17	15,7	18	16,7
Part B item 7	16	14,8	0	0,0	7	6,5	42	38,9	43	39,8
Part B item 8	14	13,0	2	1,9	1	0,9	43	39,8	48	44,4
Part B item 9	31	28,7	1	0,9	16	14,8	43	39,8	17	15,7
Part B item 10	48	44,4	5	4,6	30	27,8	20	18,5	5	4,6
Part B item 11	3	2,8	1	0,9	3	2,8	31	28,7	70	64,8
Part B item 12	22	20,4	1	0,9	15	13,9	31	28,7	39	36,1
Part B item 13	34	31,5	2	1,9	19	17,6	28	25,9	25	23,1
Part B item 14	19	17,6	2	1,9	10	9,3	33	30,6	44	40,7
Part B item 15	21	19,4	3	2,8	26	24,1	31	28,7	27	25,0
Part B item 16	8	7,4	0	0,0	4	3,7	31	28,7	65	60,2
Part B item 17	15	13,9	0	0,0	4	3,7	37	34,3	52	48,1
Part B item 18	20	18,5	0	0,0	10	9,3	41	38,0	37	34,3
Part B item 19	22	20,4	5	4,6	16	14,8	30	27,8	35	32,4
Part B item 20	18	16,7	2	1,9	9	8,3	36	33,3	43	39,8
Part B item 21	17	15,7	0	0,0	8	7,4	44	40,7	39	36,1
Part B item 22	21	19,4	1	0,9	5	4,6	33	30,6	48	44,4
Part B item 23	20	18,5	1	0,9	6	5,6	47	43,5	34	31,5

The results illustrated in Table 4.2 revealed that, the majority of the participants stated that they are able to use video conferencing apps (98.2), presentation apps (97.2), storage apps (93.5), educational gaming apps (88.9), video platforms for language teaching (88.9) and learning management apps (88).

On the other hand, an important number of participants disagreed that they are familiar enough with the following educational apps: student monitoring (76.8), language instruction (67.6), creativity sharpening (51), encouraging group work and student collaboration (46.3), project work (39.8).

4.3 Findings on Pre-service Teachers' Technological Readiness Beliefs

The RQ 2 inquired the pre-service teachers beliefs on their technological readiness. The answer to this question date were gathered through the part B of the questionnaire. The findings related to the answer to this RQ is presented in Table 4.3.

Table 4.3. *Pre-service Teachers' Technological Readiness Beliefs Considering Their Teaching Experiences*

	Neutral		Strongly Disagree		Disagree		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
Part C item 1	6	5,6	0	0,0	0	0,0	58	53,7	44	40,7
Part C item 2	12	11,1	0	0,0	1	0,9	59	54,6	36	33,3
Part C item 3	9	8,3	0	0,0	4	3,7	55	50,9	40	37,0
Part C item 4	18	16,7	0	0,0	4	3,7	60	55,6	26	24,1
Part C item 5	10	9,3	0	0,0	3	2,8	53	49,1	42	38,9
Part C item 6	15	13,9	1	0,9	2	1,9	48	44,4	42	38,9
Part C item 7	12	11,1	1	0,9	1	0,9	51	47,2	43	39,8
Part C item 8	19	17,6	2	1,9	1	0,9	56	51,9	30	27,8
Part C item 9	26	24,1	1	0,9	5	4,6	50	46,3	26	24,1
Part C item 10	23	21,3	1	0,9	6	5,6	54	50,0	24	22,2

As seen in Table 4.3, the analysis of the items related to the participants beliefs on their technology readiness revealed that the majority of them feel confident in selecting appropriate educational technology apps to use in classroom (94.4), managing problems in sending or uploading the lesson materials for student use (88),.assessing the effectiveness of educational technology apps (87.9), communicating effectively with students during online lessons (87.9).

On the other hand, some of the participants feel relatively less confident in assessing students' performance in online classes (70.2) and getting enough technical support to solve problems encountered during classes (70.1).

4.4 Findings on Pre-Service Teachers' General Technological Readiness Beliefs Considering their Teaching Practices

The RQ 3 intended to find out pre-service teachers' confidence levels in using educational technologies during their teaching practice. For this purpose, three questions were asked in part D. The results are presented in Table 4.4.

Table 4.4. *Pre-service Teachers' Perceptions on Their General Technological Readiness Beliefs and Training Provided by Their Faculty*

	Neutral		Strongly Disagree		Disagree		Agree		Strongly Agree	
	n	%	n	%	n	%	N	%	n	%
Part D item 5	19	17,6	4	3,7	17	15,7	41	38,0	27	25,0
Part D item 6	19	17,6	1	0,9	5	4,6	57	52,8	26	24,1
Part D item 7	21	19,4	1	0,9	4	3,7	56	51,9	26	24,1

As seen in Table 4.4, the analysis of the items related to the participants confidence on their educational technology usage during their teaching practice revealed that the majority of them felt confident in ability to use technology in language classes (79.9) and could integrate educational technologies to classes effectively (76). However, most of the participants still

believe that they will need further training on how to use educational technology language classes (63).

4.5 Findings on Pre-service Teachers' Opinions on Efficacy of Technology Training Provided by Their Faculties

The RQ 4 intended to reveal what kinds of technology related courses pre-service EFL teachers are provided by their faculties and what their opinions on these courses are. For this purpose, in part A, participants were asked what kinds of technology related courses they took. The results (Table 4.1.) showed that a majority (75.9%) of the participants have basic computer education, only half (%50) of them reported that they had educational technology courses that were directly related to integrating technology into ELT during their language teacher education programs.To gather data on the participants opinions on the technology training that they were provided by their faculties, four questions were asked. The findings are presented in Table 4.5.

Table 4.5. *Pre-service Teachers' Perceptions on TechnologyTraining Provided by Their Faculty*

	Neutral		Strongly Disagree		Disagree		Agree		Strongly Agree	
	n	%	n	%	n	%	N	%	n	%
Part D item 1	31	28,7	7	6,5	26	24,1	34	31,5	10	9,3
Part D item 2	25	23,1	13	12,0	25	23,1	36	33,3	9	8,3
Part D item 3	15	13,9	3	2,8	3	2,8	39	36,1	48	44,4
Part D item 4	26	24,1	5	4,6	21	19,4	40	37,0	16	14,8

The results presented in Table 4.5 showed that only 40.8 of the participants agreed that their faculty provides enough training on how to use technological tools, 41.6 agreed that their

faculty provided enough information on the usage of the educational technology applications commonly used in foreign language teaching, 51.8 stated their instructors modelled well the use of educational technology and a great number of them (80.5) agreed that their faculty should provide more courses on using educational technologies in the foreign language teacher education program.

To provide a general overview of the results, the findings reached are summarised in Figure 4.5.

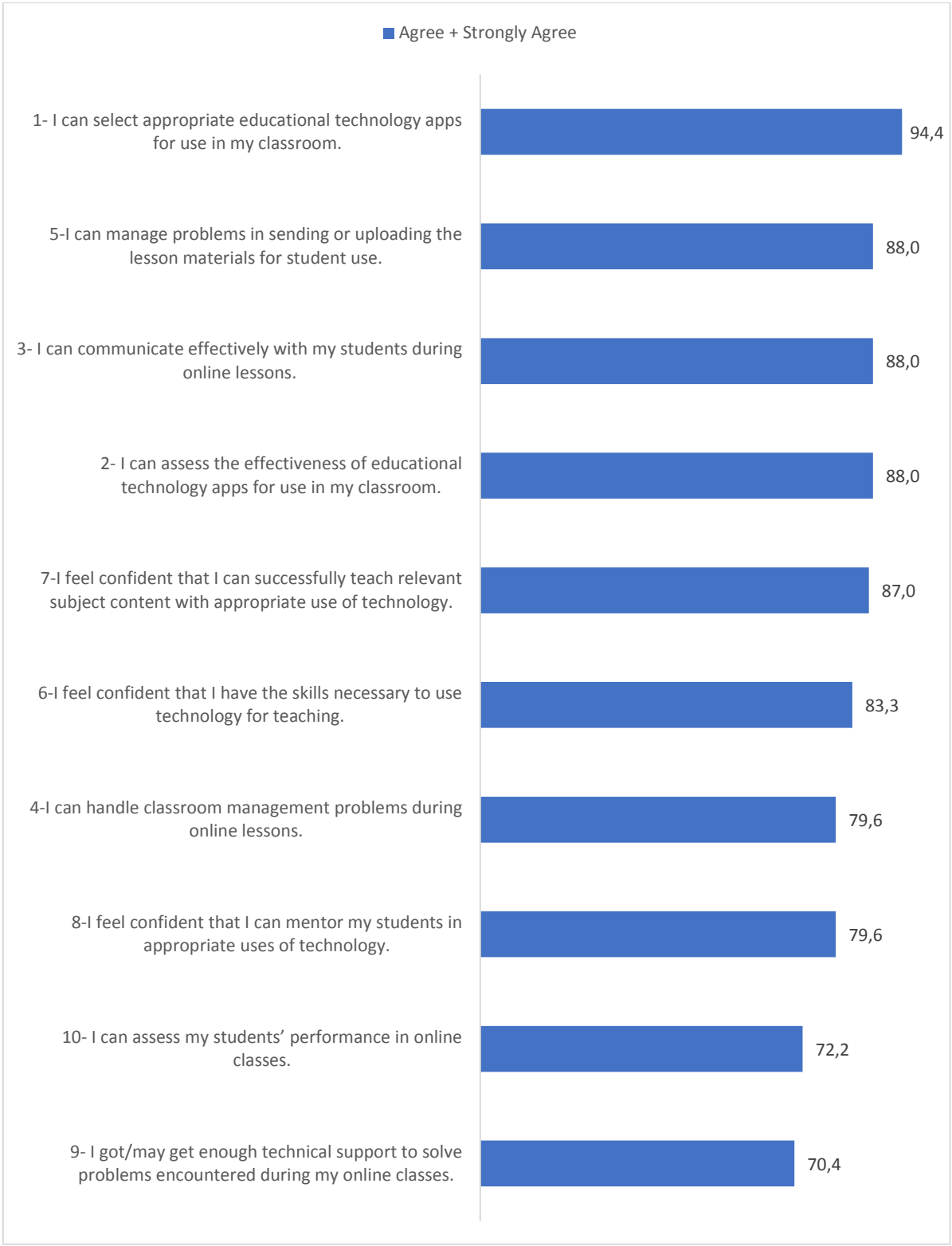


Figure 4.5. *Summary of Results*

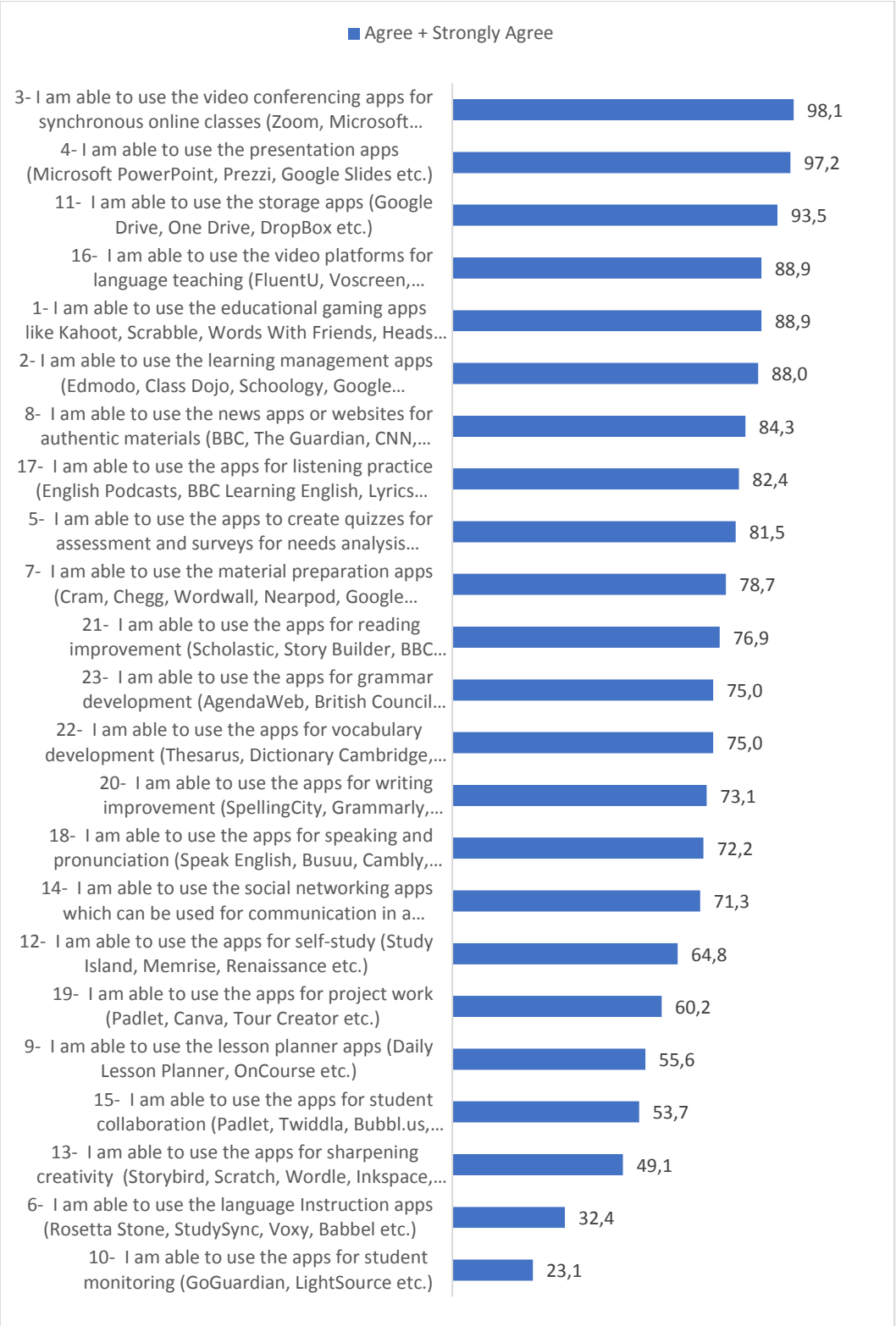


Figure 4.5. *Summary of Results*

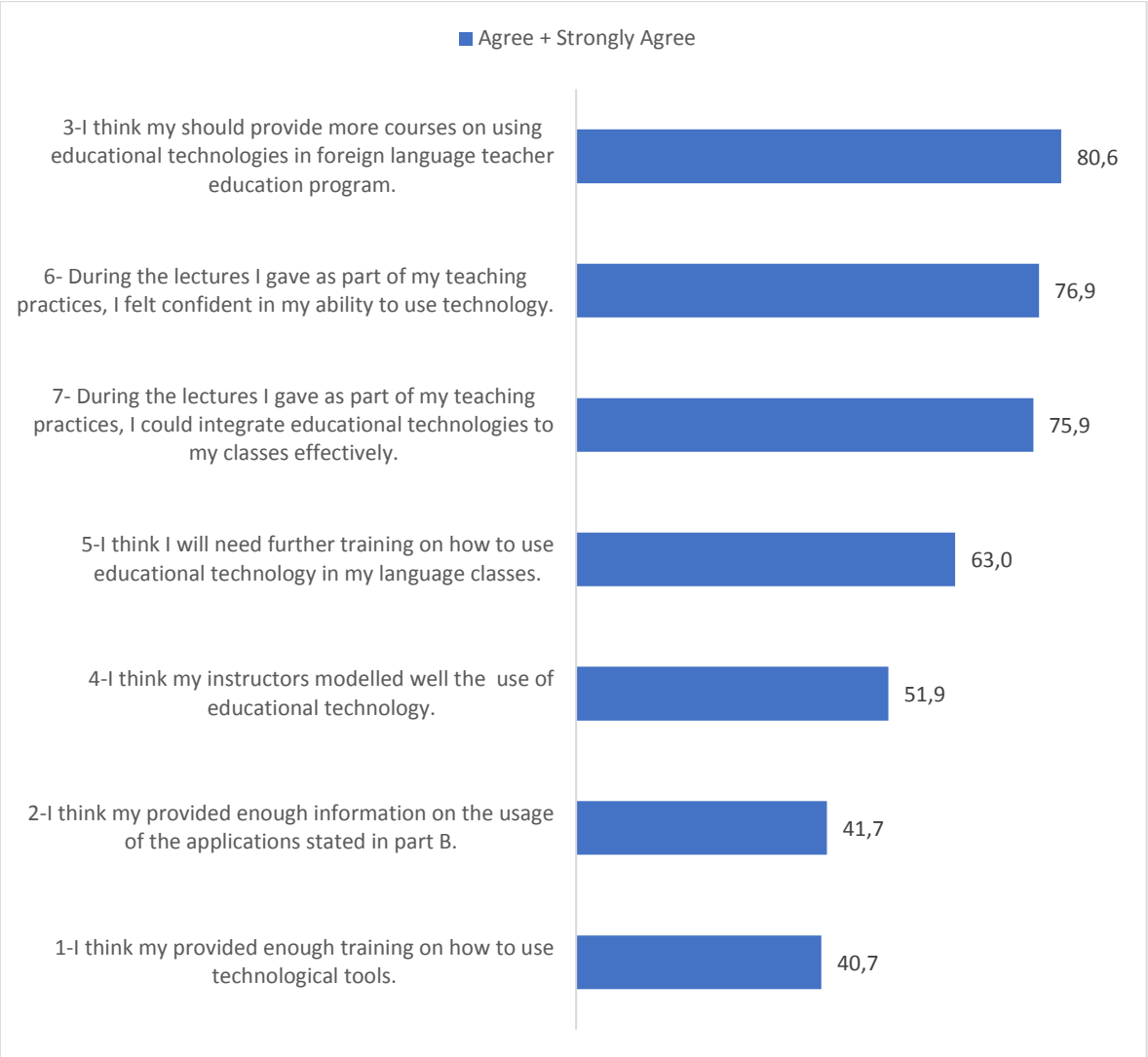


Figure 4.5. *Summary of Results*

CHAPTER V

CONCLUSION, DISCUSSION AND SUGGESTIONS

5.1. Conclusion and Discussion

The high-speed advancement of technology has resulted in significant changes in the way we live as well as societal needs. Recognizing the influence of new technologies on the workplace and everyday life, today's teacher education institutions are attempting to reorganize their education programs and classroom facilities in order to close the technological gap between today and tomorrow's teaching and learning. This process of reorganization necessitates the proper integration of technology into current educational settings.

Regardless of the amount of technology used in classrooms, which was aided to some extent by Turkish Ministry of National Education programs, the agents who will use such tools will be mostly teachers. Therefore, the present study aimed to find out technology readiness levels of future EFL teachers. The study also aimed to identify the efficacy of existing training for pre-service teachers to start their teaching career with the necessary abilities for using technology in order to create favorable student outcomes.

The analysis of the findings, in summary, showed that pre-service teachers are mostly confident at selecting and assessing educational technologies to use in their class, managing communication and material uploading problems. However, they have some concerns in assessing students' performances in a digital environment and getting help by the authorities if they encounter a problem using digital tools. This might be related to infrastructure problems they are likely to have when they start their teaching careers, as many schools still lack enough technical infrastructure and an IT worker who can help teachers with technical problems.

Having a closer look at the findings, the answer to the first research question which intends to find out how familiar pre-service English language teachers are with the educational technologies commonly used in language teaching is that pre-service language teachers are familiar with most of the educational apps except the ones for language instruction, monitoring, creativity sharpening and student collaboration. Thus, it can be inferred that pre-service

language teachers are required to be encouraged and trained on how to use educational apps for these purposes. Consequently, a lesson providing this training should be included in language teacher education programs.

The second research question investigated how pre-service EFL teachers perceive their levels of technology readiness. The results revealed that they mostly feel ready to use technology in their classes, however, they are less confident in assessing students in an online platform and getting technical support in case of a technical problem. These results show that pre-service teachers should additionally be trained on how to assess performance in virtual platforms. As for reliability of the assessing method, they might need further training. Furthermore, the results show that pre-service teachers have some concerns about technical support and technological infrastructure. Educational institutions are the ones which are responsible for providing enough technical support and infrastructure for teachers. MoNE and HEC should make necessary arrangements to be able to reach the standards defined by educational authorities like TESOL, ISTE, UNESCO and MoNE. Additionally, as the second research question (2a) investigated if there is any relationship between preservice EFL teachers' familiarity with educational technologies and their readiness beliefs. Comparing the results, it has been found that participants feel ready in using educational technologies, however, they are not familiar with some educational technology apps stated in the questionnaire. Therefore, it can be concluded that even though they pre-service language teachers feel ready, when it comes to using educational technologies, they may have difficulties. In addition, in order for pre-service teachers to use these technologies, they must have heard of these applications at least once before. To inform them about these technologies, a training covering the common educational technology applications is needed in teacher education programs.

Investigating how confident pre-service EFL teachers feel in using educational technologies during their teaching practice (RQ 3), the researcher has found that even though pre-service teachers felt confident in using educational technologies during their teaching practice, they believe that future in-service training is necessary. This result might be sourced from the reality that technology is changing and developing every day and pre-service teachers are aware of this fact, which is a sign that they are willing to keep up with the changes.

As for the findings concerning what kinds of technological courses pre-service teachers have received, and how these differ from what they need or expected to receive (RQ 4), the

findings revealed that the level of training they received appeared to be highly dependent on the background of the faculty teaching their courses and their field study placement. Additionally, pre-service teachers were less likely to get training on integrating educational applications as part of their curriculum and they were sure that they will need additional training when they start their teaching career.

The findings of the present study concerning the pre-service teachers' confidence in using some technologies in their classes show similarities with previous studies such as Jeffery (2019), who found that 73% of the preservice teachers expressed an optimism about their belief of readiness to teach as they prepared to enter their first classes. According to the present study, preservice teachers claimed they were ready to choose technology to utilize in their classrooms. Additionally, as for having a high degree of technology self-efficacy the results of the present study show similarities with the findings of Caner and Aydın (2021), Kabakçı-Yurdakul (2011), Unal (2013), Keser, Karaoglan-Yılmaz and Yılmaz (2015), İşler and Yıldırım (2018) and Birişçi and Kul (2019).

The study intended to determine if pre-service teachers could or can use educational technology in their teaching practice courses in which pre-service teachers taught English in real classroom in schools. The results indicated that pre-service teachers had a high level of competency beliefs. The findings of the study are consistent with those of Ünal (2013) and Keser, Karaoğlan-Yılmaz, and Yılmaz (2015).

When the pre-service teachers' level of readiness to use technology in their classes and their use of such technologies in actual teaching practices were compared, it is found that pre-service teachers with high readiness beliefs tended to utilize technological tools during their teaching practices. Regarding this finding, it can be concluded that in pre-service language teacher education, it is significant to increase their technological readiness beliefs by training, modelling and encouraging them to use educational technologies.

The study aimed to find out to what extent the senior students of ELT are familiar with current educational technologies commonly used in ELT and if this familiarity matches with their readiness beliefs, showed that pre-service teachers levels of familiarity with educational software and their competency levels were lower than their perceptions of their readiness to utilize technology to teach language. This finding of the present study also shows similarity

with Jeffrey's study (2019). The reason behind such a finding might be related to the lack of sufficient education on how to use such technologies in the classroom.

Similarly, when the findings concerning the familiarity of the pre-service teacher with technology and their level of readiness to use technology in their classes, it can be concluded that pre-service teachers with high readiness beliefs might not necessarily be proficient in utilizing technological tools during their teaching practices. As today's pre-service teachers are millennials, they assume that they are capable of using all kinds of technology, however, integrating educational software to classes requires an effective and detailed training.

Additionally, pre-service teachers consider the technology related courses provided by their faculties and modelling by their professors were not enough to guide them on appropriate technology integration to language teaching. this finding of the present study show similarities with some other studies (Akayoğlu et al., 2020; Altmışdört, 2016; Jeffery, 2019; Uzun, 2016).

All in all, the study showed that there is a close relation between pre-service teachers' readiness beliefs for using educational technology in language education and integrating educational technology in their teaching practices. However, the relation between their readiness beliefs and familiarity with current educational technologies used in language teaching is moderate. Even though the pre-service teachers seem confident in using such technologies in their daily lives, they were not confident enough in effectively choosing, utilizing and evaluating some of the educational technologies.

This link has yet to be formed at a suitable and functioning level, allowing educational authorities to put their plans into action. In other words, despite the fact that the initiatives' components include effective use of information technology in educational programs and pre-service teacher training (MoNE, 2017; ISTE, 2013; UNESCO, 2012; TESOL, 2008), the research findings suggest that such initiatives have failed to achieve their goals to some extent.

Based on the findings of the present study it might be concluded that, while pre-service teachers are satisfied with their level of technology readiness in general, they are dissatisfied with the training provided by their faculty and require additional teacher training, which will eventually increase their level of confidence as a teacher, as well as their students' success and participation.

5.2. Suggestions

It is a fact that both EFL students and teachers benefit greatly from educational technology. Using recent educational technologies in the language classroom fosters constructivist and cooperative learning, as well as social contact among learners, by providing realistic conversation and improving language abilities. Student use of ICT technologies in their daily life is also extremely common. As a result, EFL teachers must include recent educational technologies, as well as educational applications, into their classrooms. As a result, this research looked into how prepared pre-service language instructors are to use these tools and apps, as well as their attitudes on the education offered by their language teaching faculty.

Regarding the findings, even while pre-service teachers are confident in using educational technology in language classrooms, their actual competency level is lower than expected. Furthermore, pre-service language teachers consider their professors' instruction and modeling of proper technology usage to be insufficient. They are also dissatisfied with the options for them to learn about the educational technologies provided by their schools.

Considering the overall findings of the present study it can be suggested that universities especially language teacher education programs at the universities should provide training programs for their students. Additionally, it can also be suggested that the ELT programs and their curriculum should be supplemented with courses on how to use educational technology tools in language instruction for future teachers. Moreover, university instructors especially the ones who are in foreign language teacher education departments should be trained through in-service trainings on how to integrate educational technology into language instruction, which is required for successful modeling. Teacher educators should also be provided with additional opportunity to educate using the educational technologies and a proper technological infrastructure.

In view of the study's goals and limitations, the following are some suggestions for further research. As for participants, the study only included 108 pre-service instructors, however, higher sample sizes should be used in future investigations to get more generalizable results. In addition, this research was carried out with senior pre-service teachers. The further studies on similar issue should include other pre-service language teachers enrolled at lower levels, such as 3rd and 2nd grade to illustrate the whole picture.

In the present study, the data gathering was carried only through quantitative instrument. In further studies a mixed method research approach that combines Quantitative and qualitative data can be used to help future research and illustrate the case in detail. Since adding a Qualitative dimension to the research might provide in-depth information on the factors that influence teachers' decisions.

Lastly, future research might include pre-service training programs on the integration of educational technology into language instruction, as well as assessments of future language teachers' views and skill levels before, during and after training.

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APPENDIX 1: Pre-Service English Language Teachers' Technological Readiness

The purpose of the research is to examine preservice teachers' perceptions and readiness to teach using technology in their classes. Note that there are not wrong or right answers but the degree of your agreement with the statements. Thus, your responses will contribute to the literature on how technology is changing pre-service ELT teacher education. The survey takes about 10 mins to complete. Your involvement is voluntary. There are no known risks in this research. Data will be stored on researchers' laptop and cloud account and used just for academic purposes. Participants' e-mail addresses and other personal information will be kept confidential.

Gizem UZUNDURDU

To agree to participate in the study, please select "yes".

□ Yes

□ No

1) *Please provide the following information for demographic purposes.*

Gender: □ Male □ Female
University: …….

Technological devices owned:
□ Laptop
□ Smartphone
□ Tablet
□ Speaker
□ Printer
□ Gaming Console

Courses attended at university:
□ Basic Information Technologies (I/II)
□ Educational Technologies
□ Educational Technology in ELT
□ Other (Please state.) ……

Courses attended optionally: (Please state) ……

2) *To what extend do you agree with the following statements? Please put a tick under the most suitable option. If you don't know the technologies mentioned, please put a tick under "I am not familiar with the apps or platforms mentioned.*

A) *To what extend do you agree with the following statements? Please put a tick under the most suitable option.*

I can efficiently ……	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**	**I am not familiar with the apps or platforms mentioned.**
use language instruction apps (Rosetta Stone, StudySync, etc.).					
use apps for lesson planning (Google Classroom, Daily Lesson Planner, OnCourse, etc.).					
use student monitoring platforms (GoGurardian, LightSource, etc.).					
use news apps or websites (BBC, The Guardian, CNN, Forbes, Business Inside, etc.).					
use video conferencing platforms (Zoom, Microsoft Teams, Google Meet, Skype, Cisco, etc.).					
provide written feedback to students by using an online editing app.					
use presentation apps (PowerPoint, Prezzi, Google Slides, etc.).					
build and maintain a class webpage.					
use quiz apps (Quizlet, Quizzes, etc.).					
use spreadsheet apps (Excel, Google Sheets, etc.).					
use word processing apps (Microsoft Word, Word Pad, etc.).					
use storage apps (Google Drive, One Drive, DropBox, etc.)					
use assessment apps (Socrative, Plicker, GoSoapBox, Secretive, etc.).					
use study aid apps (Study Island, Grammarly, Soft School, Renaissance, etc.).					
use apps to create surveys (SurveyMonkey, Google Forms, etc.).					
use teaching aid apps (Scholastic, Edpuzzle, Scratch, MobyMax, Kids A-Z, Discovery Education, ReadWorks, Spelling City, etc.).					
use social media apps (Instagram, Twitter, Facebook, SnapChat, etc.).					
use typing apps (Nitro Type, TypingClub, etc.).					
use video platforms (YouTube, Dailymotion, Netflix, TikTok)					
use classroom management apps (ClassDojo, Edmodo, Schoology, Google Classroom, TEAMS, etc.).					
use apps for student teamwork (Padlet, Mindmapping, etc.).					
use apps for student creativity (Storybird, Wordle, Inkspace, Powtoon, etc.).					
use e-mail apps (Gmail, Outlook, etc.).					
use educational gaming apps (Kahoot, Prodigy, ABCya, etc.).					

B) *To what extend do you agree with the following statements? Please put a tick under the most suitable option.*

	Strongly agree	**Agree**	**Disagree**	**Strongly disagree**
I think I can/will be able to select appropriate educational technology apps for use in my classroom.				
I think I can/will be able to assess the effectiveness of educational technology apps for use in my classroom.				
I think I can/will be able to communicate effectively enough with my students during online lessons.				
I think I have/will have classroom management problems during online lessons.				
I think I have/will have problems in sending or uploading the lesson materials for student use.				
I think I can/will be able to accurately assess my students' performance in online classes.				
I feel confident that I have the skills necessary to use the computer for instruction.				
I feel confident that I can successfully teach relevant subject content with appropriate use of technology.				
I feel confident that I can mentor students in appropriate uses of technology.				
I think my school will have necessary technological infrastructure.				
I think I will get enough technical support to solve problems encountered during my classes.				
I think my students will have enough technological tools and knowledge to attend lessons effectively.				
I think I need training on EFL technology use in the classroom.				

C) *This section aims to discover your views on your undergraduate education. To what extend do you agree with the following statements? Please put a tick under the most suitable option*

During my undergraduate education…	Strongly agree	Agree	Disagree	Strongly disagree
I received theoretical undergraduate education that can use the necessary technologies in my EFL courses when I become a teacher.				
I received practical training during my undergraduate education that can use the necessary technologies in my EFL courses when I become a teacher.				
My professors effectivelly modelled the technology usage in EFL classes during my undergraduate education.				
I felt prepared to teach using educational technology in my future classes.				

3) Would you like to be interviewed for further analysis?

□ Yes □ No

If your answer is yes, please state your contact number and e-mail address.

Number:…… E-mail: ……

APPENDIX 2: Ethics Committee Approval

Evrak Tarih ve Sayısı: 31.03.2021-62662

T.C
AKDENİZ ÜNİVERSİTESİ REKTÖRLÜĞÜ
Sosyal ve Beşeri Bilimler Bilimsel Araştırma ve Yayın Etiği Kurulu
KURUL KARARI

TOPLANTI TARİHİ : 29.03.2021
TOPLANTI SAYISI : 05
KARAR SAYISI : 106

Üniversitemiz Eğitim Fakültesi Yabancı Diller Eğitimi Bölümü öğretim üyesi **Doç. Dr. Mustafa CANER**'in danışmanlığını, **Gizem UZUNDURDU**'nun araştırmacılığını üstlendiği, *"İngilizce Öğretmen Adaylarının Uzaktan Eğitim Sürecine Teknolojik Açıdan Hazırbulunuşluk Düzeyleri"* konulu çalışmanın, fikri hukuki ve telif hakları bakımından metot ve ölçeğine ilişkin sorumluluğun başvurucuya ait olmak üzere, proje süresince uygulanmasının etik olarak **uygun olduğuna** oy birliği ile karar verilmiştir. **(2021G098)**

Prof. Dr. Osman ERAVŞAR
Kurul Başkanı

Başkan **Prof. Dr.** **Osman ERAVŞAR**	**Başkan Yrd.** **Prof. Dr.** **Bahattin ÖZDEMİR**	**Üye** **Prof. Dr.** **Hilmi DEMİRKAYA**
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Üye **Prof. Dr.** **Eyyup YARAŞ**		

Bu belge 5070 sayılı Elektronik İmza Kanununun 5. Maddesi gereğince güvenli elektronik imza ile imzalanmıştır.

ÖZGEÇMİŞ

Kişisel Bilgiler

Adı Soyadı : Gizem Uzundurdu

Doğum Yeri ve Tarihi

Eğitim Durumu

Lisans Öğrenimi : Gazi Üniversitesi İngilizce Öğretmenliği Programı

Yüksek Lisans Öğrenimi : Akdeniz Üniversitesi İngiliz Dili Eğitimi Programı

Bildiği Yabancı Diller : İngilizce

İş Deneyimi

Çalıştığı Kurumlar : Kapadokya Üniversitesi (2021-…)
Antalya Bilim Üniversitesi (2019-2020)
Ege Üniversitesi (2018-2019)
Sınav Koleji (2016-2017)

İletişim

E-Posta Adresi

Tarih : 23.02.2022

BİLDİRİM

Hazırladığım tezin/raporun tamamen kendi çalışmam olduğunu ve her alıntıya kaynak gösterdiğimi taahhüt eder, tezimin/raporumun kâğıt ve elektronik kopyalarının Akdeniz Üniversitesi Eğitim Bilimleri Enstitüsü arşivlerinde aşağıda belirttiğim koşullarda saklanmasına izin verdiğimi onaylarım:

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23/02/2022

Gizem Uzundurdu

TECHNOLOGICAL READINESS OF PRE-SERVICE ENGLISH LANGUAGE TEACHERS

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