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DEPARTMENT OF FOREIGN LANGUAGE EDUCATION
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DOCTORAL DISSERTATION

A STUDY ON PREP SCHOOL EFL INSTRUCTORS' TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE (TPACK) AND SELF-EFFICACY

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ETİK İLKE VE KURALLARA UYGUNLUK BEYANNAMESİ

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ÖZET

İNGİLİZCE HAZIRLIK ÖĞRETİM ELEMANLARININ TEKNOLOJİK PEDAGOJİK ALAN BİLGİSİ (TPAB) VE ÖZ-YETERLİKLERİ ÜZERİNE BİR ÇALIŞMA

Bilgi ve iletişim teknolojisi (BİT), etkileşimli ve dinamik öğrenme deneyimlerini mümkün kılan çeşitli materyaller ve araçlar sağlayarak İngilizce dil eğitiminde önemli bir rol oynamaktadır. BİT kullanımı, öğrenci iş birliğini teşvik etmekte ve etkili dil edinimi için kritik olan kişiselleştirilmiş öğrenme yollarına izin vermektedir. Teknolojik Pedagojik Alan Bilgisini (TPAB) eğitim ortamlarına entegre etmek, öğretmenlerin teknolojiyle etkili bir şekilde eğitim vermelerini ve dolayısıyla öğrenci katılımını ve akademik başarıyı artırmalarını sağladığı için kritik önem taşımaktadır. TPAB farkındalığı, eğitmenlerin sınıf dinamiklerini etkileyen hızlı teknolojik değişimlere uyum sağlamalarına yardımcı olarak etkinliğin artmasına neden olmaktadır. Dil öğretiminde teknolojiyi kullanmak öğrenme deneyimlerini iyileştirebilirken, erişim eşitsizlikleri, dikkat dağıtıcı unsurlar ve teknolojiye aşırı bağımlılık gibi başarılı dil edinimini engelleyebilecek olası olumsuzlukları da tanımak hayati önem taşımaktadır. Çok yönlü bir eğitim sağlamak için eğitmenler, öğrencilerin eleştirel düşünme ve iletişim yeteneklerinin yanı sıra teknik yeterliliklerinin geliştirilmesini vurgulamalıdır. Eğitimciler, TPACK ilkelerini öğretim uygulamalarına dahil ederek, teknolojiyi etkin bir şekilde kullanmak ve teknik yeterliliğin ötesinde temel becerileri geliştirmek arasında bir denge kurabilmelidir. Bu yaklaşım, öğrencileri yalnızca giderek dijitalleşen bir dünyada başarılı olmak için gerekli araçlarla donatmakla kalmaz, aynı zamanda bilişsel ve kişilerarası yeteneklerini de geliştirir.

Bu çalışma, Türkiye'nin batısında yer alan iki devlet kurumunun Yabancı Dil Okulu'nda görev yapan İngilizce öğretmenlerinin öz-yeterlik inançları ile TPACK boyutları arasındaki ilişkiyi incelemeyi amaçlamıştır. Nicel verilerin toplanmasını ve ardından ayrıntılı bir nitel analizi içeren açıklayıcı ardışık karma yöntem yaklaşımı kullanılmıştır. Araştırmada nicel aşamada EFL-TPACK ölçeği ve ELTEI ölçeği kullanılarak iki devlet üniversitesinde görev yapan Türk İngilizce öğretim elemanlarından veri toplanmıştır. Araştırmanın amacı, eğitimcilerin öz-yeterlik inançları ile TPACK alanları arasındaki ilişkiyi değerlendirmektir. İkincil nitel adım, Türk İngilizce hazırlık okulu öğretim elemanlarının sınıflarında TPACK'i uygularken karşılaştıkları zorlukları incelemeyi amaçlamaktadır.

Bu çalışmadan elde edilen nicel veriler, çalışma alanındaki 86 EFL hazırlık okulu öğretmeninin orta ila yüksek öz-yeterliklere işaret eden yüksek TPACK puanlarına sahip olduğunu ortaya koymuştur. Çalışma ayrıca TPACK ile öz-yeterlik alanları arasında pozitif bir ilişki olduğunu ortaya koymuştur. Bununla birlikte, TK ve PCK'da önemli bir cinsiyet farkı vardır ve erkekler genellikle kadınları geride bırakmaktadır. C1 ve C2 seviyelerindeki öğretmenler arasında, Teknolojik Bilgi (TK) hariç tüm TPACK boyutlarında algılanan dil yeterliliğinde önemli farklılıklar bulunmuştur. Nitel veriler ayrıca, düşük TPACK'ye sahip EFL hazırlık okulu öğretmenlerinin, kurumsal ve bölüm bağlamı, bilgi ve beceri eksiklikleri, teknoloji ve kaynaklar üzerindeki kısıtlamalar ve öğretmen ve öğrenci temelli kaygılar nedeniyle TPACK becerilerini uygulamada engellerle karşılaştıklarını göstermiştir. Yüksek düzeyde bir TPACK elde etmek için öğretmenler teknolojik araçlar, işbirlikçi platformlar ve pedagojik yaklaşımlar dahil olmak üzere çeşitli araçlar kullanmışlardır.

Sonuç olarak, çalışma, TPAB bileşenleri ile sınıftaki öz-yeterliliği arasında bir bağlantı olduğunu ortaya koymaktadır. Çalışma sonuçları Türkiye'deki politika yapıcılar, öğretmen eğitmenleri ve kurumsal liderler için yabancı dil sınıf yönetimi, konu bilgisi, teknoloji kullanımı, değerlendirme ve dil düzeltme gibi yönleri hakkında içgörüler sağlamaktadır. Ayrıca öğretmenlere TPAB bilgilerini ve öz-yeterliliklerini geliştirmek için mesleki gelişim fırsatları sağlamanın önemini vurgulamaktadır. Bu araştırma, Türkiye'de öz-yeterlik, TPAB ve etkili İngilizce öğretimi arasındaki karmaşık ilişkiye dair değerli bilgiler sunmaktadır.

Anahtar Kelimeler: TPAB, öz-yeterlik, BIT.

ABSTRACT

A STUDY ON PREP SCHOOL EFL INSTRUCTORS' TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE (TPACK) AND SELF-EFFICACY

Information and communication technology (ICT) plays a vital role in English language education by providing various materials and tools that enable interactive and dynamic learning experiences. ICT encourages student collaboration and allows personalized learning paths critical for effective language acquisition. Integrating Technological Pedagogical Content Knowledge into educational environments is crucial because it enables teachers to effectively educate students with technology, enhancing student engagement and academic achievement. Awareness of TPACK helps instructors adapt to the rapid technological changes that impact classroom dynamics, resulting in increased effectiveness. While using technology in language instruction can improve learning experiences, it is also vital to recognize possible downsides, such as access inequities, distractions, and overreliance on technology, which can impede successful language acquisition. To provide a well-rounded education, instructors should stress the development of students' critical thinking, communication abilities, and technical competency. By incorporating TPACK principles into their teaching practices, educators can strike a balance between effectively utilizing technology and fostering essential skills beyond technical proficiency. This approach equips students with the necessary tools to thrive in an increasingly digital world and enhances their cognitive and interpersonal capabilities. This study investigates the relationship between self-efficacy beliefs and TPACK dimensions among EFL instructors at the Foreign Language School of two state institutions in western Türkiye. An explanatory sequential mixed-methods approach was utilized, involving the initial quantitative data collection followed by detailed qualitative interviews. This research used the EFL-TPACK and ELTEI scales during the quantitative phase to gather data from Turkish EFL instructors at two public universities. The aim was to assess the correlation between self-efficacy beliefs and educators' TPACK domains. The secondary qualitative step sought to examine the challenges faced by Turkish EFL preparatory school instructors in implementing TPACK in their classrooms. The quantitative data from this study revealed that 86 EFL prep school teachers in the study area had high TPACK scores, indicating moderate to high self-efficacy. The study also revealed a positive correlation between the TPACK and self-efficacy domains. However, there

was a significant gender gap in TK and PCK, with males generally surpassing females. There were substantial disparities in perceived language proficiency between teachers at the C1 and C2 levels across all TPACK dimensions except for Technological Knowledge (TK). The qualitative data also found that EFL prep school teachers with low TPACK faced barriers to applying TPACK skills due to institutional and departmental contexts, knowledge and skill deficiencies, constraints on technology and resources, and teacher- and student-based concerns. To achieve a high level of TPACK, teachers use various tools, including technological tools, collaborative platforms, and pedagogical approaches. To conclude, this study revealed a connection between the EFL-TPACK components and ELT self-efficacy in the classroom. It provides insights for policymakers, teacher trainers, and institutional leaders in Türkiye on aspects of EFL such as classroom management, subject knowledge, technology use, assessment, and language correction. It underscores the importance of providing teachers with professional development opportunities to improve their EFL-TPACK knowledge and self-efficacy. This research provides valuable insights into the complex relationship between self-efficacy, TPACK, and effective English language teaching in Türkiye.

Keywords: TPACK, self-efficacy, ICT.

CHAPTER I

INTRODUCTION

1.1. Statement of the Problem

Information and communication technology (ICT) is increasingly accepted in educational contexts, providing exciting opportunities for educators who play an important part in the instructional process. Educators can use online resources to enhance their teaching methods and engage students in interactive learning experiences. By incorporating technology into their lessons, educators can better prepare students for the digital world that they will enter upon graduation. Both students and instructors are required to be computer-literate while also understanding the importance of ICT. Furthermore, the COVID-19 pandemic, along with the swift progress of technology, has significantly accelerated the use of distance education (Chou et al., 2020). Moreover, it has become easier for teachers and students to use technology in the classroom (İşman, 2002). This is because it has allowed students to receive information quickly, create individual learning environments, communicate with all parties involved in the teaching process, and create collaborative learning environments. The reasons why instructors want to achieve this by integrating technology into the classroom have been thoroughly pondered. Research indicates that instructors utilize technology to enhance the motivation and engagement of students (Heitink et al., 2016; Tseng & Teng, 2015) by offering pedagogical content and supplies (Golonka et al., 2014).

Regarding information and communication technology (ICT), research indicated that English as a Foreign Language (EFL) instructors derived some advantages, such as the utilization of hypermedia (including text labeling, photos, and online support) and verbal chatting (Chapelle, 2003; Lai & Zhao, 2006). Smartphones have also been incorporated into the classroom setting (Tai, 2015; Tseng & Teng, 2015). These usages can only serve as appealing exercises to encourage pupils if they are based on a theoretical foundation. To achieve this, Mishra, and Koehler (2006) devised a pertinent framework called Technological Pedagogical Content Knowledge (TPACK), which was built off Shulman's idea of Pedagogical Content Knowledge (Shulman, 1986). This refers to the essential information instructors must possess to effectively integrate technology into their teaching across all subject areas. TPACK consists of several sub-components. Technological knowledge (TK) refers to understanding and proficiency in utilizing technology, as defined by Mishra and Koehler (2006). The second component of the framework delineates technical and pedagogical knowledge (TPK), which pertains to the systematic approach instructors employ to select the

most productive tools for instructional purposes. Technological content-area knowledge (TCK), as defined by Mishra and Koehler (2006), refers to the skill of selecting the most suitable technical instrument for a particular subject area. Finally, Mishra and Koehler (2006) suggested that the most efficient teacher knowledge encompasses all three domains: technological, pedagogical, and content-area knowledge, also known as TPACK, which is comparable to Shulman's previous research on pedagogical content-area knowledge.

The notion of Technological Pedagogical Content Knowledge (TPACK) has been discussed extensively at numerous conferences and assemblies. According to the International Society for Technology in Education, there are standards for educators. Crompton (2023) compiled seven categories of standards and delved into the ISTE Standards for Educators, which offer a structured approach for teachers to seamlessly incorporate technology into their classrooms in a manner that empowers students. These standards are crafted to assist teachers in enhancing their expertise, fostering collaboration with peers, reimagining conventional teaching methodologies, and equipping students to become autonomous learners. Accordingly, one of the skills instructors should possess is the ability to utilize various technologies to assess their teaching, which offers advantages in today's educational landscape. The evaluation phase of language instruction has gained benefits from the convenience of technology, such as automated grading of multiple-choice examinations and providing feedback on written content using artificial intelligence (AI). Consequently, it can be confidently said that instructors who possess higher levels of belief in their technological proficiency are more likely to effectively meet the current demands of incorporating information and communication technology (ICT) into their teaching practices in the relevant subject area (Anders & Meninger, 2007; Sang et al., 2010). Similarly, the study by Bektaş-Çetinkaya and Oruç (2011) showed that technical equipment significantly influenced learners' motivation levels in the classroom. Moreover, it is assumed that teachers with proficient ICT abilities will be more effective in their profession. Researchers study how individuals' self-efficacy beliefs shape their perspectives on technology. It is critical to define the concept "self-efficacy." Self-efficacy is confidence in one's capacity to perform at the expected level. Our convictions shape our worldview, influence how we understand events, regulate emotions, and draw conclusions. According to Bandura's proposal in 1994, these factors act as a guiding force, orienting our thoughts, feelings, and actions towards a particular goal or objective. Individuals' self-perception of their competence, as stated by Pajares (1992), significantly impacts their actions. These concepts offer a deeper understanding of how individuals utilize their abilities and expertise. Specifically, self-efficacy beliefs considerably impact the speed

at which individuals acquire skills and knowledge (Pajares, 1992). Henson (2002) suggests that an educator's teaching style is impacted by their confidence level in their ability to teach, known as teacher self-efficacy. This behavior encompasses how teachers structure their instructional sessions and present materials. Henson (2002) posited a correlation between teachers' and students' self-efficacies. Owing to the instructor's strong self-efficacy, pupils have increased confidence and motivation to engage in their studies.

1.2. Significance of the Problem

Technology has become indispensable in education in the present era of digital advancements. Hence, instructors must possess distinct technological integration abilities to demonstrate competence. Proficiency in integrating technology into instructional approaches necessitates comprehension of several software programs and devices. In today's technologically advanced society, it is imperative for educators to possess a thorough understanding of technology in order to optimize the learning experience for their pupils, even at an immature age. ICT is becoming more prevalent in the field of education (Godwin-Jones, 2016). Nevertheless, Andrei (2017) highlights that language instructors must be informed about the possibilities of technology, since just a minority of teachers now contemplate integrating it into their instructional strategies. The utilization of ICT by English as a foreign-language instructor, beyond material presentation and motivation enhancement, remains uncertain (Tai, 2015). In addition, it is widely acknowledged that technology is considered beneficial when its characteristics and capabilities align with the content and relevant ideas of education and instruction (Colpaert, 2006; Golonka et al., 2014; Mishra & Koehler, 2006, Valanides & Angeli, 2005). The TPACK framework, developed by Mishra and Koehler in 2006, offers a conceptual model for incorporating technology into the curriculum. On the other hand, Bandura's theory of teachers' self-efficacy beliefs, proposed in 1997, provides a paradigm for effectively integrating technology into teaching practices. Regarding this matter, there is little knowledge about the use of Technological Pedagogical Content Knowledge (TPACK) in the context of foreign language instruction. Additionally, it is important to research if English as a Foreign Language (EFL) teachers possess sufficient self-efficacy to effectively incorporate technology into their teaching. The most relevant studies in the field of literature review are those that examine the patterns of integrating technology in TPACK (Aktürk & Öztürk, 2019), the improvement of TPACK among pre-service EFL teachers (Sarıçoban et al., 2019), the relationship between Turkish EFL teachers' technological pedagogical content knowledge skills and their attitudes toward technology (Ersan, 2016), and the TPACK levels of Turkish EFL pre-service teachers. Additionally, Abbitt's 2011

investigation on the relationship between self-efficacy beliefs about TPACK among pre-service teachers was also significant. Nevertheless, there has been limited research on the views of EFL instructors on TPACK and self-efficacy in Turkish prep schools. This study enhances literature. Due to their educational nature, the concepts of TPACK and self-efficacy have been extensively examined in several educational disciplines, such as mathematics and science instruction. Regarding EFL instruction, research appears to concentrate exclusively on the TPACK patterns or beliefs of EFL teachers. In addition, it is evident that the majority focused on pre-service EFL instructors because of their readily available accessibility. A limited number of research have examined the relationship between self-efficacy and TPACK, with one such study focusing on pre-service teachers from various disciplines (Abbitt, 2011). This study will be significant because it will provide results on a neglected demographic, specifically Turkish prep school EFL teachers. Conversely, the COVID-19 pandemic has become a fundamental aspect of other educational disciplines, including English Language Teaching (ELT). Although TPACK and self-efficacy have been extensively examined in the field of education (Mourlam et al., 2022), it is evident that a significant contrast has formed between the pre- and post-outbreak eras (Chen & Hsu, 2021). Chen and Hsu (2021) conducted research that analyzed data from two separate time periods, 2017 and 2020. The study found significant variation in the degree of technology used by instructors, learners, pedagogy, and academic discipline content between the two years. Further research focused on the utilization of teachers' prior Technological Pedagogical Content Knowledge (TPACK) during the pandemic, specifically examining how they adapted and adjusted their knowledge in response to unexpected circumstances. Confronted with abrupt and unforeseen circumstances, the instructors in the research became cognizant that their levels of Technological Pedagogical Content Knowledge (TPACK) had decreased below the pre-outbreak average. These two studies provide additional evidence supporting the need for a comprehensive investigation in the field of English as a Foreign Language (EFL) in-service teachers, specifically focusing on their Technological Pedagogical Content Knowledge (TPACK) and self-efficacy levels. Hence, this study satisfies the necessary needs of the sector.

This study aimed to examine the correlation between self-efficacy beliefs and TPACK dimensions among prep school EFL instructors employed at the School of Foreign Languages at two state universities in the western part of Türkiye. An explanatory sequential mixed-methods design was employed, which entailed initially gathering quantitative data and subsequently elucidating the quantitative findings with in-depth qualitative data. The study employed the EFL-TPACK questionnaire and the ELTEI scale in the quantitative phase to

collect data from Turkish EFL instructors at two state institutions. The objective was to evaluate the relationship between self-efficacy beliefs and teachers' TPACK domains. The second qualitative phase complemented the quantitative data. This exploratory follow-up aims to investigate the obstacles that Turkish EFL prep school teachers face in using TPACK in their classes.

1.3. Research Questions

The research questions are as follows:

1. What are the TPACK levels of Turkish EFL prep school teachers at state universities related to components of their TPACK?
2. What are the self-efficacy levels of Turkish EFL prep school teachers at state universities?
3. What is the relationship between self-efficacy beliefs of Turkish EFL prep school teachers and their knowledge domains of TPACK?
4. Do Turkish EFL prep school teachers' TPACK skills differ significantly according to gender and perceived language proficiency?
5. Does Turkish EFL prep school teachers' self-efficacy differ significantly according to gender and perceived language proficiency?
6. What are Turkish EFL prep school teachers' experiences while applying TPACK in state universities?

1.4. Limitations

It is important to acknowledge the limitations of this study. First, it is worth noting that the study was carried out within a specific and limited setting, namely, two schools affiliated with state universities. As such, the results obtained may not necessarily provide a comprehensive overview of the subject matter and should therefore be viewed from a narrower perspective. Additionally, it is worth considering the size of the sample used in this study, which consisted of 86 EFL prep school teachers. Although the findings are informative, it is important to bear in mind that the sample size was relatively small. Future research with a larger sample size would undoubtedly lead to more robust and conclusive outcomes.

1.5. Assumptions

The following are the possible assumptions made in the research:

1) The EFL prep school teachers voluntarily participate in the study.
2) The EFL prep school teachers participate in quantitative and qualitative phase of the study, answering honestly and openly the questions in the questionnaires and interview.

3) 15 EFL prep school teachers agree to take part in the interview.
4) The individual interviews yield significant perspectives into EFL prep school teachers' teaching style regarding TPACK and self-efficacy.
5) It is acknowledged that not all participants may have a direct supervisor who checks their lessons due to variations in school structures and practices. However, it is assumed that all participants have someone in the leadership role who assigns their duties and has some level of oversight over their work.

1.6. Definition of Terms

TPACK is a theoretical framework for understanding teacher knowledge required for effective technology integration (Mishra & Koehler, 2006).

Self-efficacy is defined as the judgment that the subject makes about their own ability to organize and execute necessary actions to achieve different objectives (Bandura, 1977).

ELT is acronym for "English Language Teaching" referring to "the teaching and learning of the English language, either as a second or foreign language, in a variety of settings and contexts throughout the world." (Richards and Schmidt, 2013, p.1).

EFL is acronym for English as a Foreign Language (EFL) referring to "the teaching and learning of English in a non-English speaking environment where English is not used as the primary means of communication." (Richards & Schmidt, 2013, p.198).

A supervisor is described as an individual who monitors activities within a teacher's classroom with the objective of enhancing instructional quality (Gebhard, 1990). In the questionnaire it refers to the person who is responsible for assigning the workload and overseeing the performance of the participants in their teaching duties. This may include the principal or any other relevant authority figure in the school.

CHAPTER II

REVIEW OF LITERATURE

This part encompasses literature findings on English language teaching in higher education, self-efficacy, and technological pedagogical content knowledge. Teaching English in higher education is a complex and evolving field that demands educators to have a strong sense of self-efficacy and technological pedagogical content knowledge. This section examines key findings from the literature that illuminate the intersection of these three essential aspects of teaching.

2.1. Teaching English as a Foreign Language in Turkish Higher Education

Türkiye has prioritized learning English for an extended period. Discussions about the improvement of English teaching and learning are ongoing at all levels of education, from elementary to higher education (Kırkgöz, 2017). This chapter includes a wide discussion. A study conducted by TEPAV and the British Council on English language education in Turkish universities is noteworthy. In November 2013, Özen et al. (2013) conducted an extensive research study on the teaching of English in public schools in Türkiye on sponsorship of the British Council and TEPAV. TEPAV and the British Council published their findings in the Turkey National Needs Assessment (TNNA) report in 2013. The report explored the economic significance of English in Türkiye and conducted in-depth research on English language instruction in the classroom. The report's findings suggest that Türkiye's English language teaching (ELT) was not meeting expectations, mostly due to insufficient instruction in primary and secondary schools. The research also cautioned that this lack of proficiency in English has the potential to jeopardize Türkiye's economic progress. Following the publication of TNNA research, a proposal was made to conduct a similar study on English Language Teaching (ELT) in Turkish institutions. The main purpose of the baseline research was to discover exemplary instances of excellent practices in a particular institution that might be replicated in other locations with the aim of changing the system. The researchers investigated the circumstances surrounding the provision of pre- and in-session English courses in public and foundation universities in Türkiye, with a particular emphasis on identifying opportunities for improvement in these settings.

To accomplish its goals, the baseline study analyzed English education at five interconnected levels: the global context (globalization), the national context (language used for instruction), the institutional context (teaching of language), the departmental context (teaching of English language), and the departmental context (English used as a language for instruction). The report's conclusions and suggestions were derived from existing instances

and advancements that were already being implemented at Turkish colleges. Going forward, this section will maintain its focus on these levels. Prior to commencing, it would be beneficial to analyze the field of English Language Teaching (ELT) in Türkiye.

2.1.1. Language Policies regarding the English Language in Türkiye

The process of incorporating the English language into the Turkish school system started in the 1950s and continued until the late 1970s (Doğançay-Aktuna, 1998). In 1955, the first Anatolian high school was established, specifically at the secondary education level. Graduates from private and Anatolian high schools achieved a superior level of English proficiency because of prolonged exposure to English compared to pupils in other state institutions. Turkish secondary and high schools, which used Turkish as the medium of instruction, made English compulsory. However, there were differences in the quality of teaching, the level of intensity and amount of English language instruction, the range of materials used, and the credentials of teachers (Kırkgöz, 2014). The influence of the English language experienced a second phase of growth during the mid-1980s. Subsequently, the use of the English language facilitated Türkiye's surge in globalization influences (Friedman, 1994; Robins, 1996). Kırkgöz (2007) stated that before 1997, the Turkish education system consisted of a five-year primary education, followed by a three-year secondary education and a following three-year high school phase, which aimed to prepare students for higher education. Like many other nations, Türkiye classified schools into two categories: public and private. Anatolian high schools have a distinct standing among state secondary schools in comparison to other state institutions. Enrollment in Anatolian high schools and private schools was contingent upon the results of a centralized examination. These schools had a four-year educational program. The first year mainly emphasized English instruction, while the following years offered disciplines such as mathematics and science taught in English. Across 1997, the Turkish Ministry of National Education (MNE) partnered with the Turkish Higher Education Council to enact substantial modifications to Türkiye's English language policy, aiming to revamp English Language Teaching (ELT) methods across the nation. The Ministry of Education Development initiated a significant curriculum innovation initiative in English Language Teaching (ELT) to enhance English language instruction in Turkish educational institutions. The Ministry of Education Development shifted English instruction from secondary schools to the fourth grade in primary education to comply with the European Union's standards for foreign language education and promote the development of persons proficient in English as a second language. This transition took place after 1997. An essential

element of this reform entailed amalgamating primary and secondary education into a unified educational trajectory, so elongating the period of primary school from 5 to 8 years. Another notable consequence of this reform was the implementation of English language education for children in Grade 4 and Grade 5. The objective of this policy change was to extend the duration of English language exposure for kids by transferring English education from secondary schools to elementary schools. In addition, it established the basis for using a Communicative Language Teaching (CLT) methodology in English language teaching while also including younger pupils in the educational process (Kırkgöz, 2007). Kocaoluk and Kocaoluk (2001) categorized the objectives of the CLT framework as follows: heighten students' awareness of a foreign language, foster a positive attitude towards acquiring the English language, enhance students' motivation and eagerness to learn English, establish classroom environments focused on gamified activities to make English learning enjoyable, incorporate dialogues and meaningful, contextually-based learning exercises, and aid students in developing effective learning strategies. However, this approach failed to produce the intended results. In his study, Kırkgöz (2007) found that instructors were unable to effectively apply communicative language instruction due to their reliance on traditional teaching approaches during classroom activities. Commencing the study of English at an immature age yielded favorable outcomes in children's English proficiency. However, the curriculum exhibited unfavorable characteristics, including complex subject matter for higher grades, inadequate textbooks, insufficient instructional time per grade, overcrowded classrooms, and a scarcity of resources in numerous schools.

Türkiye's aspirations to join the EU have prompted advancements in language policy, resulting in varying degrees of policy modifications. In 2007, a group of Turkish curriculum specialists embarked on the task of revamping the curriculum for teaching English as a foreign language to elementary school students (MEB 2007). According to Sönmez and Köksal (2022), this curriculum modification followed worldwide educational patterns by integrating Western-based methods, prioritizing the communicative aspect of language instruction, and implementing a substantial pedagogical change in classrooms. The 2005 curriculum allowed students to learn subjects such as geography, music, and sports in English using a teaching method called the "constructivist approach." This approach emphasized active learning, tasks, and the application of the "multiple intelligences theory." The curriculum also incorporated "content and language integrated learning." Furthermore, it introduced performance-based assessment to update the evaluation system, as recommended by the EU (Kırkgöz, 2007). The 2005 teaching program emphasized the need to adopt a constructivist teaching style and

focused on enhancing the communicative part of language learning. The objective of this program was to synchronize Türkiye's English Language Teaching (ELT) curriculum with the language instruction benchmarks established by the European Union (EU). In 2012, the educational system underwent a change where the former model of 8 years of elementary school followed by 4 years of secondary education was replaced with a new model called "4+4+4." Consequently, the teaching technique for the English language was modified to align with this new paradigm. The commencement age for English education has been reduced from grade 4 to grade 2, and English sessions now have an extended duration with revised materials. In order to conform to the new paradigm, a spiral curriculum, grounded in Bruner's (1974) cognitive theory, was introduced to strengthen prior knowledge and foster communication. The new program emphasizes the utilization of everyday language, the recognition of individual and cultural differences (Çelik & Erbay, 2013), and the incorporation of family involvement in language acquisition (Enever, 2011).

2.1.2. English education at the tertiary level in Türkiye

The execution of instruction in English (EMI) in tertiary education in Türkiye has occurred gradually. In 1956, the Middle Eastern Technical University (METU) became the first state-owned EMI university to be created. In subsequent decades, there was a growing demand for EMI education. The enactment of the Higher Education Law in 1981 enabled private colleges to provide EMI programs. Bilkent University, the inaugural privately funded institution for higher education in Türkiye, was established in 1983 (Kırkgöz, 2007). English is a mandatory subject at Turkish-medium institutions. Nevertheless, this course prioritizes the development of overall English language skills rather than specific subject expertise. Previously, students had the option to pursue French or German as a foreign language alongside English. Nevertheless, the growing prevalence of EMI has resulted in a decrease in the enrollment of students pursuing these languages. Consequently, French and German have been eliminated from the academic program at the majority of universities, leaving English as the sole mandatory foreign language.

Two alternatives are offered in university departments: Turkish Medium Instruction (TMI) and English Medium Instruction (EMI). Alternatively, some departments follow a blended curriculum, providing courses in both English and Turkish. The implementation of EMI (English as a Medium of Instruction) in university classrooms in Türkiye has sparked much debate and disagreement. According to Doğançay-Aktuna and Kızıltepe (2005), all Turkish-medium university programs now include mandatory preparatory courses for foreign languages. In the third semester of a four-year undergraduate program, a compulsory module

called "Yabancı Dilde Okuma, Konuşma" or "Reading and Speaking in a Foreign Language" was introduced. Following that, in the fourth, fifth, and sixth semesters, other compulsory courses, specifically "Mesleki Yabancı Dil I and II" or "Foreign Language for Specific Purposes," and "İş Hayatı İçin Yabancı Dil" or "Foreign Language for Business," were incorporated. The main goal of the "Mesleki Yabancı Dil" courses is to acquaint students with the specialist vocabulary relevant to their specific areas and enhance their ability to interact with relevant literature. Conversely, "İş Hayatı İçin Yabancı Dil" seeks to provide pupils with the necessary abilities in both spoken and written communication to engage in commercial transactions with international persons and companies. The British Council and TEPAV assessed Turkish higher education in 2015 and found that, except for a few cases, English as a Medium of Instruction (EMI) and instruction in a combination of languages have not proven effective in their current state, resulting in low student competence. During the early 1990s, Türkiye possessed just four EMI universities; nevertheless, in recent times, this figure has seen a substantial augmentation. In 2013, Arik and Arik (2014) reported that 20 percent of Turkish university programs used English as their primary language for teaching. The Turkish government's efforts to integrate Turkish higher education with that of European Union nations are primarily responsible for the significant proportion of English language usage in this country, which falls within the Expanding Circle. Furthermore, studies indicate that the incorporation of English into university curricula varies among different academic subjects, with certain disciplines exhibiting a greater emphasis on it than others. As an example, 40 percent of psychology programs provided education in the English language (Arik & Arik, 2018).

Although these courses are mandatory, it is a fact that Turkish students have a strong inclination to study English at the university level (Alptekin & Tatar, 2011). Alpteking and Tatar highlighted the socio-psychological aspect of this picture, building on Kırkgöz's research from 2005. According to her assertion, a sizable portion of Turkish students display a strong inclination toward obtaining their academic qualifications from Turkish colleges that use English as the medium of instruction. A range of factors that promote integration and practicality drive this preference. Nevertheless, Kırkgöz argued that pupils also experience a degree of alienation from their own society due to being educated in English. Sayarı (2007) examines whether mandating English instruction for university students as part of their tertiary education positively influences their attitudes toward Western cultures overall, with a specific focus on English-speaking cultures. As the participants' English proficiency improves, they place greater importance on the role of acculturation in language acquisition. However, the

findings do not suggest a significant change in their overall perspective. As predicted by Doğançay-Aktuna and Kızıltepe (2005), the policy in 2005 did not specify which foreign language should be taught, but English emerged as the chosen language due to its prominence in Türkiye, the lack of qualified teachers for other languages, the significance of English in intercultural communication, and the current stance of the Ministry of Education.

According to the Council of Higher Education (2024), Türkiye now possesses 208 universities, consisting of 129 public and 79 private institutions. The rise of globalization in higher education has resulted in the English language gaining more importance (Altbach & Knight, 2007). Arik (2020) noted that the Council of Higher Education centralized and supervised higher education in Türkiye, similar to basic and secondary education. The tuition prices at public colleges are fairly affordable, usually ranging from a few hundred US dollars each year. The Turkish government's tendency to conform to European Union standards has led to a policy favoring English as the primary language of instruction in tertiary education. This policy grants university departments the freedom to decide whether to use English or Turkish as the language of instruction (Kırkgöz, 2009).

2.1.3. Teaching English in Preparatory Schools

Despite the global rise in English Medium Instruction (EMI) programs, finding a comprehensive solution for students who struggle to manage their academic schoolwork alongside the requirements of a foreign language remains a challenging task. This difficulty is present not only in English-speaking nations but also in locations where English is not the primary tongue, as evidenced by the available research (Jenkins, 2014). In educational settings where English is the predominant or official language, non-native speakers occasionally require language assistance in Anglophone EMI environments. Additionally, the adjunct model of English as a Medium of Instruction (EMI) meets the language requirements of international students by coordinating both academic and language courses (Jenkins, 2014).

Balcı (2023) provided the most comprehensive analysis of the state of preparatory schools in Türkiye. Prior to enrollment in academic programs, prospective students are required to fulfill specified language competency standards as per the criteria outlined in the Common European Framework of Reference for Languages (CEFR). Those who don't meet these requirements must engage in a mandatory one-year English preparation program. The two-semester preparation program aims to improve learners' overall English proficiency. Its main objective is to provide learners with the necessary abilities to understand and communicate effectively in the target language, specifically in their chosen academic disciplines. Preparatory schools usually organize general English programs by placing

students from different fields of study into classrooms according to their degree of ability. These programs cover both the capacity for comprehension and the capacity for articulation of language, and they equip pupils for the academic lecture setting they will face in the future. Having extensively discussed the current situation and characteristics of English in Türkiye across many contexts, it is now appropriate to shift our attention to the specific aspects of instruction and teaching in preparatory departments within universities. The report of the British Council and TEPAV (West et al., 2015) should be further expanded upon in this section. Subsequently, a number of noteworthy research studies conducted at preparatory schools will be discussed. The researchers investigated five levels of contextual analysis in English: international context (globalization), national context (medium of instruction), institutional context (language teaching), departmental context (English language teaching), and departmental context (English as medium of instruction). Within the framework of these five levels, the study identified some difficulties and emergent scenarios and then proposed some remedies. Consequently, Türkiye has expanded both the quantity and scale of its universities in recent years; however, it has also encountered challenges pertaining to the standard of education. Although several Turkish colleges have achieved commendable ranks on a worldwide scale, Türkiye's URAP rankings indicate that there are still 100 universities that do not feature among the top 2,000. The deficiency in English language skills significantly impacts the caliber of tertiary education in Türkiye. Researchers have proposed the creation and funding of a project to enhance the quality of universities in Türkiye. The project's main objective is to prioritize the identification and assistance of research institutions that exhibit exceptional quality. Additionally, the project aims to improve the teaching, research, and resources of universities currently not ranked among the top 1,000 in the URAP rankings. The initiative should prioritize the assessment of English language competency among students and academic staff (West et al., 2015).

Concerning the national background, the research observed that Türkiye has a lengthy tradition of providing university education in both Turkish and English languages, as well as a more contemporary approach of combining both languages in instruction. Nevertheless, the existing English language skills of both academic staff and students were impeding the effectiveness of learning in English as a Medium of Instruction (EMI) and Technology-Enhanced Medium of Instruction (T-EMI) programs. The implementation of mixed-medium T-EMI instruction has shown to be mainly unproductive, as both staff and students tend to avoid utilizing the English language (West et al., 2015). A suggestion was made to allocate additional attention, prestige, and money to TMI initiatives. Although complete elimination of

EMI programs is not recommended, it has been proposed to develop parallel TMI programs, allowing students to participate and be evaluated in either one or both languages. There should be no approval for any new T-EMI projects that combine several mediums, and the existing T-EMI programs should be gradually discontinued without delay.

Within the institutional framework, it was discovered that the existing distribution and curriculum of English language instruction at Turkish institutions did not adequately align with academic programs or internationalization efforts. Preparatory school lessons proved to be ineffective in enhancing pupils' English proficiency levels and enthusiasm. The research from 2015 recommended implementing changes in three specific areas.

a) Eligibility and standards: Preparatory sessions should be optional and exclusively offered to students who are receiving instruction in English medium. To ensure the maintenance of standards, it is necessary to elevate the admission and departure criteria and evaluate them through reliable tests. Students who fail to achieve these criteria should be directed to Turkish medium instruction (TMI) programs or institutions.

b) Curriculum: The curriculum should transition from English for General Purposes (EGP) to English for General Academic Purposes (EGAP) and must be customized to address the particular academic requirements of students within their various disciplines. A final-year undergraduate optional course in English for Occupational Purposes (EOP) should be offered to students who are actively pursuing employment opportunities. The curriculum for all these programs should be developed based on a comprehensive needs study.

c) Distribution: It is important to continue offering credit-bearing English language courses in all undergraduate and graduate programs. These courses should be mandatory for all EMI students but optional for TMI students.

The remaining two contexts were exclusive to the department: English language teaching and English as a medium of instruction. However, the scope of this study prevents further elaboration in these contexts.

The research conducted by TEPAV and the British Council highlights exemplary instances at a particular university that might be emulated in other institutions, aiming to bring about systemic reforms. The researchers conducted an investigation on the state of public and foundation universities in Türkiye, with a specific focus on identifying areas for improvement. Now, let's shift our focus to some important research undertaken at preparatory levels in Türkiye, specifically with the integration of technology.

2.1.4. Focused Research on Preparatory Schools in Türkiye

When examining literature on the utilization of innovation in preparatory institutions, one of the extensively researched subjects is blended learning. This term pertains to the systematic advancement of previous efforts that entailed combining different educational methods (Claypole, 2016). Paker and Balcı (2020) examined whether blended learning constitutes an innovative approach to technology-integrated education or merely a way for effective teaching that employs the suitable amalgamation of techniques and strategies. The author reiterates that this approach is not a novel concept. This is an advancement of the previous asset. However, there is a lack of research undertaken in preparatory schools. In a study conducted by Balcı (2017), the author examined the viewpoints of both students and teachers in the English Preparatory Program at a university in Türkiye. Inquiring about the extent of this research, he inquired about the instructors' perspectives and attitudes towards blended learning training. The data for this study were acquired using a blend of qualitative and quantitative research methodologies. The data analysis reveals that teachers typically have a slightly positive perception of blended learning. The majority of respondents saw the use of online platforms in blended learning as a practical and creative method. It is seen as a method to improve student independence and promote greater involvement, while also providing personalized practice opportunities. Based on the interviews conducted by Balcı (2017), it was observed that instructors indicated general contentment with the idea of blended learning and considered that it had a beneficial effect on students' learning results. Specifically, a specific teacher highlighted the advantageous impact of blended learning in augmenting language exposure, a pivotal element of language acquisition. The instructors expressed satisfaction with the use of blended learning into their instructional approaches, emphasizing its effectiveness in facilitating chances for honing listening skills, grammar, and vocabulary. In a similar vein, another educator emphasized the beneficial impact of internet platforms on student motivation. Regarding practicalities, two teachers provided their viewpoints on how blended education streamlined the learning process for pupils. Nevertheless, it is important to acknowledge that despite their general acceptance of blended learning, several educators did express reservations over its execution. Balcı (2017) extracted several problems from the lengthy quote provided by the interviewer:

1. The registration procedure was excessively protracted and intricate, hence causing demotivation among certain pupils. It is important to ensure that the system is streamlined and user-friendly, catering to individuals with less technological expertise.
2. The Online Workbook is a commendable concept, but it should not be obligatory for students. Certain pupils prioritize grades over personal growth.

3. The online platform is beneficial for auditory comprehension tasks, but in-person grammar activities remain indispensable. Students acquire knowledge more effectively when certain concepts are elucidated through face-to-face interactions. Greater focus should be placed on developing speaking abilities, as the online platform lacks substantial opportunities for improvement in this domain.
4. Several educators had difficulties in developing their virtual courses, highlighting the need for increased technological support. Students may become disinterested in online activities, which frequently consist of basic tasks such as completing gaps and matching items.
5. The online platform is less complex than anticipated, with a restricted range of interactive and innovative tasks. Enhancements might be made by incorporating a greater variety of engaging and innovative activities.

Essentially, Balcı (2017) determined that the teachers in a one-year combined language program were generally content with the idea and implementation of the blended format and considered that learners obtained substantial advantages from this learning approach. However, the instructors emphasized some critical areas that need to be improved, such as technological challenges, required consequences, and the insufficient design of the platform. Furthermore, the divergence in viewpoints between instructors and students is comprehensible, as there may be a discrepancy between the intentions of instructors and the actual needs of pupils.

A study was undertaken at Ankara University Preparatory School to evaluate the opinions of students and instructors towards blended learning (Deniz, 2016). Initially, a questionnaire was used as the main research tool to gather a comprehensive understanding of the possible outcomes of implementing blended learning in the English as a Foreign Language (EFL) program at Ankara University Preparatory School. This was done by collecting the perspectives of both students and instructors. In the academic years 2015–2016, a web-based course was provided to pupils enrolled in the preparatory school. A total of 167 participants were present. The course utilized a blended learning method, integrating in-person instruction with online training. Deniz (2016) conducted interviews with three teachers at that location. Based on the testimonies of the three volunteer educators, they encountered unease and discontentment with the blended learning/instruction method. They were of the opinion that the system requires substantial improvements and restructuring. They supported the implementation of compulsory attendance and said that the system should be modified to guarantee students make effective use of it and approach online courses with a higher degree of seriousness. Furthermore, Ata and Tıkız Ertürk (2019) investigated the writing-related

challenges encountered by students in undergraduate programs at the School of Foreign Languages in a Turkish state-owned institution from the perspective of English as a Foreign Language (EFL) instructors. The results revealed that writing teachers face various challenges, including course organization and students' unique perspectives. The study outlined implications, including the need for assistance from supplementary skills and the promotion of good writing among learners, pertinent to both educators and curriculum developers.

Until now, the situation in tertiary level has been covered in terms of English language teaching. From now on, the remaining section of the thesis delves into the intricacies of self-efficacy theory and its implications, as well as the theory of technological pedagogical content knowledge. Initially, an in-depth exploration of self-efficacy shall be provided, along with an analysis of its interconnectedness with related theories.

Bandura's Social Cognitive Theory (1977) and Rotter's Locus of Control (1966) have a common ground regarding self-efficacy. Both theories highlight the importance of individuals' perceptions of themselves and their abilities. Bandura's idea centers on the influence of observational learning and modeling in forming self-efficacy beliefs, while Rotter's theory emphasizes the effect of internal versus external locus of control on self-efficacy. Meanwhile, both theories propose that self-efficacy beliefs have an effect on motivation, behavior, and outcomes. When Bandura's and Rotter's theories are in explaining self-efficacy, self-efficacy is basically a person's belief in their own ability to achieve goals and overcome challenges. Bandura's (1977) theory emphasizes the concept that self-efficacy is developed through observation, experience, and social persuasion. For example, if you see someone similar to you succeed at a task, you are more likely to believe in your own ability to do the same. On the other hand, Rotter's (1966) approach underscores the significance of reinforcement and incentives in the development of self-assurance. This means that if you are rewarded for your efforts, you are more likely to believe in your capabilities. When comparing the two theories, it is seen that both Bandura and Rotter emphasize the importance of experiences and feedback in building self-efficacy. However, Bandura's theory puts more emphasis on social influences, while Rotter's theory focuses more on individual experiences and rewards. Overall, both theories provide valuable insights into how self-efficacy is developed and maintained, but they approach the concept from slightly different perspectives.

2.2. Self-efficacy

In educational settings, teacher self-efficacy is a widely discussed topic. According to Bandura's Social Cognitive Theory (1977) and Rotter's Locus of Control (1966), self-efficacy pertains to a teacher's conviction regarding their capacity to execute specific teaching duties to a prescribed standard in a given circumstance (Dellinger et al., 2008). The terms efficacy, teacher effectiveness, and self-efficacy have often been used interchangeably in literature. This part comprehensively covers these terms, starting from their underlying theoretical foundations and delving into their practical applications.

During the initial phase of exploring teacher efficacy, a substantial theoretical framework was established in accordance with Rotter's Locus of Control (Rotter, 1966). This approach considered effectiveness to be strongly linked to one's opinion of one's ability to govern one's own life. Researchers examined the association between instructors' self-efficacy, which refers to their conviction in their capacity to impact student results, and their impression of their teaching methods. Rotter's Locus of Control is a psychological theory positing that an individual's impression of being in charge of their life events may substantially influence their behavior and general well-being. This theory categorizes control into two distinct components: internal locus of control and external locus of control. Individuals with an internal locus of control recognize themselves as the prime movers behind their actions and the following outcomes. This recognition involves taking responsibility for one's decisions, behavior, and ability to determine one's future. Greater self-assurance, a proactive approach, and high self-reliance often characterize those with an internal locus of control. On the other hand, external locus of control refers to an individual's belief that external factors, such as luck, chance, or the actions of others, largely determine their actions. People with an external locus of control tend to be more reactive, passive, and dependent on others for guidance. Rotter's theory posits that an individual's locus of control substantially influences their psychological wellness, conduct, and general well-being. Psychologists may assist individuals in cultivating healthier and more adaptive attitudes about themselves and their surroundings by comprehending the aspects that impact one's sense of control. In education, a teacher is said to have an external locus when they rely on the student's progress in their environment. At the same time, they are considered to have an internal locus when they depend on their abilities to impact on the student's learning. When analyzing the two theories, Rotter’s and Bandura’s, it becomes apparent that both Bandura and Rotter underscore the significance of experiences and feedback in the development of self-efficacy. Nevertheless, Bandura's theory places greater emphasis on social influences, whereas Rotter's theory concentrates more on individual experiences and incentives.

Bandura's Social Cognitive Theory (1977) likewise affirms that effectiveness is a crucial determinant. The concept of human agency is a fundamental element in theoretical frameworks. Personal agency pertains to an individual's capacity to influence and control the occurrences and circumstances in their life. This implies that individuals can exert control over their behaviors, the level of exertion they invest, and their resilience in the presence of setbacks. Bandura (1977) provides a comprehensive analysis of this topic. The subsequent section will go into Bandura's Social Cognitive Theory to enhance comprehension of the theory.

2.3. Social Cognitive Theory

Miller and Dollard's seminal book, "Social Learning and Imitation," published in 1941, established the foundation for social cognitive theory. This hypothesis is based on two primary psychological subgroups: behavioral and social. Behavioral psychology regards human behavior as observable activities regulated by stimulus-response sequences. Still, social psychology challenges the idea that people are only reactive machines that automatically respond to external stimuli. The framework of social learning theory encompasses both approaches. Social learning theorists claim that human behavior is shaped by environmental circumstances and behavioral patterns. Rotter (1966, as cited in Tschannen Moran et al., 1998) and Bandura (1997) have emphasized the importance of external factors and individual choices in influencing the way people behave in this perspective.

Social learning theorists propose that learning takes place through the assimilation of socially desirable actions. This form of learning occurs within a social setting through the act of monitoring and emulating the conduct of someone else. Human learning is facilitated by the interaction between an individual's environment, behavior, and internal events like perception. Individuals possess an inherent drive to seek organization, significance, and consistency in their encounters. This inclination impacts their reactions to many circumstances, such as the receipt of incentives or penalties. In order to communicate successfully, it is necessary to take into account the individual requirements of the audience and utilize clear and simple language that flows smoothly. Moreover, internal drives serve as a crucial factor in stimulating behavior by acting as intermediaries between stimuli and responses. From the available study data, it can be inferred that a person's conduct is closely connected to their environment. The social learning theory has made significant modifications to Bandura's Social Cognitive Theory in several aspects. Bandura emphasized the significance of cognitive ideas, elucidating the intellectual processing of social events by individuals and the impact of cognition on conduct. Like social learning theory, his method recognized that

external inputs impact behavioral outcomes. However, he argued that the degree to which these cues influence behavior depends on one's cognitive processing and understanding of them. Bandura's (2001) perspective asserted that the human mind is not a passive entity that only absorbs and reacts to external inputs. Instead, it is a complex and ever-changing system distinguished by ingenuity, initiative, and introspection. Cognitive processes provide expectations and values that guide the mind in selecting encoding information and executing behavior. This suggested that humans are not only passive observers of internal processes influenced by external stimuli; rather, they are proactive participants who employ their sensory, motor, and mental systems as tools to accomplish their life goals and ambitions. According to Bandura (1997), individuals may use these systems to engage in activities that provide their life meaning, guidance, and joy. Self-efficacy theory should be enclosed in parentheses concerning its interactions. Bandura's self-efficacy theory, introduced in 1977, 1986, and 1997, outlines a model that explains how individuals interact with their society, considering their behaviors, internal traits, and external environment. Bandura, in 1997, recognized self-efficacy beliefs as a dynamic personal element that serves as a mediator between knowledge and actions while also interacting with external circumstances.

Bandura's Social Cognitive Theory posits that behavior, cognition, internal personal characteristics, and environmental influences are interconnected determinants that mutually influence each other. This paradigm, as described by Bandura (1989a), recognizes the bidirectional nature of these interactions. Despite its seeming complexity, this interaction model may be succinctly summarized as follows: The three bi-directional relationships contributing to human behavior are person-behavior, environment-personal qualities, and behavior-environment. Person-behavior interaction refers to the reciprocal relationship between an individual's cognitive, emotional, and physiological attributes and their actions. Expectations, convictions, self-perceptions, goals, and intentions provide organization and guidance to one's actions. Individuals' behaviors are shaped by their convictions, cognitions, and emotions. Their cognitive processes and affective reactions are influenced by the inherent and external effects of their activity (Bandura, 1989a). Personal qualities, social roles, and the physical environment influence beliefs, expectancies, and cognitive capacities. This interactive process is referred to as the environment-personal characteristic interaction. It refers to how an individual's distinct characteristics and position influence their understanding of the world and their reactions to social signals and input from their surroundings. The ultimate manifestation of interaction is the reciprocal influence between behavior and environment. Bandura's social cognitive theory (1989a) posits that human conduct gives rise

to social constructions, which impose constraints, offer resources, and present chances for personal advancement and maturation (Bandura, 2001). According to Bandura (1989a), people become influenced by and shaped by their environment. It therefore suggests that, besides the influence of immediate surroundings on behavior, individual acts may also impact on the characteristics of the environment in which one exists. To summarize, the core principle of social cognitive theory is that all three interactions above influence behavior. Diverse forms of contact might elicit disparate impacts on people's behavior.

2.4. Rotter Tradition in Self-efficacy

The examination of teacher efficacy has been a pivotal area of research for a considerable duration. The initial inquiries into this matter were grounded in Rotter's social learning theory, which evaluated the degree to which educators believed people could influence the outcomes of their actions. Essentially, it revolved around the question of whether instructors thought they had control or influence over the events or environment. This part of studying teacher effectiveness focuses on instructors' perception of environmental conditions that impact students' motivation and academic achievement, as well as their capacity to endure these adverse impacts (Rotter, 1966). In this context, two main components of teacher efficacy are personal teacher efficacy (PTE) and general teacher efficacy (GTE). PTE denotes educators' convictions of their capacity to shape the academic achievements of particular pupils. GTE, on the other hand, is teachers' beliefs about their overall effectiveness as educators. Teachers with high PTE believe they can help even the most struggling students succeed, while those with high GTE believe their teaching practices are effective for all students. In general, teacher effectiveness is a crucial notion with significant implications for teaching and learning. Educators with elevated levels of efficacy are more inclined to exhibit active involvement in their lessons, effectively facilitate student learning, and demonstrate perseverance when confronted with obstacles.

The Rand Corporation performed the first studies on teacher efficacy in this environment (Armor et al., 1976). Rotter's Social Learning Theory supplied the theoretical basis for these studies. They sought to ascertain the extent to which teachers considered the impact of their teaching. The researchers sought to examine the potential consequences of instructors' perceptions in student motivation and accomplishment. Two methodologies were employed to assess the instructors' proficiency in their roles while evaluating a reading program. The teachers were requested to provide written responses to two inquiries in order to demonstrate their work performance. In 1981, Rose and Medway created a measurement tool called the Teacher Locus of Control Scale (TLC) to evaluate the extent to which primary

school instructors believe they have control over their classes. The scale has twenty-eight elements, with half representing success scenarios and the remaining half reflecting failure circumstances. Teachers must attribute responsibility for student achievements and shortcomings by choosing two conflicting arguments for the events. One interpretation ascribes student success or failure to the instructor inwardly, whereas the other relates it to external sources. The study conducted by Rose and Medway validated the internal consistency and association between the TLC scale and classroom teaching behavior. The link between this scale and classroom teaching conduct was more significant than the correlation between Rotter's Internal-External scale and classroom teaching behavior. Rotter's scale is a more generic measure of control beliefs. Nevertheless, Coladarci's study in 1992 revealed just a few connections between scores on the Teacher Locus of Control Scale and teacher effectiveness.

The RSA scale, created by Guskey in 1981, assesses instructors' perceptions of accountability for their students' academic accomplishments and failures. The scale consisted of 30 items, requiring participants to distribute 100 % points between two options: one associated with the instructor and the other related to external issues outside the teacher's immediate influence. These options included specific teaching abilities, the effort exerted in teaching, the difficulty level of the task, and luck as the causes of student success or failure. Overall, Guskey's RSA scale aimed to provide an enhanced comprehension of the influence of instructors on their pupils' academic achievement.

In a subsequent investigation, Guskey (1982; as cited in Tschannen-Moran et al., 1998) expanded the scale by incorporating two more Rand items to assess the correlation between teacher effectiveness and responsibility for student accomplishment. Nevertheless, a notable link was not discovered. In 1988, Guskey altered the Responsibility for Student Achievement Scale and incorporated two Rand items to assess teacher efficacy, as mentioned in the citation by Tschannen-Moran et al. (1998). This study assessed the intersection between teacher efficacy, self-concept, and attitudes toward implementing instructional motivation. Teachers' responses to items pertaining to good student outcomes on the RSA scale were seen as markers of effectiveness in fostering positive student outcomes. In contrast, instructors' replies to issues concerning bad student outcomes demonstrated their effectiveness in preventing unfavorable student results. Guskey's (1982, 1988; as quoted in Tschannen-Moran et al., 1998) research focused on examining the relationship between scores on the RSA scale and teacher efficacy, which was assessed by combining the scores of the two RAND items. The findings revealed substantial positive associations between teacher efficacy and accountability for student achievement and lack thereof. The study revealed significant

relationships between the two criteria, indicating that instructors were more effective in obtaining positive outcomes compared to preventing bad ones. This demonstrates their elevated level of trust in their capacity to exert influence on favorable results. Furthermore, the study revealed a correlation between teacher efficacy, as assessed by the RAND questions, and the impact of instruction. The impact of teaching is influenced by several aspects, including instructors' satisfaction with teaching, self-assurance in teaching, and openness to adopting new concepts. Thus, this research investigates how instructors see the reinforcement of their instruction as a gauge of their effectiveness, drawing inspiration from Rotter's paradigm. This study examines the potential association of instructors' views on educational results. These findings offer a significant understanding of the determinants that impact teacher effectiveness and the possible consequences of their teaching techniques.

2.5. Efficacy, Self-efficacy, and Teacher Efficacy

As stated earlier, there needs to be more clarity in using the terms self-efficacy or teacher sense of efficacy, teacher efficacy, or teacher self-efficacy. From this part of the review, a definition was given to the term efficacy and continued with its transformation into other terms in the educational context.

According to Barfield and Burlingame's (1974) study, efficacy is characterized as a "personality trait that enables us to deal with the world effectively" (p. 10). Additionally, Rand researchers suggest that self-efficacy is one of the factors on changing student performance, pointing out "a belief that the teacher can help even the most difficult or unmotivated students" (McLaughlin & Marsh, 1978, p. 227). Ashton (1985) also defines efficacy as the belief teachers hold in their ability to impact student learning positively. Integrating this fashionable term into the educational context, efficacy was discussed with the teacher. Teachers' sense of efficacy has been studied by academics regarding its influence on student success (Tschannen-Moran et al., 1998; Zimmerman, 1995).

In 1966, Rotter proposed the concept of Locus of Control. Building upon this theory, Rand Change Corporation performed research that revealed noteworthy findings concerning instructors' confidence in their capacity to be efficacious. Although the studies undertaken by those businesses have not yet examined Bandura's self-efficacy, most researchers have included teacher self-efficacy as a fundamental aspect of their study. By recognizing the significance of teacher self-assurance, we may get a more profound comprehension of what it takes to empower instructors and cultivate positive outcomes in the classroom. The concept of teacher effectiveness, as demonstrated in research by Tschannen-Moran and Woolfolk Hoy (2001), has a notable influence on student engagement and learning outcomes in the classroom,

particularly in relation to student accomplishment. According to Tschannen-Moran et al. (1998), this framework has an impact on the efforts, ambitions, and aspirations of instructors. The level of teacher efficacy plays a critical role in education, especially among instructors who have high or low levels of efficacy. Teachers that are highly effective have a greater feeling of responsibility and dedication to their job (Guskey, 1988; Tschanmen-Moran et al., 1988). They demonstrate resilience in difficult circumstances and inspire disengaged pupils, resulting in enhanced academic progress (Gibson & Dembo, 1984). These educators have a greater willingness to take chances and establish more demanding benchmarks for themselves, which encompasses embracing novel teaching techniques and resources (Guskey, 1988; Tschannen-Moran et al., 1998). In contrast, instructors who have poor efficacy demonstrate a negative perspective on student motivation and encounter difficulties in efficiently managing their classes (Hoy, 2000). Teachers may depend on external variables to encourage their pupils, which might impact their capacity to learn (Ashton & Webb, 1986).

2.6. Sources of Self-efficacy Information

Educators cultivate their self-efficacy beliefs through the evaluation of their instructional methods, which are influenced by environmental factors such as teaching sources, collegiality, and students. This is according to Tschannen-Moran et al. and supported by Phan & Locke (2015). In constructing their self-efficacy beliefs, teachers from such sources benefit from enactive mastery experiences, vicarious experiences, verbal persuasion, and physiological and emotional states (Bandura, 1987). Furthermore, teachers' self-efficacy views may be subject to personal variables, including gender, age, and teaching experience. Research has shown that female teachers tend to have higher self-efficacy beliefs compared to male teachers (Henson et al., 2001). Additionally, experienced educators are more inclined to possess elevated self-efficacy beliefs. as they have had more opportunities for enactive mastery experiences and vicarious experiences. However, age does not seem to exert a substantial influence on self-efficacy beliefs (Tschannen-Moran & Woolfolk Hoy, 2007). It is important for schools and educational institutions to provide supportive environments that foster positive teaching practices and encourage the development of strong self-efficacy beliefs in their teachers. In addition to personal characteristics, the school environment can also play a significant role in shaping teachers' self-efficacy beliefs. A positive and supportive school climate can provide teachers with the necessary resources and encouragement to develop their teaching skills and confidence. On the other hand, negative or unsupportive environments can lead to lower self-efficacy beliefs and even burnout among teachers. Therefore, it is crucial for schools to prioritize creating a positive and supportive atmosphere

that fosters growth and development for both students and teachers alike. By doing so, schools can help ensure that their teachers feel empowered and confident in their abilities to make a difference in their students' lives.

2.7. Enactive Mastery Experiences

Within the framework of enactive mastery experiences, it is indispensable to recognize that both successes and failures profoundly affect an individual's self-assessment of their capacity to perform a certain activity or achieve a specific outcome. Chacon (2005) emphasized that these events have the potential to either enhance or diminish an individual's self-efficacy.

Bandura (1987) asserts mastery experiences are the most influential factor in developing effectiveness. These experiences might originate from several sources, such as the achievements and setbacks teachers encounter. These experiences strongly influence individuals' ideas about their talents, as they offer tangible proof of what can and cannot be achieved in a specific context. Therefore, instructors must be aware of their accomplishments and shortcomings since they can significantly influence their pupils' belief in their abilities. Phan and Locke (2015) found that if teachers see their previous encounters with unenthusiastic students as ineffective, it might diminish their self-assurance in instructing a cohort of difficult and uninspired pupils. Conversely, if an individual has a favorable encounter, they may develop a sense of self-assurance regarding their competence in executing the work (Zonoubi et al., 2017). Bandura (1997) posited that success enhances levels of self-efficacy, but failures might undermine them, mainly when they occur prior to the establishment of a strong sense of efficacy.

In addition, failures may lead to negative expectations for the future, resulting in lower self-confidence (Bandura, 1997; Tschannen-Moran et al., 1998; Pajares, 2002). Conversely, accomplished performances have the ability to generate a favorable anticipation for what is ahead. It is essential to recognize that the way individuals assign credit or blame for success or failure is equally crucial in this process.

2.8. Vicarious Experiences

An effective approach to cultivating a feeling of personal proficiency is through vicarious experience or modeling, as posited by Bandura (2006). According to Bandura (2006), it is easier to appraise an individual's aptitude for tasks that lead to autonomous and objective outcomes. As most tasks lack definitive measures of adequacy, people must gauge their abilities based on the achievements of others. This is where the concept of modeling comes in handy. By observing and learning from the successes and failures of others,

individuals can gain valuable insights into how to approach a task and improve their own performance. This can be done through various means, such as seeking out mentorship or studying the methods of experts in a particular field. Additionally, social media platforms have made it easier than ever to access the experiences and advice of others in real time. By taking advantage of these resources, individuals can develop a sense of personal proficiency that will serve them well in both their personal and professional lives. Bandura (1995), Woolfolk Hoy (2000), and Pajares (1992) posit that an individual's efficacy is more influenced by models who share a similar characteristic. This phenomenon occurs due to social comparative inference, wherein people tend to believe that they possess the potential to excel in comparable tasks like others who have already demonstrated success. Further research has also shown that an individual's efficacy can be influenced by the level of similarity between themselves and their chosen model. This means that if a person perceives themselves as being very different from their model, they may not feel as confident in their ability to replicate their success. Additionally, it has been suggested that the perceived competence of the model plays a significant role in efficacy beliefs. Models who are seen as highly competent are more likely to have a positive impact on an individual's self-efficacy than those who are seen as less competent. These findings highlight the importance of carefully selecting models when trying to enhance one's self-efficacy beliefs. Especially in the same professional learning communities, wherein teachers assemble to exchange pedagogical information, like in-service meetings, teachers can see others' different teaching styles and increase their self-efficacy by adapting some into their teaching (Zonoubi et al., 2017). Additionally, being part of a professional learning community can also foster a sense of camaraderie among teachers. It creates an environment where they can share their experiences and challenges with like-minded individuals who understand the nuances of the profession. This can lead to a supportive network that helps teachers feel less isolated and more motivated to continue improving their craft. Moreover, exchanging ideas and collaborating on projects within these communities can lead to innovative approaches to teaching and improved student outcomes. Overall, participating in professional learning communities is not only beneficial for individual teachers but also for the education system as a whole.

2.9. Verbal and Social Persuasion

The third source is called social or verbal persuasion in fulfilling self-efficacy beliefs (Bandura, 1997). When people take appraisals or constructive feedback in educational cycles while performing the tasks, they strengthen their self-efficacy. The impact of verbal persuasion is decisive according to feedback owner's teaching sessions, held by professional experts, are

believed to increase teaching competence (Tschannen Moran et al., 1998). Social persuasion significantly influences individuals' confidence in their own capabilities to accomplish goals, according to research by Bandura (1997). Individuals are more likely to exert more effort and sustain their motivation when vocally persuaded that they possess the requisite abilities to do a job, as opposed to voicing uncertainties, particularly when faced with difficulties. While verbal persuasion may not result in enduring improvements in efficacy, it can nevertheless exert a discernible influence by motivating individuals to begin a task, explore novel strategies, or exert sufficient effort to achieve their objectives (Bandura, 1997; Woolfolk Hoy, 2000).

2.10. Physiological and affective state

According to Bandura's (1997) theory, individuals rely on somatic information derived from physiological and emotional states such as anxiety and tension to evaluate their abilities. These bodily sensations are crucial in appraising one's talents, especially in physical performance and overall health. Therefore, improving one's physical condition, lowering stress levels and destructive emotional tendencies, and resolving incorrect bodily state interpretations are all strategies to improve one's self-efficacy. Again, Bandura (1997) asserted that people experience emotional reactions as they approach a task, and these emotions offer hints on how they might gauge their confidence level and construct an idea of how well they will do. Before beginning an activity, a person experiencing negative emotional states begins to doubt their skills and has reduced self-efficacy beliefs. Considering the classroom issues, the effective or physiological and emotional states such as happiness or anxiety cause a positive or negative result on a teacher's self-efficacy (Bandura, 1997). After a successful performance in the classroom, the teacher may increase self-efficacy.

2.11. General Teaching Efficacy and Personal Teaching Efficacy

Bandura (1977) theorized that instructional efficacy might be categorized into general and personal domains. This category is done because an individual's conduct is shaped by their anticipation of results and their convictions regarding their ability to accomplish an endeavor (Guskey, 1984). A person's efficacy expectations are founded on their conviction that they are capable of successfully completing a given task. In contrast, outcome expectations pertain to their evaluation of the repercussions of their behaviors. Expanding upon Bandura's theories, Ashton and Webb (1986) proposed that a teacher's beliefs about the outcomes of teaching, generally, can be referred to as teaching efficacy, while beliefs about an individual's ability to accomplish a specific task can be classified as personal efficacy.

Gibson and Dembo (1984) expanded upon this idea and devised a questionnaire to assess the two aspects of teacher efficacy. The initial item that arose from the factor analysis was "a teacher's perception of their personal teaching efficacy." This component encompasses elements that begin with "I-statements" and pertain to the teacher's accountability for student learning and conduct. This aligns with Bandura's concept of self-efficacy, as described on page 573. The second component is a teacher's teaching effectiveness, which is the capacity of a teacher to bring about meaningful change but is constrained by external circumstances outside their control (Gibson & Dembo, 1984, p. 574). This component corresponds to Bandura's result expectation.

Ashton and Webb (1982) and Gibson Dembo (1984) have established two categories of teaching efficacy in literature - personal teaching efficacy and general teaching efficacy (Coladarci, 1992; Soodak & Podell, 1997; Tschannen-Moran & Woolfolk-Hay, 2001). Gaining insight into these two aspects of teaching efficacy might enhance our comprehension of how instructors assess their competence and perceive external influences that impact their capacity to effect change in the classroom.

2.12. Collective Teacher Efficacy

Teachers can develop their own beliefs about their efficacy as individuals and community members. When considering the group, this is referred to as collective teacher efficacy (Bandura, 1997). According to Goddard et al. (2000), collective teacher efficacy is defined as "the perception among teachers in a school that the efforts of the faculty as a whole will have a positive impact on students" (p. 480). By establishing positive relationships with teaching behavior (Chiang, 2014), collective teacher efficacy can increase the group's motivation and investment in their endeavors. Research has shown that both individual self-efficacy and collective teacher efficacy have a positive impact on the success of groups (Goddard et al., 2000) and student achievement (Tschannen-Moran et al., 1998). Furthermore, they are both strong predictors of each other, indicating that higher levels of teacher self-efficacy led to increased collective efficacy (Goddard et al., 2000).

2.13. Factors associated with teacher's self-efficacy

Teachers' belief in their ability to teach well has been found to have a significant impact on student success and motivation. (Gibson & Dembo, 1984). This belief also affects how open teachers are to new ideas, the amount of effort they put into teaching, and how they manage their classrooms. Additionally, personal qualities such as gender, grade level, and experience also play a role in teacher effectiveness. In addition, teacher diversity has also been found to be important in promoting equity in education. Students from diverse backgrounds

benefit from having teachers who share similar experiences and cultural backgrounds. This can lead to a greater understanding of different perspectives and improved academic outcomes for all students. Finally, ongoing professional development is essential for teachers to stay up to date with the latest research and teaching strategies. (Guskey, 1988) Teachers who participate in regular training and development opportunities are better equipped to meet the needs of their students and provide high-quality instruction. Overall, teacher beliefs, personal qualities, and professional development all play important roles in determining teacher effectiveness and ultimately impacting student success. Furthermore, correlation studies have demonstrated that teacher self-efficacy is positively associated with variables other than interventions. Moafian and Ghanizadeh (2009) and Rastegar and Memarpeur (2009) regard emotional intelligence as a crucial element in language acquisition, whereas Chacon (2005), Choi and Lee (2016), Eslami and Fatahi (2008), and Yilmaz (2011) concentrate on perceived language competency. Eslami and Fatahi (2008) and Nishino (2012) examine the rationale for employing communicative-based methods of instruction, whilst Babaei and Abednia (2016) underscore the significance of adopting a reflective approach to teaching. Külekçi and Ata (2019) assert that cultural involvement in language instruction, which fits into other skills and pedagogical methods, must be considered. Goker (2006) emphasizes the importance of peer cooperation, whereas Liaw (2009) and Wyatt (2010) emphasize the significance of group debate. Cabaroğlu (2014) examines the concept of involvement within the context of action research, whereas Brannan and Bleistein (2012) highlight the significance of supporters, such as coworkers. Faez and Valeo (2012) emphasize the significance of teacher training in fostering efficacy growth, whereas Hoy and Woolfolk (1993) examine the educational setting and school culture. Veisi, Azizi, Gowhary, and Javalinesari (2015) consider empowerment to be a crucial element, while Zonoubi et al. (2017) and Karimi (2011) emphasize the importance of professional development programs. Khezerlou (2013) and Klassen and Chiu (2010) examine the volume of work satisfaction. It would be beneficial to concentrate on the fundamental components of self-efficacy.

2.14. Teacher Self-efficacy and teacher's commitment

According to Coladarci's (1992) research, Personal Teaching Efficacy and General Teaching Efficacy are the two most important factors that predict a teacher's commitment to teaching. Additionally, having confidence in one's teaching abilities can significantly impact student achievement. Therefore, teachers must develop and maintain a strong sense of efficacy in their teaching practices to ensure positive student outcomes. Teachers may enhance and sustain their sense of effectiveness by actively pursuing professional development

opportunities, engaging in collaborative work with colleagues, and engaging in reflective activities to evaluate and improve their teaching methods. Receiving feedback from students and parents is crucial for instructors to enhance their teaching approaches. Moreover, establishing attainable objectives and commemorating accomplishments may significantly enhance a teacher's self-assurance in their competencies. In conclusion, by placing Personal Teaching Efficacy and General Teaching Efficacy as top priorities, teachers may establish a favorable learning atmosphere that yields advantages for both them and their students.

2.15. Teachers' Self-Efficacy and Classroom Management

In 1990, Woolfolk et al. performed a study which revealed that teachers who possess high levels of personal and general teaching efficacy tend to choose a humanistic approach. This method prioritizes the promotion of student autonomy and responsibility, rather than exerting control over them in a custodial manner. In contrast, instructors who have low effectiveness levels are inclined to exhibit more dictatorial and inflexible behavior. In a similar vein, the 2013 study conducted by Ghasemboland and Hashim revealed that instructors assessed their own efficacy in classroom management to be greater compared to instructional methodologies or student involvement. This indicates their strong confidence in this particular aspect. An analysis of 187 instructors investigated their self-efficacy beliefs by employing the Teacher Sense of Efficacy Scale. The findings revealed that teachers exhibited remarkably elevated levels of self-efficacy in regard to classroom management. In contrast, research conducted by Chacon in 2005 yielded contrasting findings, as instructors rated their effectiveness in instructional tactics as equally high as their effectiveness in engagement and classroom management. The TEBS-self was administered to instructors in three dissertation studies conducted by Bobbett (2001), Olivier (2001), and Dellinger (2001). Bobbett's study examined the correlations among school culture, teacher efficacy, decision-making deprivation, and school results. Olivier's study examined the individual and institutional elements of schools functioning as professional learning communities and the connections between them. Dellinger's objective was to investigate the perceived origins of efficacy information in teachers' professional learning contexts and its correlation with their self-efficacy, work-group efficacy, and faculty collective efficacy views. The investigations revealed a strong correlation between classroom management and motivation, and the overall performance of the school structure. Classroom management, classroom atmosphere, and higher-order thinking abilities are reliable indicators of the effectiveness or ineffectiveness of schools. Hence, there exists a favorable correlation between classroom management and school success.

2.16. Self-Efficacy Studies in EFL Context

Akbari and Tavassoli (2014) sought to create a self-efficacy measure for English Language Teaching (ELT) to address the lack of research in this area. The English Language Teaching Efficacy Instrument (ELTEI) was developed based on the analysis of English lectures given by ELT practitioners, interviews conducted with these practitioners, and interviews conducted with students. The instrument was produced by identifying recurring themes from qualitative data. The final device consists of the following components:

Exhibiting proficiency in classroom management and executing remedial actions

Demonstrating efficacy in evaluating a classroom and choosing suitable resources.

Exhibiting efficacy in adapting instructional approaches and skill levels

Demonstrating efficacy in instructing and correcting language elements.

Exhibiting efficacy in adapting to various age groups

Demonstrating proficiency in social adaptability and essential efficacy.

The newly developed instrument, distributed to 206 EFL instructors, enabled the interpretation of instructors' efficacy in L2 environments by considering variables including context, language proficiency, age, and teachers' perceptions. Chacón (2005) conducted a well-known research study that examined the self-efficacy views of 100 English as a Foreign Language (EFL) instructors in Venezuela. The study illuminates the opinions and attitudes of these instructors regarding their competence in teaching English as a foreign language. The results indicate that their self-efficacy for instructional tactics surpassed that for engagement and classroom management. In terms of teaching tactics, there was a preference for strategies that focused more on grammar than communication. Teachers have acknowledged a deficiency in their ability to speak English fluently, and their level of language competency is directly related to their self-confidence. EFL teachers with advanced language proficiency enhance their ability to motivate pupils to participate in projects. Elevated language proficiency among English as a Foreign Language (EFL) instructors enhances their ability to encourage pupils to participate in assignments.

Chacón's (2005) research emphasizes the importance of effective classroom management for instructors' effectiveness. To ensure effective teaching, it is crucial to devise strategies that anticipate and handle classroom management challenges, as this is vital for establishing an environment that promotes learning. Consequently, instructors must cultivate these strategies to guarantee the success and prosperity of their classrooms. Moreover, the instructors' self-efficacy judgments on classroom management approaches have a significant impact. Alasmari and Althaqafi (2024) employ several ways to efficiently oversee their

classrooms. Alasmari and Althaqafi (2024) performed research with the aim of identifying these tactics. The study further examined the obstacles that hinder teachers from implementing proactive classroom management practices. The study also investigated the correlation between instructors' self-assurance and their implementation of classroom management strategies. The study included a blend of methodologies, encompassing a questionnaire and interviews. A total of 80 Saudi English teachers participated in the survey as foreign language instructors, whilst the interviews were conducted with a group of eight teachers. Based on the results, EFL teachers perceive proactive classroom management tactics as more effective than reactive ones. Experienced educators typically favor proactive approaches to managing their classrooms in contrast to less experienced teachers. This choice highlights a distinction between the two groups in terms of their approach to achieving effective classroom supervision. Furthermore, the study categorized four types of barriers that obstruct proactive classroom management strategies: The impediments that can hinder the efficient utilization of e-learning tools can be ascribed to diverse factors including the curriculum focused on specific subjects and institutional regulations, institutional policies and teachers' attitudes towards digital tools, teachers' inadequate understanding of the course plan, and the absence of motivation among students. Finally, the study discovered a direct relationship between instructors' strong belief in their own abilities and their successful use of proactive classroom management practices. Marashi and Azizi-Nassab (2018) performed a study in Iran to examine the correlation between English as a Foreign Language (EFL) instructors' self-efficacy, language competency, and classroom management. The researchers employed Teacher Self-Efficacy Scale and TOEFL Scores as measures to assess the association between these variables. The study revealed a favorable correlation between instructors' self-efficacy and language competency. However, it did not find any direct influence of language proficiency on successful classroom management. Phan and Locke (2015) conducted a study on Vietnamese EFL instructors to investigate the factors that contribute to their self-efficacy in teaching. The researchers conducted observations of eight university English as a Foreign Language (EFL) instructors and engaged in individual interviews with them. In addition, they requested that the individuals document their thoughts and experiences in a personal notebook. A study revealed that teachers derived greater confidence from receiving encouragement from others rather than from their own teaching proficiency. This was unexpected given the general assumption that teachers possess a sense of self-assurance due to their competence in their profession. According to the researchers, this is attributed to the limited opportunities for instructors to observe and gain knowledge from others' teaching methods. Bellemans and

Devos (2023) investigated the factors that contribute to the self-assurance of school administrators in Flanders, Belgium, in doing their duties effectively. They examined four factors that might enhance self-efficacy, referred to as "sources of self-efficacy". These were instances of triumph, receiving support from others, acquiring new knowledge, and seeing the achievements of others. The researchers conducted interviews with 23 primary school administrators in order to ascertain the factors that contributed to their sense of confidence. The researchers discovered that the most crucial factors were instances of achievement, support from peers, and acquisition of new knowledge. The success of others had less significance. According to the study, even minor instances of achievement can have a significant impact on an individual's level of self-assurance.

Assessing the self-efficacy levels of EFL instructors relies heavily on the incorporation of technology. In 2022, Sharmain Brown performed research to investigate the perceptions of rural English as a foreign language instructors on their capacity to use technology into their teaching. The study utilized two frameworks: the TPACK model, devised by Koehler and Mishra, and Bandura's theory of self-efficacy. The qualitative case study involved a planned selection of 10 EFL teachers. The findings revealed that technology coaches played a crucial role in instilling confidence among instructors to effectively utilize technology and integrate it with the learning process. In addition, the interviews, lesson plans, and observations revealed that thorough lesson preparation enhances teachers' self-efficacy and confidence. The study revealed that personal and environmental characteristics exerted an impact on both positive and negative teacher self-efficacy in employing technology. This research has demonstrated its usefulness in managing educational transitions connected to pandemics and developing new techniques to assist instructors in implementing blended learning.

Researchers that are interested in self-efficacy have increasingly focused on the concept of technology integration self-efficacy. Zhang and Fang (2022) examined the proficiency of higher education professors in utilizing technology inside their flipped courses. The study examined the experiences and perspectives of 12 English as a foreign language instructors about the utilization of technology in their teaching practices. The researchers employed the Technological Pedagogical Content Knowledge (TPACK) framework and teacher efficacy theories as guiding principles for their inquiry. An interview was conducted with a cohort of university educators specializing in teaching English as a second language. Their documents were meticulously examined to get insights into their perspectives, views, and attitudes toward the use of technology in their instructional practices. The methodology

employed was phenomenological. The study unveiled six significant topics. The initial three areas of the study elucidated the manner in which English as a Foreign Language (EFL) instructors employ technology for instructional purposes. In addition, they implemented a novel pedagogical approach known as the "FC-situated TPACK framework," which integrates two instructional methodologies. The study revealed an overall improvement in the instructors' confidence in utilizing technology for teaching, but with some slight alterations. The effectiveness of teachers in their teaching is impacted by several elements, such as enhanced student performance, supportive leadership, and environment, efficient cooperation among peers, and a readiness to adopt technology. However, teacher efficacy was diminished due to variables such as adhering to a uniform teaching style enforced by the department, meeting technologically challenging tools, and experiencing a sense of disconnection from them. The study offered valuable insights into the use of FC-situated TPACK and the enhancement of teacher effectiveness in FC teaching by instructors.

Two research conducted in 2023 by Zhang, Fathi, and Mohammaddokht, and in 2022 by Xu and Jia, revealed a correlation between the emotional and psychological states of English as a Foreign Language (EFL) instructors and their self-efficacy. In 2023, Zhang and his colleagues did a study to determine the characteristics that contribute to the enjoyment experienced by English as a foreign language (EFL) instructors during teaching. A total of 355 English as a Foreign Language (EFL) instructors participated in the study by completing four questions online. The researchers employed a statistical methodology to assess the quality of the questions and examine the interrelationships among the many variables under investigation. The study revealed a positive correlation between instructors' self-assurance in their teaching skills, their favorable perception of the school environment, their mental well-being, and their level of enjoyment in teaching. The study revealed that mental well-being had a crucial role in elucidating the connection between teacher confidence, school atmosphere, and the experience of enjoyment. Additionally, the study demonstrated that a conducive school atmosphere might enhance teachers' mental well-being and instill a sense of confidence. Experiencing a sense of confidence can also contribute to instructors' mental well-being.

In the realm of language instruction, stress and self-efficacy can exert a substantial influence on educators. Instructors' emotional tiredness and job engagement play crucial roles in the educational experience for both instructors and learners. Nevertheless, it is important to ascertain the interconnections between all of these components. Through an examination of the relationship between self-efficacy, stress, emotional fatigue, and job engagement, we may enhance our comprehension of the factors that contribute to the effectiveness of language

education. In 2022, Xu and Jia conducted a study examining the relationship between stress and teacher efficacy. The study had 295 Chinese EFL instructors, encompassing both male and female participants, who willingly agreed to take part. These teachers were selected from 21 provinces. The participants were instructed to fill out four questionnaires that assessed their level of teacher self-efficacy, job engagement, teacher stress, and emotional weariness. The study revealed a clear correlation between the level of teacher engagement in their work and their self-assurance in their skills. Conversely, when instructors experience higher levels of stress and emotional exhaustion, their level of engagement tends to decrease. Curiously, there was no substantial correlation observed between self-assurance and stress. The investigation moreover discovered that both self-assurance and stress levels exert a noteworthy influence on pupils' emotional fatigue and involvement in their own tasks.

Education content is a contributing component in the development of self-efficacy. In 2014, research was done by Jafariger and Valadi involving thirty English as a Foreign Language (EFL) instructors in Iran. The participants were instructed to provide their responses to the Teachers' Sense of Efficacy Beliefs (Tschannen-Moren & Hoy, 2001) questionnaire as well as interview questions. The participants responded to identical inquiries in two different settings: public schools and exclusive language institutions. The findings indicated that the participants experienced a heightened perception of effectiveness beliefs inside the institution setting as opposed to the school setting. Furthermore, the interview results indicated that 10% of the individuals exhibited higher scores favoring the school environment, whereas 90% of them exhibited better scores favoring the institute setting.

In 2011, Karimi performed research with the purpose of examining the impact of professional development activities on the level of self-efficacy among English as a Foreign Language (EFL) instructors. The study was conducted using experimental-control group design, in which the effects of professional development efforts were evaluated on the experimental group, while the control group did not receive any intervention. The study aimed to ascertain the extent to which such activities may augment the self-efficacy of English as a Foreign Language (EFL) instructors. Prior to and during engagement in 5 professional development activities - In-service training, colleague observation/assessment, growth/improvement process, mentorship, and study groups - participants underwent the Teacher Sense of Efficacy Scale as a pretest and posttest. The study's results demonstrated that programs targeting professional development (PD) had a beneficial influence on the confidence of English as a Foreign Language (EFL) instructors in their capacity to teach

proficiently. These programs provided instructors with the chance to enhance their expertise in subject matter, instructional methods, and classroom administration abilities.

2.17. Self-efficacy Studies in Turkish EFL Context

In 2012, Tilfarlioğlu and Ulusoy performed research in Türkiye to assess and evaluate the levels of assurance exhibited by high school and secondary English instructors. The study also aimed to gain insights into the strategies employed by these teachers in managing instances of misbehavior within their classrooms. The study involved the recruitment of 120 English as a Foreign Language (EFL) instructors. Data collection was conducted through the administration of two questionnaires and one interview. No significant difference was found in the degree of self-efficacy for classroom management in English as a Foreign Language (EFL) communication between secondary and high school English instructors.

Burnout among educators is a prominent subject of discussion when considering teacher effectiveness. The study by Mede (2009) examined Turkish EFL instructors to establish the correlation between personal factors, perceived self-efficacy, social support, and burnout. There was a total of 63 Turkish instructors who taught English as a Foreign Language (EFL). The findings indicate that self-efficacy within social groups is a reliable predictor of burnout components. Insufficient support from colleagues can lead to heightened emotional exhaustion and a sense of detachment among teachers. Conversely, when teachers require additional assistance from their administrators, they are more prone to experiencing a sense of connection with their pupils and a diminished sense of achievement in their professional roles.

In a study done by Ucar and Yazıcı Bozkaya (2016), the researchers investigated the self-assurance, goals, and engagement of prospective English educators in an online educational setting. An investigation was undertaken to examine the views and experiences of pre-service English as a Foreign Language (EFL) instructors on distance learning. The study included a combination of questionnaires and interviews to gather data from a cohort of 186 pre-service English as a Foreign Language (EFL) teachers who were currently enrolled in a teacher preparation program. The surveys inquired about the instructors' self-assurance, objectives, and engagement in online education, whereas the interviews inquired about their encounters as both learners and educators. The study revealed that while the pre-service EFL instructors typically possessed a sense of assurance in their capabilities, this assurance was frequently delicate. Moreover, several instructors had numerous objectives in regard to teaching and learning, and these objectives had an impact on their motivation. The study refrained from offering explicit guidelines for online learning environments in EFL teacher education. However, it did propose the necessity for further investigation to comprehend the

impact of participating in online courses on instructors' self-assurance. Previous scholars have done studies investigating the correlation between the effectiveness of teachers who are currently employed and many aspects, including the level of student involvement, the ability to maintain control over the classroom, the methods used for education, and socio-demographic characteristics. Ortaçtepe (2006) examined the correlation between the effectiveness perceptions of Turkish EFL instructors and their implementation of Communicative Language Teaching. The study comprised a group of 50 individuals who were engaged in the instruction of English in Istanbul. It revealed a noteworthy correlation between teacher efficacy and the implementation of Communicative Language Teaching. An investigation was undertaken to assess the level of self-assurance that primary school teachers had in many domains, such as classroom management, instructional techniques, and student involvement. The study also examined the impact of variables such as teaching experience, gender, and English ability on teacher confidence. The results revealed that instructors had a sense of assurance in their competencies, with their highest level of confidence being in their classroom management skills and use of instructional methodologies. Nevertheless, they saw a need for greater self-assurance in actively involving pupils. The study identified several factors contributing to this phenomenon, including the school atmosphere, the curriculum, and the students themselves. The study further revealed that instructors' perception of their English proficiency significantly influences their confidence levels, whereas teaching experience and gender appear to have no influence.

In research done by Yılmaz (2011), the focus was on the perceptions of English language instructors in Türkiye about their teaching abilities and self-assessed competency. The study comprised a sample of 54 instructors in Çanakkale and revealed a positive correlation between teachers' self-efficacy beliefs and their self-assessed proficiency levels. Curiously, the teachers exhibited greater assurance in their pedagogical approaches compared to their ability to handle classroom management or effectively involve students. The study conducted by Yılmaz (2011) examined the perception of self-efficacy and self-reported competence level among Turkish EFL teachers. The study encompassed 54 English language instructors in Çanakkale and unveiled a direct correlation between teachers' opinion of efficacy and their self-reported degree of competence. The teachers saw themselves as more proficient in teaching tactics than in classroom management or student involvement. Multiple studies have been carried out to assess the effectiveness of pre-service teachers in the domain of English as a Foreign Language (EFL). The objective of this research is to investigate the relationship between teacher efficacy and several characteristics, such as student engagement,

classroom management, instructional tactics, teaching practicum, peer coaching, the role of mentors, and metacognitive awareness. Göker (2006) performed a study to assess the influence of teaching practicum and peer coaching on the self-confidence and instructional abilities of pre-service teachers. The study findings demonstrated that peer coaching significantly contributed to the improvement of teacher candidates' performance, while the utilization of videotape feedback proved to be a very successful approach for cultivating teaching behavior.

In 2007, Atay performed research to examine the alterations in pre-service teachers' opinions of their effectiveness during their teacher training and the factors that drove these changes. The study unveiled a significant enhancement in the scores associated with student involvement in the concluding phase of the practicum, however the scores pertaining to instructional tactics exhibited a decrease. Nevertheless, there was a substantial rise in the ratings pertaining to classroom management. In a study done by Pekkanli-Egel (2009), the researchers examined the self-perceived competence of student instructors in an English Language Teaching department at a public university in Türkiye. The study centered on the importance of mentors who deliver efficacious feedback. The findings indicated that the participants exhibited a notable degree of self-efficacy and experienced a strong sense of confidence in their aptitudes. Furthermore, the study highlighted the substantial influence that instructors exerted on the achievement of student teachers and their conduct towards the capacity of pre-service teachers to thrive. In their study, Alcı and Yüksel (2012) investigated the impact of self-confidence and knowledge of learning techniques on the academic achievement of student teachers studying English. The study revealed a positive correlation between instructors' elevated self-assurance and heightened self-awareness of their learning process, and their increased performance in their academic pursuits. The study determined that self-assurance and knowledge of effective learning techniques often increase as time progresses. The objective of Şen and Durak's (2022) study was to examine the correlation between lifelong learning inclinations, professional competences, and self-confidence in technology integration among English instructors. Data was gathered using self-report questionnaires from 561 English instructors employed in institutions associated with the Ministry of National Education in Türkiye. The findings indicated a favorable correlation between individuals' inclination towards continuous learning, their proficiency in their respective fields, and their trust in integrating technology. The study proposed that English instructors must engage in ongoing learning and development in order to enhance their self-assurance in integrating technology. Furthermore, the study proposed that teacher training and development programs should prioritize enhancing English teachers' technological skills by

including self-assurance and distinctive professional abilities to favorably influence their inclination towards lifetime learning. Furthermore, it was suggested that in-service training programs should give priority to the cultivation of distinctive field competences and self-assurance in the effective incorporation of technology. The results of this study offer support for causal and experimental research by elucidating the factors that contribute to the advancement of instructors' lifetime learning abilities, thereby providing valuable insights for future researchers.

2.18. TPACK

In 1986, Shulman coined the term "Pedagogical Content Knowledge." The TPACK framework is based on the fundamental principle of integrating three distinct categories of knowledge: content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). Effective teaching necessitates a comprehensive strategy that integrates three essential domains of expertise: pedagogical content knowledge (PCK), technical content knowledge (TCK), and technological pedagogical knowledge (TPK). The combination of these domains constitutes the integrated Knowledge of Technological Pedagogical Content Knowledge (TPACK), which is essential for effective teaching in the contemporary digital era (Mishra & Koehler, 2006). Proficiency in the subject matter is crucial for educators, but they must also possess the ability to effectively tailor their presentation to accommodate the different needs and interests of their students. They utilize the Pedagogical Content Knowledge (PCK) framework to organize and present material that is customized to the individual learning style of each learner. The incorporation of technology has brought about a substantial revolution in the sphere of education. The Pedagogical Content Knowledge (PCK) framework has been augmented by the implementation of technology, resulting in the development of a novel framework known as Technological Pedagogical Content Knowledge (TPCK). This paradigm emphasizes the significance of efficiently integrating technology into instructional methodologies. Koehler and Mishra (2006) have also established a correlated framework highlighting the importance of teachers' expertise in this domain. Teachers can utilize these frameworks to create instructional approaches that accommodate the distinct requirements and talents of their students, while using state-of-the-art technology. These frameworks empower instructors to remain up to date with the most recent technological breakthroughs and develop efficient teaching strategies for their pupils. In 2005, Niess proposed a transition towards an integrated approach in teacher development programs. This technique would provide future educators with the necessary expertise to proficiently instruct in particular disciplines, such as mathematics or science, by utilizing technology. Educators

have come to see the need to integrate technology with pedagogical and subject-specific knowledge, rather than treating it as a distinct field of expertise. In response to this issue, Mishra and Koehler presented the Technological Pedagogical Content Knowledge (TPACK) framework, which offers a theoretical foundation for comprehending the appropriate integration of technology in education. This framework serves as a tool for engaging in discussions around the topics of teaching, learning, and technology. This demonstrates the interconnectedness and interaction between content, pedagogy, and technology. Furthermore, it elucidates the interconnections and intricacies within these three domains of knowledge. The framework consists of seven components, namely TPK, PCK, and TCK, which together make up TPACK. Schmidt et al. (2009) provide the definitions for these components.

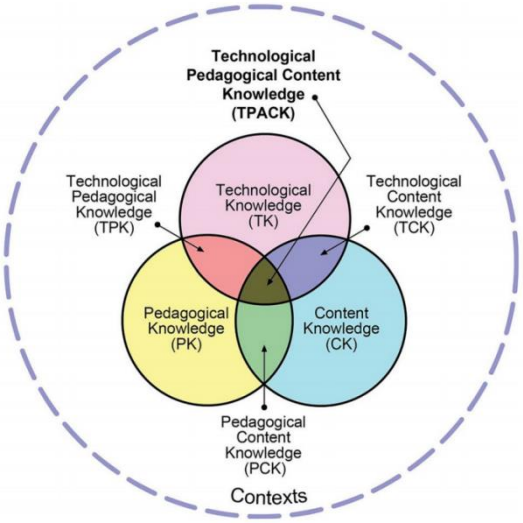


Figure 1. Technological pedagogical content knowledge framework.

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Acquiring a thorough comprehension of the various domains of knowledge necessary for educators is crucial for enabling efficient teaching. Technological knowledge encompasses comprehension of a wide range of technologies, spanning from rudimentary instruments like pencil and paper to advanced digital technologies like the internet, digital video, and interactive whiteboards. Content knowledge refers to the comprehensive understanding of the subject being taught, including both theoretical and practical knowledge. Pedagogical knowledge encompasses the techniques and procedures of instruction, encompassing expertise in areas such as classroom administration, evaluation, curriculum design, and student cognition. Pedagogical Content Knowledge refers to the specialized knowledge that encompasses both the subject matter and the pedagogical skills needed to effectively teach a certain subject. It necessitates adjusting one's approach to accommodate various teaching

situations and the varying capacities of students. Technological material Knowledge, or TCK, pertains to comprehending how technology may provide novel representations for particular material and how this knowledge can be used in educational settings. Technological Pedagogical Knowledge (TPK) encompasses the understanding of how different technologies may be effectively employed in educational settings, encompassing the process of choosing, utilizing, and incorporating technology inside the classroom. To acquire this information, one must possess a comprehension of the capabilities and constraints of various technologies and their potential to improve student learning. Technological pedagogical content knowledge refers to the information that instructors must possess in order to effectively incorporate technology into their teaching across all subject areas. It involves understanding how technology may be utilized to achieve educational objectives. Acquiring this information necessitates a profound comprehension of technology, pedagogy, and material interactions, and how they may be utilized to enhance the effectiveness of teaching and learning.

Teacher education programs often prioritize a candidate's expertise in their subject matter and their ability to effectively teach it in a classroom setting. However, it was acknowledged that addressing these two sectors as distinct entities posed a difficulty. The emergence of the notion of pedagogical content knowledge entails that in order to attain proficiency as an educator, one must possess a fundamental comprehension of instructional principles, expertise in the subject matter, and the ability to integrate them harmoniously. Teachers must possess the requisite knowledge and abilities to effectively integrate technology into the classroom. Over time, the integration of Shulman's concept of pedagogical content knowledge (PCK) with technology has occurred. In 1999, Pierson developed a theoretical model that integrated technological knowledge with Shulman's framework. The term used to refer to this concept is "technological-pedagogical-content knowledge." Pierson (2001) suggests that the best way to use technology in education is when instructors view it as an essential part of the learning process.

In their study, Margerum-Leys, and Marx (2002) investigated the influence of computer technology in classrooms on students' academic achievement. Their research indicated that educational technology has the ability to augment students' learning experience. Nevertheless, they underscored the need for instructors possessing a thorough and diverse comprehension of instructional technology in order to successfully integrate it into their teaching methodologies. The researchers investigated teachers' proficiency in educational technology using Shulman's approach, which encompasses content knowledge, pedagogical knowledge, and pedagogical content knowledge. The observational data was examined

utilizing Shulman's approach, leading to the proposal of a novel "knowledge set" that enhances educational technology practice. The new knowledge set encompasses three distinct components: technological content knowledge, which pertains to understanding the functionality and applications of technological tools in the classroom; technological pedagogical knowledge, which involves the skill of utilizing technology to enhance students' learning experience; and technological pedagogical content knowledge, which involves the expertise of integrating technology into subject-specific content to augment students' comprehension of the material. The study proposed that integrating educational technology into classroom activities might enhance students' academic achievement. Nevertheless, instructors must possess a thorough understanding of instructional technology in order to properly employ it in their teaching methodologies.

Niess (2005) asserted that teaching candidates struggle with employing an integrated knowledge framework when instructing a particular subject. Niess underscored the need to cultivate a thorough comprehension of the subject matter pertaining to technology and its use in education for prospective science and mathematics educators. There should be a clearer demonstration of how teachers' education coursework is integrated with TPACK training. In research done by Çam and Erdamar Koc (2021), the impact of Technological Pedagogical Content Knowledge (TPACK) training on teachers and teacher trainees was examined. The study examined seven educators from various departments at a Turkish university who underwent TPACK training in the Spring term of the 2016-2017 academic year. These educators are esteemed authorities in their respective domains and possess bachelor's, master's, and doctoral degrees from the Faculty of Education, where they presently serve as instructors. The study encompassed 158 pre-service teachers enrolled in various departments, who received instruction from the educators and were thereafter tasked with applying the acquired techniques from the training. The investigation was carried out utilizing the case study methodology, which is a form of qualitative research. Throughout the instructional sessions conducted by the educators, the researchers carefully observed and gathered comments from pre-service teachers. The data was examined utilizing content analysis methodologies. The educators underwent a three-stage in-service training in TPACK. The initial phase, referred known as "Comprehending the Essence of TPACK," consisted of two sessions in which all educators involved were provided with extensive knowledge on the structure of TPACK. The primary goal was to guarantee that all instructors participating in the program had a comprehensive comprehension of the TPACK methodology. The second stage of the approach, "Acquiring Technological Information," entailed delivering educational technology

instruction to the instructors. However, following the assessment, it was noted that they lacked sufficient expertise in this field. Consequently, the educators participated in a training program comprising of 14 sessions, during which they were familiarized with a particular technology application, its benefits, constraints, and prospective educational applications. Afterwards, each teacher developed a TPACK resource customized for their specific discipline with the given technical tool. In addition, conversations were held to examine the many instructional techniques that may be effectively utilized with the technology. The last phase, referred to as "Field Study - TPACK Practices," required the educators to put into practice the information they acquired in their respective professions and apply it in real classroom environments. At this stage, the educators are able to completely exemplify the TPACK concepts.

Çam and Erdamar Koç (2021) subsequently examined classroom practices using an observation form that encompassed various categories, such as the lesson objectives, teaching methods and technological integration, effective utilization of educational resources, student engagement, learning support, fostering student participation, enhancing content, and facilitating classroom management. Following the completion of the activities, pre-service instructors provided their favorable and unfavorable feedback using a "view form." To summarize, the study emphasizes the beneficial effects of TPACK training on both educators and pre-service teachers. The TPACK training program provided educators with the essential competencies and understanding to establish genuine learning settings and proficiently utilize technology in the classroom. Moreover, the study offers valuable insights into the several pedagogical strategies that may be employed to enhance student engagement and active involvement in the educational process. Based on the artifacts, Çam and Erdamar Koç (2021) deduce that pre-service teachers displayed a positive disposition towards classes that employed the TPACK method. The pre-service instructors were captivated by these approaches and actively participated in the courses as a consequence. They no longer found traditional teaching techniques appealing and showed a desire for novel ways that they might later apply as instructors. After examining the class observations and the opinions of the pre-service teachers, it was determined that the TPACK framework predominantly emphasized the Pedagogical Knowledge (PK) component. Investigating the delivery of the TPACK course in undergraduate teaching programs has been a worthwhile topic of debate. Now, the researcher will focus my analysis on the TPACK framework in the next paragraph.

The works of Niess (2005) and Margerum-Leys and Marx (2002) have greatly enhanced the existing body of knowledge on Technological Pedagogical Content Knowledge (TPACK). Mishra and Koehler (2006) subsequently introduced a paradigm that integrates

technology as a third component alongside knowledge, content, and pedagogy. This framework was further enhanced to provide a visual, conceptual model that accurately depicts the information that instructors need to possess in order to proficiently use technology in their teaching methodologies. The framework acknowledges and adapts to many educational techniques for teaching and learning, without endorsing any one pedagogical style (Harris & Hofer, 2011). The TPACK framework, developed by Harris and Hofer (2011), Jimoyiannis (2010), has gained significant popularity in recent years for designing teacher development programs in many subject areas. Koehler et al. (2007) conducted a study which revealed that creating online courses using Technological Pedagogical Content Knowledge (TPACK) is an intricate task that necessitates teachers to possess a thorough comprehension of how content, pedagogy, technology, and web contexts interact with each other. Therefore, in order to provide engaging and influential online courses, educators must acquire Technological Pedagogical Content Knowledge (TPACK). This framework enables individuals to incorporate technology into their teaching methods and curriculum, taking into account the various aspects that impact the learning environment. Academics have recognized several uses for TPACK. An such instance is the ICT-TPCK model described by Angeli and Valanides (2009). This approach expands upon the TPACK framework by incorporating ICT components, content, contexts, and learners, while introducing two more knowledge domains: Knowledge derived from learners and the teaching context. In addition, scientists such as Chai et al. (2010) and Yurdakul et al. (2012) have utilized the TPACK framework to create and verify scales. This section specifically addresses this aspect.

2.20. TPACK Scale

In 2006, Mishra and Koehler created a method consisting of seven distinct components to assess instructors' proficiency in technology, pedagogy, and their specific subject matter. This tool has been utilized by several studies. TPACK has been evaluated in several specialized sectors for multiple purposes since its inception in educational circles. Several academics primarily concentrated on the scholarly works that have specifically addressed TPACK. Wu (2013) did a study with the objective of examining the progression of TPACK research across the years. The analysis included 24 empirical papers that were published in the SSCI database from 2002 to 2011. After 2009, the research on Technological Pedagogical Content Knowledge (TPACK) had significant and fast growth. The majority of research (66.7%) concentrated on domain-general Technological Pedagogical Content Knowledge (TPACK), whereas a lesser proportion (20.8% and 12.5%, respectively) of the studies investigated domain-specific TPACK. In summary, the study offers significant insights

into the patterns of TPACK research during the previous ten years. Chai et al. did a study in 2013 where they examined 74 research publications released till May 2011. The study revealed a rise in the quantity of research conducted on a subject known as Technological Pedagogical Content Knowledge (TPACK). The majority of these research (about 64%) examined TPACK in relation to broad subjects, however, none specifically investigated the application of TPACK in language instruction. The majority of studies, or 49.65%, were conducted in North America. The Asia Pacific area was rated in second place, accounting for 17.6% of the completed research. Europe and non-European Mediterranean nations conducted 16.7% of the research, ranking as the third most prevalent site. Voogt et al. did a systematic review in 2013. They examined a total of 55 papers and one book chapter that were published from 2005 to 2011. The objective of the study was to ascertain the utilization of the Technological Pedagogical Content Knowledge (TPACK) theory in teacher education. The study's findings revealed the following:

(a) Only a limited amount of research has examined the utilization of technology by instructors across various academic disciplines.

(b) In order to assess the proficiency of instructors in utilizing technology, a combination of tests and surveys were administered. The surveys were challenging due to their utilization of generic terminology instead of subject-specific vocabulary.

(c) Demonstrating the use of technology in class through exemplary lessons is an effective approach to assist instructors in enhancing their technological proficiency.

(d) The way instructors perceive technology is crucial in determining how they utilize it in the classroom.

(e) Understanding teachers' rationales for employing certain instructional methods might provide valuable insights into their decision-making process about the integration of technology in the classroom.

Various research has focused on evaluating teachers' Technological Pedagogical Content Knowledge (TPACK). The TPACK evaluation is commonly conducted using a seven-factor instrument created by Mishra and Koehler in 2006. Additional aspects have been examined in the literature, including those investigated by Angeli and Valenides (2014). The main approaches for evaluating Technological Pedagogical Content Knowledge (TPACK) are based on survey data, as demonstrated by studies undertaken by Baran, Chuang, and Thompson (2011), Baser, Kopcha, and Ozden (2016), Hsu (2016), and Xiaobin et al. (2014). Qualitative methodologies have also been employed in certain investigations, as evidenced by

the research conducted by Jaipal and Figg (2010), Niess and Gillow-Wiles (2010), and Stoilescu and McDougall (2010).

Studies employing mixed methodologies, such as those done by Bustamante (2017) and Koh, Chai, and Lim (2017), have been undertaken to enhance comprehension of Technological Pedagogical Content Knowledge (TPACK) among teachers who are either in training or currently employed. This research has yielded useful insights into the necessary assessment methodologies for properly evaluating Technological Pedagogical Content Knowledge (TPACK). Prior to delving into TPACK scales, it is important to grasp the methodology used to evaluate TPACK investigations. In their study, Wang, Schmidt-Crawford, and Jin (2018) examined the TPACK growth of pre-service teachers through the use of five research methodologies: self-report measures, open-ended questionnaires, performance evaluations, interviews, and observations. From 2006 to 2015, a total of 88 papers were chosen. These publications focused on the examination of Technological Pedagogical Content Knowledge (TPACK), featured pre-service teachers, were based on empirical research, and were written in the English language. Three themes were identified in this analysis regarding self-report measures: self-perceived knowledge in the areas of content, pedagogy, and technology domains of TPACK; the role of teacher educators in modeling effective teaching to enhance pre-service teachers' TPACK development; and the influence of teaching experience on TPACK development. Furthermore, it was shown that the growth of Technological Pedagogical Content Knowledge (TPACK) is strongly associated with Technological Knowledge (TK). Eight research employed open-ended questionnaires as assessment instruments. A notable discovery was that pre-service teachers acquired the ability to integrate educational technology into their coursework or teaching by following appropriate guidelines or models provided by their course instructors. They also demonstrated varying degrees of progress in their Technological Pedagogical Content Knowledge (TPACK) level.
The research utilizing performance assessments, such as artifacts, task completion, scenario, or problem-based questions, shown that the enhancement of Pre-service teachers' acquisition of Technological Pedagogical Content Knowledge (TPACK) may be enhanced by the use of scaffolding or modeling. The evolution of TPACK was significantly shaped by the input received from peer mentors, field instructors, and the demonstration of effective teaching practices by teacher educators. During the assessment, it was revealed that researchers encounter difficulty in identifying the progression of the integrated knowledge domains of Technological Pedagogical Content Knowledge (TPACK). The second issue of concern pertained to the challenges faced by academics in discerning the several phases of TPACK's

growth, a crucial domain of investigation in the field of educational technology. This problem presents a substantial obstacle for scholars that aim to comprehend and examine the function of TPACK in the contemporary education system. The researchers conducted interviews to get insights into the utilization of technology by instructors in the classroom. It was discovered that instructors who are now teaching and undergoing training can acquire the skills to properly utilize technology. Additionally, the researchers found that training programs for prospective educators are crucial in fostering their confidence in utilizing technology. The study demonstrated that instructors may enhance their proficiency and self-assurance in utilizing technology with adequate training and assistance.

Thirteen studies were undertaken to test Technological Pedagogical Content Knowledge (TPACK) in pre-service teachers using observations as a study approach. The results indicated a significant requirement for pedagogical expertise among pre-service teachers, as well as the difficulty of precisely monitoring the interconnected knowledge areas of Technological Pedagogical Content Knowledge (TPACK). The process of developing and validating TPACK measuring tools has been a challenging and rigorous endeavor. Choosing suitable products might be ambiguous or overly broad, depending on the circumstances. Njiku, Mutarutinya, and Maniraho (2020) conducted a study where they analyzed 28 TPACK scales. The purpose was to investigate the overall structure of the survey scales, and the types of questions used to assess the three main domains of teacher knowledge. Additionally, they examined how these domains interacted to generate the four subscale items. While research concentrated on particular technologies or subjects, others investigated more extensive technical capabilities. For instance, several studies have investigated the use of social media and mobile devices by individuals, while others have explored the usage of other technologies such as movies and photos. Several research examined pedagogical techniques in a broad sense, while others specifically explored instructional methods for areas such as mathematics, physics, or language arts. Researchers have employed several methodologies to investigate this subject. The interaction between TK (Technological Knowledge), CK (Content Knowledge), and PK (Pedagogical Knowledge) in the formation of TCK (Technological Content Knowledge), TPK (Technological Pedagogical Knowledge), PCK (Pedagogical Content Knowledge), and TPACK (Technological Pedagogical Content Knowledge) is intricate. The concept of Technological Content Knowledge (TCK) refers to the expertise in effectively integrating technology into the teaching of a certain topic. On the other hand, Technological Pedagogical Knowledge (TPK) encompasses a broader understanding of how to use technology in the process of teaching.

In addition, PCK refers to the comprehensive understanding of how to teach a certain subject. TPACK encompasses the expertise of effectively using technology into teaching a particular topic to enhance student learning. The authors of the study recognized that the interaction between these areas is complex, and their limits are occasionally well defined. Njiku et al. (2020) found that the majority of the papers they examined used survey scales that were modified from earlier studies. Among these, the survey scale developed by Schmidt et al. (2009) was the most frequently employed. Other academics have made multiple revisions to the TPACK framework. Lee and Tsai (2010) adopted a distinct strategy by integrating Web-based applications rather than conventional technologies. The term was changed to Web-based Pedagogical Content Knowledge. The original TPACK framework was criticized for its emphasis on integration rather than transformation, which prompted the development of other representations. In 2019, Chai and his colleagues presented a new instrument known as TPACK-21CQL (21st Century Quality Learning). This tool is founded on the ideas of 21st-century quality education. This tool has been extensively integrated into Singapore's educational system, where it facilitates the cultivation of essential 21st-century competencies such as genuine learning, cooperative learning, introspective learning, and active/constructive learning. This method prioritizes a learning environment that is captivating, interactive, and tailored to the demands of the contemporary period. In 2019, Chai, Koh, and Teo proposed a revised conception of the Technological Pedagogical and Content Knowledge (TPACK) taxonomy to better suit the demands of the 21st century. The researchers suggested a consolidated TPACK classification that excludes intermediary sub-elements like Technological Pedagogical Knowledge (TPK) and Pedagogical Content Knowledge (PCK), as well as fundamental factors such as Technological Knowledge, Pedagogical Knowledge, and Content Knowledge. The objective of this novel model was to create and authenticate a fresh tool, analyze the shifts in pre-service teachers' convictions and TPACK-21CQL (Technological Pedagogical Content Knowledge 21st Century Quality Learning) during an intervention program, and scrutinize the design convictions and TPACK-21CQL before and after the intervention. The study encompassed 564 instructors participating in a year-long teacher certification program across several areas including language, science, mathematics, humanities, and social sciences. The study developed a novel evaluation tool named TPACK, which measures the convergence of TPACK, a crucial component for high-quality learning in the 21st century. The study further discovered a substantial improvement in the participants' self-efficacy in design thinking and TPACK-21CQL. Wang (2022) proposed that using a two-dimensional TPACK scale would be more effective in evaluating the TPACK (Technological

Pedagogical Content Knowledge) of EFL (English as a foreign language) instructors when it comes to combining technology and cognitive abilities. The existing TPACK evaluations should offer further assistance to assist instructors in comprehending the level of technology integration in teaching English as a Foreign Language (EFL). An ensemble of educators successfully conducted the poll via an internet-based platform. The gathered scores were utilized to verify the authenticity and dependability of the novel evaluation instrument. The revised scale has a cognitive process factor that directs the thinking abilities of student instructors as they engage in reflective practices regarding their Technological Pedagogical Content Knowledge (TPACK). The 2D EFL-TPACK scale consists of two dimensions. The first dimension, shown on the X-axis, is the TPACK dimension, which contains PCK (Pedagogical Content Knowledge) and TPCK (Technological Pedagogical Content Knowledge). The second dimension, represented on the Y-axis, is the cognitive process dimension, which consists of six levels of thinking abilities. This was developed using Revised Bloom's Taxonomy, a framework of cognitive abilities that assist in the analysis of teaching and learning. The diagram below depicts the conceptual framework of this evaluation instrument.

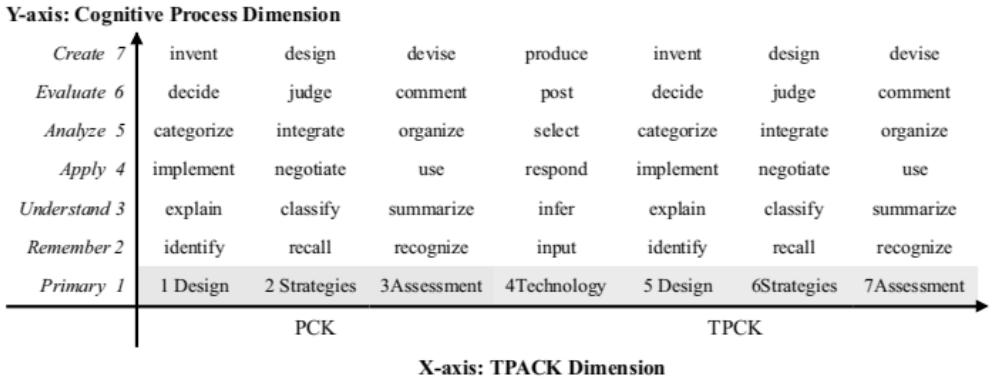


Figure 2. 2D EFL-TPACK Scale structure (Wang, 2022, p. 9940)

The findings from the 2D EFL-TPACK Scale indicate that the participants possessed a moderate degree of confidence in their Technological Pedagogical Content Knowledge (TPACK) abilities. The average score for the participants' TPACK skills was 174.49, with a standard deviation of 32.04. The Primary scores exhibited the highest values (Primary M=3.68, SD=0.69), indicating the original TPACK items from the current TPACK examinations. The

teachers exhibited more self-assurance in their TPACK proficiency pertaining to instructing lower-level cognitive abilities (Remember, Understand, and Apply) as opposed to higher-level cognitive abilities (Analyze, Evaluate, and Create). Participants achieved greater results in the Remember, Understand, and Apply categories, however their scores in Analyze, Evaluate, and Create were comparatively lower. Participants had lower levels of confidence (below the average score of 3.5) in their TPACK skills related to higher-order thinking abilities, particularly in the areas of Analyze (M=3.45, SD=0.70) and Create (M=3.46, SD=0.74).

2.19. EFL Teachers' Differences Regarding Gender and Age

Research done in 2006 by Mishra and Koehler examined the process by which instructors acquire the skills to utilize technology effectively. The objective was to ascertain the level of confidence among instructors in utilizing technology and determine whether this was correlated with their age, gender, or other personal characteristics. Additional research has also investigated the impact of teachers' backgrounds on their proficiency in utilizing technological resources in the teaching environment. Research findings indicate that gender disparities impact the self-assurance levels of instructors in relation to their knowledge of technology application (TK). Female instructors are more prone to experiencing diminished self-assurance levels in this domain than their male counterparts. Koh, Chai, and Tsai (2014) and Roig-Vila, Mengual-Andres, and Quinto-Medrano (2015) are prominent researchers who have extensively examined this matter and have recorded their discoveries in several scholarly papers. A recent study indicates that males demonstrate superior problem-solving abilities while females exhibit more vital language ability. Moreover, research has indicated that female educators have greater levels of confidence in their educational expertise compared to male educators (Lin et al., 2013). An examination scrutinized the proficiency of educators in using digital games for instructional objectives. The study revealed that males had superior proficiency in playing digital games, particularly those that simulate real-life scenarios, and demonstrated enhanced technical aptitude compared to girls. Although specific studies have indicated that there are no substantial gender disparities in teachers' overall perceived technological pedagogical content knowledge (TPACK), other research has revealed that male teachers exhibit greater confidence in their subject matter knowledge (CK) while displaying less confidence in instructional representation and approaches (PK). Two studies, one conducted by Jang and Chang (2016) and another by Liu, Zhang, and Wang (2015), both corroborate this discovery. These studies indicate that gender disparities in TPACK may differ based on the particular domains of knowledge and instructional approaches. Researchers have examined the relationship between age and instructors' perceived self-confidence in

Technological Pedagogical Content Knowledge (TPACK). Research has indicated that older instructors generally demonstrate less self-confidence in their technical Knowledge (TK) and technical Pedagogical Content Knowledge (TPACK), particularly in relation to utilizing the internet for educational purposes. The elder instructors' lack of faith in technology may be linked to their limited exposure to it during their formative years. Conversely, there is a suggestion that older instructors possess greater self-efficacy in pedagogical content knowledge (PCK), which pertains to their proficiency in efficiently teaching subject matter. The reason for this is because older instructors possess a greater number of years of experience in the realm of education, enabling them to enhance and perfect their teaching abilities and knowledge.

The age and gender of teachers may influence their level of technological expertise and confidence in their talents. Studies indicate that older female educators exhibit diminished self-assurance in their technical aptitude, including their comprehension of technology applications and pedagogical utilization. This study is conducted using samples of teachers who are now working and teachers who are still in training. Analogous findings have been discovered in Türkiye, where research was undertaken to examine the impact of gender on teachers' levels of technological pedagogical content knowledge (TPACK). The findings of their study indicated that gender does not have a significant effect on TPACK levels. This result aligns with the findings of Şimşek et al.'s (2013) research, which also concluded that the TPACK levels of instructors are not significantly affected by their gender. The research findings indicated that gender does not have a major influence on TPACK levels. The findings align with the results of Şimşek et al.'s (2013) research, which also concluded that the gender of instructors does not have a major impact on their TPACK levels. Nevertheless, it is important to acknowledge that several studies in the existing body of research have shown different levels of Technological Pedagogical Content Knowledge (TPACK) depending on gender. Studies undertaken by Argon et al. (2015), Tuncer and Bahadır (2016), and Kazu and Erten (2014) specifically identified variations in TPACK levels based on gender. To summarize, with the exception of Turkish research, age can have a notable impact on instructors perceived Technological Pedagogical Content Knowledge (TPACK), especially among teachers who are currently employed. Henceforth, we shall go into the correlation between TPACK and several other standards.

2.20. The other mediators of TPACK: ICT competence, ICT self-efficacy, ICT support

There is a growing trend in education where the use of Information and Communication Technology (ICT) is becoming more prevalent. As a result, instructors are expected to include ICT into their teaching methods (Graham et al., 2009). Many instructors find it challenging to use contemporary tools in their teaching to meet objectives for learning (Heitink et al., 2016). Numerous educators want assistance in utilizing tech inside the educational setting. One factor is that educators may require more training to effectively incorporate technology into their teaching during their initial educational period. ICT support refers to the assistance offered by educational institutions to instructors in order to enhance their proficiency in utilizing technology. This support includes elements such as training, infrastructure, and help from IT personnel. Institutions can enhance instructors' technological proficiency and enhance their pedagogical approaches by offering such assistance. This aid might manifest as educational support provided in K-12 educational environments (Özgür, 2020), or as support offered in higher education institutions. Educators require many forms of assistance in order to properly fulfill their responsibilities. The two main types of help are administrative support and support from colleagues. Administrative assistance refers to the provision of facilities, digital resources, and policies that facilitate and empower teachers to carry out their responsibilities effectively.

Colleague support includes the provision of technical aid and encouragement by fellow educators, which is crucial for cultivating a supportive and collaborative work atmosphere. Dong et al. (2020) argue that both forms of assistance are essential for instructors to provide high-quality education and attain favorable student learning outcomes. Prior research has shown the importance of bolstering teachers' convictions and actions in relation to the incorporation of Information and Communication Technology (ICT) (Brown et al., 2010; Dong et al., 2020). The provision of institutional ICT assistance has been found to positively influence teachers' perspectives and attitudes towards ICT, as indicated by studies conducted by Admiraal et al. (2017) and Moreira-Fontán et al. (2019). Joo et al. (2018) found that institutional support might have either a positive or negative impact on the utilization of ICT. Teacher educators who have a favorable perception of institutional support are more inclined to integrate technology into the education of future teachers. In the study done by Farjon et al. (2019), it was shown that teacher educators who believed they received more support from their institutions had better levels of technological competency and Technological Pedagogical Content Knowledge (TPACK). Institutional support was identified as a factor that positively predicts and mediates the Technological Pedagogical Content Knowledge (TPACK) of teacher educators. ICT competency is a measure of TPACK, which

refers to the level of expertise instructors have in utilizing Information and Communication Technology (ICT) (Aesaert & Van Braak, 2015). Put simply, digital technology has become a crucial component of education. Teachers require proficiency to properly utilize diverse digital resources during instruction. ICT competence encompasses specialized knowledge and abilities that progressively evolve into thoughtful and hierarchical expertise. It encompasses the use of technical expertise and practical abilities to use technology in order to resolve issues or achieve objectives within particular contexts. It has resemblance to the technological component of TPACK, which is a framework designed to enhance the effectiveness of teaching via the use of technology (Voogt, 2008).

Within academic settings, academics have examined the concept of ICT self-efficacy. Initially, ICT self-efficacy was confined to computer self-efficacy, which involved evaluating one's degree of confidence in carrying out job-related activities using computers. This involved the belief in one's ability to do fundamental computer abilities, more advanced skills, or utilizing computers for educational reasons (Scherer & Siddiq, 2015). Researchers have recognized the importance of Internet self-efficacy, which refers to individuals' confidence in their capacity to effectively utilize the internet and multimedia blogging, in light of the increasing influence of the internet and its impact on education (Papastergiou et al., 2011). Consequently, a number of researchers broadened the notion of ICT self-efficacy to encompass individuals' assurance in their ability to utilize ICT for educational and instructional purposes (Moreira-Fontán et al., 2019; Siddiq et al., 2016).

Several research have examined the relationship between teacher attributes, value beliefs, self-efficacy, sense of classroom authority, accomplishment level, and Technological Pedagogical Content Knowledge (TPACK) (Cheng & Xie, 2018; Dong et al., 2015). Nevertheless, the majority of these research have predominantly concentrated on instructors who are already employed (Dong et al., 2020; Moreira-Fontán et al., 2019). As pre-service teachers are still in college, they primarily acquire and build Technological Pedagogical Content Knowledge (TPACK) inside the university context. During this period, individuals expand their understanding of information and communication technology (ICT), enhance their proficiency in ICT, and cultivate their confidence in using ICT with the assistance offered by their educational institutions. Hence, the extent to which pre-service teachers get Technological Pedagogical Content Knowledge (TPACK) with the assistance of university Information and Communication Technology (ICT) support is strongly linked to their psychological traits and ICT proficiencies. However, there is presently a lack of research that investigates the role of ICT-related factors in moderating this link, especially with respect to

pre-service teachers. Wang and Zhao (2021) sought to fill this void in the existing body of research.

In their study, Wang and Zhao (2021) investigated the impact of university support for technology on the enhancement of pre-service teachers' Technological Pedagogical Content Knowledge (TPACK). The researchers discovered that the level of support provided by the university for technology had a favorable influence on how pre-service teachers perceived technology, their proficiency in using technology, and their confidence in using it. Nevertheless, it had no immediate impact on their Technological Pedagogical Content Knowledge (TPACK). The research encompassed 298 senior students from several academic disciplines, all of whom aspired to pursue a career in teaching. They successfully finished an online self-assessment questionnaire that was modified from prior research and translated.

The researchers utilized structural equation modeling to determine that the pre-service teachers' confidence in utilizing technology was the most influential factor in predicting their Technological Pedagogical Content Knowledge (TPACK). The impact of perception of technology was less significant, although the proficiency in using technology did not serve as a predictor for TPACK. Technological proficiency had the greatest influence on the impact of university assistance on pre-service teachers' Technological Pedagogical Content Knowledge (TPACK), in comparison to the other two categories. These findings indicate that when universities provide assistance for technology, it can have a good effect on the development of pre-service teachers' Technological Pedagogical Content Knowledge (TPACK). This aspect has not been emphasized in prior studies.

The COVID-19 pandemic, which emerged in late 2019, caused substantial damage to the worldwide education market. While the pandemic largely pertained to health concerns, its repercussions permeated many facets of everyday existence, encompassing economic adversities and transforming labor methodologies across diverse sectors. Amidst this catastrophe, it was imperative for all parties involved to cooperate in order to surmount it. The transition from traditional physical education to high-caliber, technology-driven online education brings out noteworthy obstacles and prospects. In order to effectively execute online education, it is imperative for the government, educational institutions, professors, students, and parents to collaborate closely. Multiple hurdles must be confronted in order to surmount the barriers to online education. These factors encompass ensuring the willingness and capability of governments and institutions to embrace online education (Bozkurt & Sharma, 2020), establishing policies for accrediting online education (Tafazoli & Atef Boroujeni, 2021), addressing psychological concerns associated with technology usage that can impact

both educators and students (Geng et al., 2019), managing financial considerations related to providing resources for online education (Aguilera-Hermida, 2020; Gillis & Krull, 2020), and guaranteeing that teachers possess proficiency in effective technology-based teaching methods (Sepulveda-Escobar & Morrison, 2020; Tafazoli, 2021b). Studies on language learners have shown that EFL learners have seen beneficial effects as a result of the COVID-19 epidemic. The researchers have examined the accomplishments of students in different areas, including their speaking skills (Xie et al., 2021), writing skills (Abe, 2021; Reynolds & Kao, 2021), reading comprehension (Yang & Qian, 2020), vocabulary proficiency (Chen & Hsu, 2020; Li et al., 2021), and their willingness to communicate (Lee & Drajati, 2020). Language instructors have not completely embraced technology integration, despite its availability, for several reasons. These include personal variables, contextual components, and the quality of computer-assisted language learning (CALL) teacher education and professional growth (Meihami, 2021; Tafazoli, 2021a; Yeh & Swinehart, 2019). Tafazoli (2021a) contends that Computer-Assisted Language Learning (CALL) teacher education and professional development have a key role while transitioning from conventional teaching techniques and prompting university instructors to reevaluate their instructional strategies. The process entails assessing, strategizing, and incorporating instructional technology. CALL professional development, often known as CALL PD, is suggested for the purpose of altering teachers' views, professional identity, and teaching philosophy (Dixon et al., 2014; Hur et al., 2016; Meihami & Esfandiari, 2021). In addition, it acts as a catalyst for incorporating technology into teaching methods (Bataineh et al., 2020; Tafazoli et al., 2020), overcoming instructors' reluctance, and improving their abilities (Laabidi & Laabidi, 2016; Tayan, 2017).

Several scholars, including Anderson (2012) and Dashtestani (2012, 2019), argue that a lack of adequate professional development opportunities for computer-assisted language learning (CALL) has hindered the incorporation of technology in language classrooms. The importance of teaching technique and topic knowledge, referred to as Technological Pedagogical topic Knowledge (TPACK) by researchers Mishra and Koehler in 2006, is also highlighted in conjunction with teachers' digital literacy.

Due to the significant influence of the COVID-19 epidemic, particularly on education, instructors are required to communicate their experiences and needs regarding this insufficient procedure. In their study, Tafazoli and Meihami (2022) examined the specific technical requirements of Iranian English as a Foreign Language (EFL) instructors and provided suggestions on how to effectively incorporate computer-based language learning (CALL) methods in the context of the COVID-19 curriculum. The study entailed examining the

narratives of 66 Iranian English as a Foreign Language (EFL) instructors using both deductive and inductive theme analysis stages. Tafazoli and Meihami (2022) assert that educators who include technology in their instructional practices must possess thorough preparation and a comprehensive grasp of its appropriate utilization. Their suggestion is that teacher training programs should prioritize the development of Technological Pedagogical Knowledge (TPK) as the first priority, followed by Technological Content Knowledge (TCK), and finally Technological Knowledge (TK). Teachers have also expressed the need to comprehend the relationship between TCK/TPK and TPK/TK. English language educators in Iran have advised instructors, students, and parents to collaborate in order to enhance their proficiency in using technology amidst the ongoing epidemic. This necessitates enhancements to the technological infrastructure and educational programs for teachers that prioritize the enhancement of their collaborative abilities, digital literacy, autonomy, and Technological Pedagogical Knowledge (TPK). The training should also cater to the educational requirements arising from the epidemic. Research was undertaken in 2023 by Mashadi, Kadhom, and Shooshtari to examine the influence of COVID-19 on the technological pedagogical content knowledge (TPACK) of English instructors in Iraq's public and private high schools. The study encompassed 288 male and female English as a Foreign Language (EFL) instructors from Basrah, Iraq. These teachers willingly took part in an online Technological Pedagogical Content Knowledge (TPACK) survey, which was conveniently accessible to them. The study uncovered significant disparities in the overall TPACK and specific components of Technological Knowledge (TK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and Technological Pedagogical Content Knowledge (TPCK) among teachers from public and private schools. Nevertheless, there were no notable disparities detected in Content Knowledge (CK), Pedagogical Knowledge (PK), and Pedagogical Content Knowledge (PCK) between the two groups. The greater levels of TK, TCK, TPK, and TPCK seen among Iraqi EFL instructors at private high schools, as opposed to those in public schools, can be attributed to many factors. Private schools have greater financial capabilities to acquire state-of-the-art technology equipment and resources using student fees, hence facilitating the development and enhancement of EFL instructors' technological expertise. Additionally, private schools often organize technology seminars and professional development programs, which help to improve the IT literacy and abilities of instructors. Furthermore, the conducive atmosphere in private high schools contributes to the promotion of successful incorporation of technology in the classroom. School administrators and colleagues offer support and encouragement to English as a Foreign Language (EFL) teachers, thereby positively impacting their beliefs about

their proficiency in technology. Furthermore, kids enrolled in private high schools typically originate from homes with elevated socioeconomic statuses, and they exhibit enhanced drive and involvement, fostering an atmosphere that is favorable for the investigation and utilization of technology. Furthermore, the insistence of parents on using technology-driven pedagogical methods in private schools necessitates that EFL teachers be well-informed about technological advancements and embrace novel approaches. As documented in the literature, during the COVID-19 pandemic, there have been notable alterations that have highlighted certain requirements and required adjustments of certain procedures at distinct levels.

2.21. TPACK Studies in Language Teaching

The researcher wishes to highlight the vital and essential insights provided by Carolina Bustamente's research. The study conducted in 2020 examines the professional growth of educators who teach Spanish as a second language. It notably concentrates on the integration of Web 2.0 resources within the classroom setting. The research emphasizes a successful instance of an internet-based professional development course for Spanish teachers, developed by the University of Nebraska-Lincoln and funded by a Teacher Quality Grant from the U.S. Department of Education. The course effectively enhances the use of Web 2.0 resources in the classroom, serving as a commendable illustration of how technology may facilitate the professional growth of language educators. The objective was to investigate the teachers' encounters with professional development and their integration of Web 2.0 tools in their classes. This study examined the participants' learning and integration processes by qualitatively analyzing data obtained from interviews, classroom observations, and documentation. In order to gather data, the researchers employed many methodologies, including examining written documentation, conducting interviews, and collecting observations at multiple junctures during their investigation. Prior to attending the professional development program, participants were obligated to complete an application form. This form facilitated the gathering of data on their teaching experience and proficiency with technology. As a component of their professional growth, participants in the Spanish classroom program were obligated to uphold a weekly notebook in their portfolios. The diary recorded their encounters with Web 2.0 tools and their implementation in the classroom. At the end of each module, participants completed a diary as their final assignment. In this journal, they reflected on the learning objectives of the week, assessed their own progress in meeting those objectives, and shared any valuable insights they acquired that may be beneficial in their teaching. Additionally, participants composed a concluding essay that encapsulated their comprehensive learning experience and outlined their strategies for using technology into their future

teaching. This last essay was incorporated into the data analysis procedure. Following the post-discussion session, the researchers interviewed each participant to gain further insights into their perceptions of the encounter.

After the completion of the professional development (PD) program, the participants were monitored during the next semester as they put into practice the technical tools they had acquired. The observations were conducted utilizing a qualitative observational procedure, which entailed documenting a sequential series of actions in the classroom via descriptive notes. Furthermore, the participants' teaching methods and their interaction with the technology were further understood through the collection of reflective notes on classroom experiences, processes, and activities.

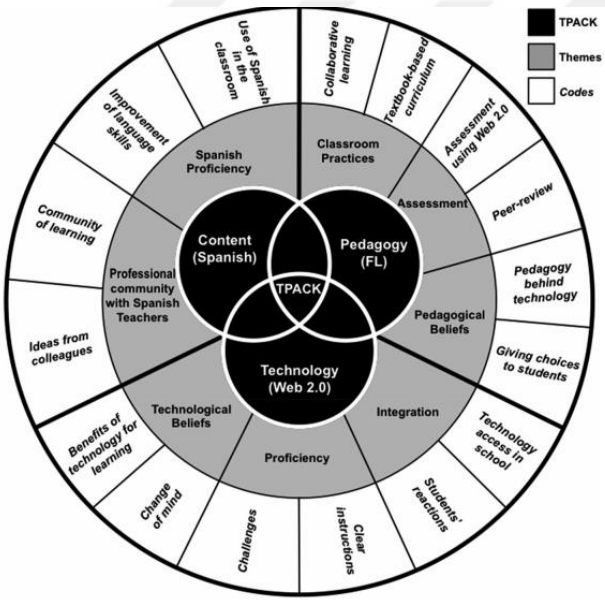


Figure 3. Categorization of emerging themes and codes within pedagogy, technology, and content (Bustamente, 2020, p. 336).

Following an extensive data analysis, several crucial themes were found and classified into three primary categories: Content, Pedagogy, and Technology. The Technology category encompassed subjects pertaining to technological ideologies, assimilation, and expertise, whereas the Content category addressed matters such as Spanish fluency and the professional network of Spanish educators. The Pedagogy category provided valuable insights on instructors' own experiences with classroom procedures, pedagogy, and assessment. The study's findings revealed that most participants had positive learning experiences in the three key areas examined (pedagogy, technology, and content) and successfully integrated Web 2.0 technologies. Furthermore, the study highlighted the need of using the Technological

Pedagogical Content Knowledge (TPACK) framework as a basis for creating successful professional development programs.

Lee and Tsai (2010) employed the Technological Pedagogical and Content Knowledge (TPACK) paradigm to investigate Web Pedagogical Content Knowledge, specifically examining the incorporation and advancement of Internet and information and communication technologies. This specific concept has garnered significant appeal. Research was done in 2017 by Gökçearslan, Karademir, and Korney, which involved 170 pre-service teachers specializing in various disciplines. The study aimed to determine whether a teacher's profile could be used to categorize them according to their approach to Web Pedagogy and topic understanding. In order to accomplish this objective, the researchers employed the Relational Screening Model, a statistical instrument utilized to ascertain the level of connection between two or more variables. The essential data was obtained using the Individual Innovativeness Scale and W-PCK Scale. Their research demonstrated that the level of individual innovativeness was a significant factor in determining one's overall online pedagogical material knowledge. These findings suggest that a teacher's profile might serve as a reliable predictor for identifying their approach to Web Pedagogy and topic knowledge.

The use of the Technological Pedagogical Content Knowledge (TPACK) framework in English as a Foreign Language (EFL) setting has been predominantly confined to stimulating and capturing the interest of students. Tseng (2018) conducted research to investigate the benefits of using an SLA interface in the classroom. The study enhanced the grounded theory model by integrating TPACK instructors' data, including lesson plans, classroom observations, and interviews, with surveys and focus-group interviews conducted with students. The researcher conducted an experiment to evaluate the efficacy of a website named "Cool English" as an educational resource for English language acquisition among students. The website incorporates a plethora of engaging elements like movies, interactive games, and computer-mediated conversations to facilitate students' practice in the domains of speaking, listening, reading, and writing. The author discovered that the website facilitated students' acquisition of grammatical principles through an enjoyable approach, enhanced their use of new vocabulary by means of visual aids, and provided them with opportunities to hone their skills in constructing diverse sentence structures through online interactions with a computer.

Tseng et al. (2020) conducted a comprehensive meta-analysis of domain-specific TPACK research in the field of language instruction, covering the period from 2011 to 2019. Their aim was to provide a broad perspective on TPACK. Previous study on educational

technology reviews has found issues and trends in TPACK research, as indicated by the results. Nevertheless, this study enhances the current knowledge by providing a thorough examination of TPACK studies that specifically focus on the field of language instruction. The study revealed a total of 51 studies, predominantly done in Asia and the Middle East. Notably, in 2015, there was a significant increase in the number of publications on the issue. The 51 articles were classified into four categories: (a) investigating TPACK; (b) evaluating TPACK; (c) constructing TPACK; and (d) implementing TPACK. The purpose of studying TPACK is to have a more comprehensive comprehension of how language educators integrate different components of TPACK. The examination of the research unveiled three main results:

(a) There were differences in the confidence levels of language teachers regarding their TPACK skills, but they mainly used technology for activities such as drill-and-practice exercises, student motivation, and delivering content in classrooms which teacher dominated.

(b) Teachers' technology use in the classroom was more influenced by their TPACK knowledge and skills than their self-efficacy beliefs.

(c) The teachers' implementation of particular TPACK sub-domains, particularly Pedagogical Content Knowledge (PCK), was predominantly influenced by their pedagogical reasoning, which was frequently emphasized and explained. The studies examined in this analysis reveal three main findings:

Assessing TPACK can influence the development of TPACK instruments, as per research. The boundaries between TPACK's seven sub-domains are defined by specifying content-specific methods and technologies in survey items. Successful TPACK development treatments involve language teachers' comprehension of the TPACK framework, experienced teachers or teacher educators modeling, and collaborative lesson planning. The use of TPACK-informed language learning platforms and courses has been found to be valuable and practical, according to research. Tseng (2014) approached the issue from a different angle: in the eyes of students. On the contrary to literature publishing articles studying TPACK with teacher-based questionnaires, students’ perspectives were assessed toward their teachers' TPACK with a validated TPACK instrument. The results revealed that teachers seemed to be more proficient in content knowledge than TPACK.

In a study conducted by Szeto and Cheng (2017), the researchers explored how teachers integrate technology into their teaching across various subjects. The study involved

observing class sessions, interviewing the teachers, and analyzing their lesson plans. The findings indicated that teachers' teaching approaches changed based on their personal preferences, the school environment, and cultural influences. Additionally, the study identified that different subjects required diverse levels of technology integration. Saudelli and Ciampa (2016) utilized a distinct approach for their ethnographic case study conducted in Canada and the United States. Their research involved conducting a study of multiple cases and analyzing them to predict similar or contrasting results, with obvious reasons for each. The primary objective was to investigate the impact of three TPACK knowledge domains on teachers' language arts teaching classes, as well as determine whether and how they relate. The researchers collected data through classroom observations, teacher interviews, and blogs. According to the findings, during the study, it was observed that all three language arts teachers who utilized iPads in their teaching demonstrated a significant impact on their teaching practices due to their self-efficacy in technology integration. The teachers' confidence in using iPads in the classroom allowed them to incorporate technology into their teaching methods seamlessly, resulting in a more engaging and interactive learning experience for the students. Additionally, the teachers showed an enhanced ability to adapt to new technology, which helped them to create a dynamic learning environment. Furthermore, the TPACK framework proved to be a vital tool for teachers' self-efficacy beliefs. Data was collected through teacher interviews, blogs, and classroom observations. According to findings, all three teachers of Ipad language arts were found that their self-efficacy about technology integration impacted the teaching practices.

Collaborative learning through online communication tools, connecting learners from different places, refers to telecollaboration. The main aim of telecollaboration is to improve learners' knowledge and skills through collaborative tasks and project work (Vinagre, 2016). For English as a foreign language (EFL) teachers, this platform has become an essential way to display their technological proficiency and expertise. Palloff and Pratt (2005) pointed out that telecollaboration has a positive impact on achievements and attainments. These include the development of reasoning and evaluation skills, the creation of team-oriented knowledge, meaningful interactions, and reflective and transformative learning. The examination of unfolding processes within a designated domain has been effectively achieved through longitudinal studies. Oakley (2020) conducted a study over a period of 5 years to observe pre-service teachers' perspectives on designing digital storybooks for early childhood classrooms and how it relates to their understanding of TPACK development. The study involved 67 pre-service teachers from five cohorts who were observed and investigated during their preparation

of digital stories for children. As part of their coursework, pre-service teachers (PSTs) enrolled in the instructional unit were required to produce a digital storybook. These digital storybooks were then used as pedagogical tools during their initial professional teaching experience to facilitate the instruction of specific literacy concepts to children aged 4 to 8 years. The digital storybooks were tailored for either a select group of students or an individual pupil, with consultation from a supervising teacher from the school. The supervising teacher offered insights into the literacy learning requisites and interests of the targeted children, while also suggesting pertinent learning objectives to guide the PSTs. The overarching intention was to encompass only some of the classroom cohort in the utilization of the digital storybook. The stipulated task mandated the creation of a digital storybook comprising approximately 12 pages or screens, strategically designed to impart a specific literacy skill or concept. This resource was meant to be integrated into the educational milieu alongside other instructional materials, ideally within the framework of a designated literacy learning station.

As a part of their assignment, prospective student teachers (PSTs) were required to explain the reasoning behind their design choices for digital storybooks and provide a detailed account of their intended classroom employment strategies. To facilitate this, PSTs were trained in technical proficiency with PowerPoint. Data was collected through various sources, including web-based questionnaires, group interviews, and reflective entries from PSTs. The data was analyzed thematically for qualitative insights. Oakley (2020) discovered that creating and utilizing digital storybooks in their teaching practice aided PSTs in developing their technological, pedagogical, and content knowledge while improving their understanding of student dynamics.

2.22. TPACK Studies in Turkish EFL Contexts

With the advances in technology, it has become essential for teachers to acquire skills that are pertinent to the 21st century. Kozikoğlu and Babacan (2019) conducted a study to analyze the connection between the technological pedagogical content knowledge skills and attitudes towards technology of Turkish EFL teachers, as well as looking at whether gender, participation in the Fatih project training, and professional experience have an impact on individuals' TPACK skills and attitudes towards technology. Designing on the Correlational Survey Model, the study employed 721 EFL teachers in Türkiye. It was concluded that the correlation between TPACK skills and attitudes toward technology is high. In addition, research has shown that TPACK skills are more prevalent among female teachers, while professional experience does not play a significant role in differentiating the TPACK skills of teachers. The TPACK levels of the pre-service EFL teachers were analyzed by Atar, Aydın

and Bağcı (2019). During the academic year 2018-2019, 182 pre-service English teachers who were enrolled in the Faculty of Education at two state universities located in Istanbul and Sakarya were included in the sample. The data used for this study was attained by means of a technique known as the TPACK-Deep, which stands for Technological Pedagogical Content Knowledge Scale. The information for this research was collected through a method called the Technological Pedagogical Content Knowledge Scale (TPACK-Deep). A team of researchers developed this tool in 2012 to assist in gathering information about the use of technology in education. Besides assessing participants' competency levels, the researchers also analyzed various factors, such as grades, gender, daily internet usage, and social media activity. The results revealed that, in general, the sample demonstrated an elevated level of proficiency in the TPACK model as well as in its three dimensions, with the exception of the Ethics dimension, where they showed a medium level of competence. In the analysis of the TPACK model, it was observed that none of the variables had a significant impact on the overall model. However, when examining the design dimension of the model, it was found that both gender and daily internet usage had a significant effect. The findings of the study indicated that there is a potential correlation between the variables and the design dimension, and therefore, it is imperative to conduct further research to better understand this relationship. Pre-service teachers' technological proficiency, content knowledge, and pedagogical knowledge are crucial for their effective integration. These findings offer valuable insights into these aspects and their ability to blend them effectively.

Koçoğlu's (2009) qualitative study delved into the process by which 27 pre-service teachers were able to cultivate their Technological Pedagogical Content Knowledge (TPACK) skills by skillfully integrating technology into their teaching methods during their university ICT course. It was concluded that the course helped them develop TPACK skills. TPACK development program was applied to the pre-service teachers (Kurt et al., 2014) through 12 weeks. It was discovered that participants' TK, TCK, TPK, and TPACK scores significantly increased even though the preservice teachers had not previously received TPACK instruction. Furthermore, teachers were found to gain confidence in selecting appropriate technologies for teaching. Regarding the differences among gender and academic achievement, in Koçoğlu's (2009) study, the author explored how 27 pre-service teachers were able to improve their TPACK abilities by effectively incorporating technology into their teaching practices during their ICT course at university. According to the results of TPACK Competency Survey (Archambault & Crippen, 2003), males' technological knowledge was higher than females; on the other hand, females' pedagogical knowledge were better than males.

In a study conducted by Turgut (2017), the integration of TPACK by pre-service teachers from Türkiye and Denmark in their respective teacher education programs was compared. 99 English Language preservice teachers were invited to fill TPACK scale (Schmidt et al., 2009) and observed in their practicum courses. From their responses to open-ended questions, Turkish practicum teachers in Türkiye complained not to use technology their class apart from listening CDs, whereas Danish counterparts succeeded to transform technology in their lesson with using it more professionally. The scale also revealed that Turkish pre-service teachers had better TPACK levels overall, with the exception of technological pedagogical expertise.

A correlational study was undertaken by Aktürk and Oztürk (2019) related to 78 instructors employed across different academic fields, including science and technology, mathematics, and others, where a correlation was observed between the instructors' TPACK levels and the students' self-efficacy as predictors of academic achievement. The findings revealed that teachers' TPACK levels and the self-efficacy of pupils accounted for 12% of the academic success of pupils. Among students, the degree of academic self-efficacy was the greatest influential factor in determining their academic progress. Students' academic self-efficacy was the single most significant variable influencing their academic growth. The most crucial element influencing students' academic development was their level of academic self-efficacy. In this mixed-method study, participants' beliefs were assessed through TPACK survey. Quantitative results demonstrated that they were ready to use and integrate technology in class. On the contrary, the qualitative results showed the reverse. 54 percent of them felt difficulty in creating activity examples using technology.

In addition, through interviews and classroom observation, Wetzel and Marshall (2011) conducted an exploratory case study on the behaviors of a middle school English language teacher that are consistent with the TPACK framework. As a result, the teacher understood to show technological pedagogical knowledge. Yüksel and Yasin (2014) conducted a study that examined the levels of TPACK of 24 EFL teachers. The results indicated significance between TPACK levels and their experience, gender, workplace, and the time they allocate for computer use or internet. Furthermore, it was discovered that EFL instructors possessed a moderate degree of TPACK.

İşler and Yıldırım (2018) examined the perspectives of pre-service English as a Foreign Language (EFL) lecturers from Türkiye with respect to their proficiency in the field of technological pedagogical content knowledge (TPACK). The study employed a combination of methods design. Furthermore, the study aimed to ascertain the variables that

impacted the participants' opinions and impressions of TPACK in relation to the incorporation of technological devices in EFL classrooms. In order to gather data on the ways in which 94 Turkish new teachers who were instructing English as a foreign language integrated technology, instruction, and subject knowledge into the teaching and learning processes, these educators completed two questionnaires. As one of the data collection tools, İşler and Yıldırım (2018) used the 'TPACK-Deep Scale' questionnaire. Kabakcı-Yurdakul et al. (2012) constructed a scale to evaluate technological pedagogical content knowledge, drawing inspiration from the model proposed by Mishra and Koehler (2006). The scale consists of 33 items, to which participants provided responses on a five-point scale spanning from "strongly disagree" to "strongly agree." Furthermore, in interviews with six members of this cohort, their perspectives on technology-assisted content knowledge (TPACK) competencies and beliefs concerning the application of technology in language instruction were investigated. The findings derived from the analysis of quantitative data demonstrated that those surveyed held positive attitudes towards their Technological Pedagogical Content Knowledge (TPACK) abilities. In support of this conclusion, qualitative analysis revealed that respondents emphasized the significance of accessibility, particular interest, knowledge, and expertise in relation to TPACK formation. Furthermore, they underscored the importance of receiving instructional assistance from their professors throughout this endeavor. In light of the research outcomes, it is suggested that curricula designed for pre-service teachers should encompass guidance on the skilled integration of technology, topic matter, and pedagogy. Furthermore, courses for teacher preparation ought to provide chances for pre-service teachers to acquire expertise in the development of technology-controlled supplies.

In their prior investigation, Sarıcoban, Tosuncuoğlu, and Kırmızı (2019) utilized pre-service teachers as subjects. Their objective was to assess the TPACK expertise of preservice English as a foreign language (EFL) instructors undergoing EFL teacher preparation. Details were obtained from a sample of 77 pre-service EFL teachers via the questionnaire devised by Başer et al. (2016). The research employed a method that was quantitative in nature. The investigators inquired whether there were any differences in participants' perspectives regarding the sub-dimensions of TPACK according to sex, formation attendance, age, or social standing. Additionally, they questioned pre-service and in-service EFL teachers regarding their own perceptions of TPACK. Sarıcoban, Tosuncuoğlu, and Kırmızı (2019) identified, based on the participants' self-evaluations, that they hold the following thoughts of TPACK: Regarding pedagogical knowledge, participants reported being able to reflect on their practicum experiences, collaborate with peers, and support students' learning considering their

diverse physical, mental, emotional, social, and cultural backgrounds. In relation to pedagogical content knowledge (PCK), the study found that the participants felt competent in classroom management, adapting lesson plans to suit students' abilities, and assessing students' learning progress. With regard to technological subject matter expertise (TCK), the participants exhibited remarkable skill in utilizing multimedia components (e.g., slideshows and videos) to communicate ideas on a diverse array of English topics. Moreover, they effectively utilized technological resources (e.g., online meetings and inquiry forums) to engage in online relationships with multilingual groups.

2.23. The Interplay between Self-efficacy and TPACK

Within the field of education, multiple versions of self-efficacy have been implemented, as previously mentioned. While the subject of this thesis is teacher self-efficacy in relation to English language instruction, it is imperative to also examine self-efficacy regarding technology integration. Within the domain of technology-related research, numerous ideas have been introduced and investigated, including self-efficacy with computers and web self-efficacy, which were informed by Bandura's theory of self-efficacy.

The relationship between technology integration self-efficacy (TISE) and technological pedagogical content knowledge (TPACK) has been the subject of much research in recent years. A number of studies have found a positive relationship between these two variables, meaning that teachers who have higher self-efficacy in integrating technology also tend to have a deeper understanding of the relationships between technology, pedagogy, and content. An illustration of this can be seen in the systematic review conducted by Zeng, Wang, and Li (2022), which looked over twenty-eight studies and identified a noteworthy significant association ($r = 0.607$, $p < 0.001$) between TISE and TPACK. This suggests that professionals who possess more trust in their ability to embrace technology are more willing to possess a more profound comprehension of the interconnections among technology, pedagogy, and content. Nathan (2009) observed a slight relationship between tech integration self-efficacy beliefs (TISE) and technology integration competency levels (TPACK) in his study of 197 future teachers. This finding suggests that while a link did exist between the two parameters, it was not as substantial as the connection examined by Zeng, Wang, and Li. Similarly, Birisci and Kul (2019) determined a robust favorable relationship between TPCK competency levels and pre-service teachers' technology integration self-efficacy beliefs. This demonstrated that beginning educators possess the ability to integrate technology into their teaching.

In the meta-analysis they conducted on the relationship between technology integration self-efficacy and TPACK, Zeng, Wang, and Li (2022) examined the intersection

between teachers' self-efficacy and TPACK and focused on influencing factors in the context of implementing educational information technology. Initially, they inquired about the nature of the attachment between teachers' self-efficacy in technology insertion and TPACK. Secondly, they investigated whether another moderating variable exists in the context of promoting educational information technology. Following the elimination of six hundred and thirty- articles based on their titles and abstracts, the researchers reviewed forty-three individuals more publications and removed a mere 132 duplicates. Upon verification, twenty-eight papers were found to meet the criteria and contained 28 effect values. The research papers were examined based on the number of samples, career phases (including pre-service and in-service), sex, instruction periods (including preschool, primary school, middle school, and university), and instruction periods (including pre-service and in-service), middle school, and university, teaching subjects, including general subject, English, mathematics, International Chinese, physical education, science, and chemistry; measurement tools, including TISE (Technology Integration Self-Efficacy), ICTSE (The Information Communications Technology Self-Efficacy), CSE (Computer Self-Efficacy, and TSE (Teacher Self Efficacy) and correlation coefficients. It is noteworthy that among the twenty-eight studies that were carried out from 2006 to 2022, only two included subjects employed in higher education. This finding underscores the significance of the present study. Zeng, Wang, and Li (2022) reported a substantial positive correlation ($r = 0.607$, $p < 0.001$) between teachers' information technology integration self-efficacy (TISE) and TPACK, indicating a close association between the two variables. In addition, it was found that teachers' technology use habits are directly correlated with their self-efficacy in integrating information technology. Furthermore, research has revealed a significant connection between educators' technological practices and their level of assurance in successfully incorporating information technology. Educators' confidence in their ability to utilize technology in the classroom is a determining factor to the extent to which they adhere to that belief. After conducting an analysis of variances among various groups, it was determined that neither the subjects taught by participants nor the educational levels (which ranged from pre-school to university) moderate the correlation between teachers' self-efficacy in integrating information technology and TPACK. While this finding contradicts the study's hypothesis, it is crucial to exercise caution when extrapolating conclusions. It is noteworthy that the meta-analysis solely incorporated a restricted number of papers (2) on university teaching and preschool (2) and (2) on preschool; teaching subjects were comparatively dispersed. Conversely, the analysis revealed that career

stages had an impact on the association between teachers' self-efficacy in integrating technology and TPACK and their ability to do so, with a significant sizable effect.

In line with the aforementioned investigation, Nathan (2009) examined the connections between Technological Pedagogical Content Knowledge (TPACK) and Technology Integration Self-Efficacy (TISE). Nathan's doctoral dissertation offered significant contributions to educators aiming to improve their capacity to incorporate technology into instructional methods. To achieve this objective, a total of 197 students enrolled in the Interdisciplinary Studies program took part in the survey as part of the Quality Urban Education for Student Life course. The primary goal of the QUEST initiative was to equip aspiring teachers with essential competencies required to meet future challenges posed by technology-driven learning environments. In his study, Nathan (2009) directed his attention towards assessing the preservice teachers' Technological Pedagogical Content Knowledge (TPACK) and Technology Integration Self-Efficacy (TISE). These parameters are crucial in determining the extent to which these preservice teachers are capable of successfully integrating technology into their teaching practices. A gathering of data was conducted using the TISE/TPACK Survey, comprising 63 items organized on a Likert 5-point scale. The survey findings indicated a moderate correlation between the TISE and TPACK levels.

Academics in Türkiye have exhibited a notable inclination towards investigating the notion of technology integration self-efficacy. This development signifies an expanding acknowledgement and valuation of the significance of technology across diverse academic disciplines and professional contexts. Such scholarly endeavors underscore the imperative to consistently advance and adjust to the perpetually shifting technological environment. The primary goal of the research was to determine the degree to which pre-service teachers' confidence in the way they can transform technology estimates their own confidence in technopedagogical education competency. The research project utilized the "Technopedagogical Education Competency Scale" and the "Technology Integration Self-Efficacy Perception Scale" to gather info. Birisci and Kul (2019) described the study's results. Their objective was to determine how pre-service teachers' confidence in their ability to integrate technology influences their own technology integration self-efficacy. The research involved 174 pre-service teachers at a university in the Eastern Black Sea region of Türkiye, who completed the "Technopedagogical Education Competency Scale" and the "Technology Integration Self-Efficacy Perception Scale". The findings revealed a substantial positive association between levels of TPCK competency and beliefs regarding one's own ability to integrate technology. This suggests that enhancing one's technopedagogical education

competency could end up resulting in increased levels of confidence in one's ability to integrate technology. Keser, Yılmaz, and Yılmaz (2015) shared a passion in investigating self-efficacy in the context of information technology integration. They carried out an experiment at the Faculty of Educational Sciences, Ankara University, during the 2012-2013 semester in spring. The objective was to evaluate the technological pedagogical content knowledge (TPACK) competency and self-efficacy understanding regarding technology integration among pre-service teachers. The participant group comprised seven hundred thirteen freshmen and senior class students representing a variety of backgrounds in education. The research examined the technology, process, and knowledge (TPACK) competencies and self-efficacy beliefs of first- and fourth-year pre-service teachers with respect to incorporating technology. Likewise, these capabilities were analyzed in relation to gender, grade level, and department. Lastly, the study postulated a correlation between the levels of TPACK competency and the pre-service teachers' self-efficacy perceptions concerning technology insertion.

Dikmen and Demirer (2022) introduced a significant contribution to the field by examining the bond between technology integration self-efficacy and TPACK. Dikmen and Demirer developed a proposed structural model in their study to clarify the interconnections among the following variables: teachers' factors related to Technological Pedagogical Content Knowledge (TPACK), technology integration self-efficacy. Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Pedagogical Content Knowledge (PCK), TPACK-core, Technology Integration Self-Efficacy (TISE), Instructional Technology Outcome Expectations (ITOE), Interest in Educational Technologies (IET), and Intentions to Use Educational Technologies (IU) were among the components of teachers' scores that were revealed by the results. In addition, the research findings revealed positive associations between the components of Technology-Practised Classroom Knowledge (TPACK) held by educators and their self-efficacy in integrating technology, expectations of instructional technology outcomes, interest in educational technologies, and intentions to utilise such technologies. Considering the significant impact that intentions have on transforming intentions into practical actions (Sahin, 2008), it is conceivable that educators, provided with sufficient technological resources, would employ TPACK. Nevertheless, after conducting an examination of the study's assumptions, it was determined that specific elements of pedagogical knowledge, content knowledge, and pedagogical content knowledge did not have a statistically noteworthy effect on the technology integration self-efficacy, instructional technology outcome expectations, interest in educational technologies, or intentions to utilize educational technologies of teachers. This finding is consistent with prior research that has

reported the same thing (Dikmen and Demirer, 2022). Additionally, the research findings revealed that there was a clear connection between Technological Knowledge (TK), Interest in Educational Technologies (IET), and Technology Integration Self-Efficacy (TISE). It is worth noting that TK had the most significant immediate effect on TISE, which subsequently affected IET. This suggests that the technological proficiency of educators affects their inclination to utilize educational technologies via self-efficacy, interest, and anticipated outcomes. According to the authors (2022), educators who possess advanced technological skills tend to have a more positive perception of their own capability in utilizing technology, which promotes a positive mindset towards its integration (Abbitt, 2011; Ozturk, 2013; Tokmak, 2013). However, they further stated that although technological knowledge assists in clarifying interest in educational technologies and self-efficacy regarding technology integration, it may not be adequate to elaborate on desired outcomes and intentions. Furthermore, the research conducted in this study found that Technology Integration Self-Efficacy (TISE) was directly influenced by Technological Pedagogical Knowledge (TPK) and Technological Content Knowledge (TCK). This finding is consistent with previous studies that have indicated a substantial impact of TPK and TCK on TISE, since they shape educators' perception of their own proficiency in utilizing technology in the classroom (Abbitt, 2011; Chieng & Tan, 2021; Ozturk, 2013). Moreover, the research findings demonstrated that the Intentions to Use Educational Technologies (IUET) were influenced indirectly by the Technology Integration Self-Efficacy (TISE) of teachers, which was mediated by their Interest in Educational Technologies (IET) and Instructional Technology Outcome Expectations (ITOE). This supports the idea that TISE influences IUET in an indirect manner, mirroring the conclusions drawn in Sahin's (2008) study. Similar associations have been documented in academic literature, which can be seen in the study of Baker-Eveleth & Stone (2008). This accentuates the role of technology integration self-efficacy in driving intentions to use educational technologies. In summary, the research highlights the collective impact of Technological Knowledge (TK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and TPACK-core on technology integration behaviors, in addition to self-efficacy, outcome expectations, interest, and intentions.

Dinçer et al. (2024) conducted a study in Türkiye employing a quantitative technique with a correlational design for investigating the TPACK levels and TISE of Turkish EFL instructors and to determine the predictive relationship between these levels and their TISE. Data was gathered from 101 EFL instructors across eight separate colleges via an online questionnaire distributed using Google Forms. The instrument comprised three components:

demographic data, the TPACK-EFL survey, and the TISE survey. Descriptive and inferential statistics were utilized to evaluate the data, incorporating correlation analysis and regression approaches for both TISE and TPACK. The study revealed a significant predictive relationship between EFL instructors' perceptions of Technology Integration Self-Efficacy (TISE) and their degrees of Technological Pedagogical Content Knowledge (TPACK). Multiple regression studies were conducted to determine the predictive capacity of TISE on the seven types of knowledge within the TPACK framework. TISE beliefs were substantial predictors of various dimensions of TPACK, including Technological Knowledge (TK), Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK), and overall TPACK. Regression models demonstrated that TISE beliefs greatly influenced variations in TPACK, representing 60% of the total change in TPACK. The subject matter expertise, pedagogical competency, and technological understanding of EFL instructors, together with their perceptions of technology integration self-efficacy, are essential elements that collectively influence their overall TPACK proficiency.

Stewart's (2012) master's thesis investigated the connections between self-efficacy and Technological Pedagogical Content Knowledge (TPACK) in the context of agriculture in a novel way. Stewart assessed the degrees of teachers' proficiency in integrating technology and TPACK via an exploratory study. Furthermore, Stewart compared the degrees of proficiency between preservice and in-service agricultural education teachers in Oklahoma and investigated the association between TPACK and self-efficacy. In 2012, Stewart undertook a study employing descriptive research methodology and a quasi-experimental design to examine the interconnections between intrapersonal factors of preservice and in-service teachers and technology. The principal aim of this investigation proved to explore the interrelationships among these factors and their influence on the integration of technology in the classroom. Through the utilization of this approach, Stewart intended to acquire a comprehensive understanding of the subject matter. The objective of the research was to ascertain the intrapersonal characteristics that influence preservice and inservice teachers' beliefs and integration of technology in their lessons. A pair of variables were the focus of the investigation: intrapersonal technology integration and TPACK. A total of 426 agricultural education instructors in Oklahoma educational institutions, together with around one hundred thirty agricultural school students at Oklahoma State University, administered questionnaires. The surveys were gathered using a combination of online and paper-based methods. According to Stewart (2012), teachers' self-efficacy, outcome expectations, curiosity, and motivation play significant roles in shaping their Technological Pedagogical Content Knowledge and their

ability to use technology into their teaching. Veteran in-service instructors typically perceive technology as a means to captivate pupils and enhance teaching methods, but inexperienced freshman and preservice teachers usually regard it as a tool for classroom management. In order to enhance teacher education, it is necessary to transition from traditional lecture-based training to more interactive and student-centered teaching approaches that integrate diverse learning opportunities.

The study conducted by Joo, Park, and Lim (2018) aimed to investigate the connection between TPACK and teacher self-efficacy. Using the Technology Acceptance Model (TAM), the researchers examined the structural links among TPACK, teacher self-efficacy, perceived ease of use, and perceived usefulness for preservice teachers. The study involved analyzing responses from 296 participants from the College of Education at three Korean institutions using structural equation modeling techniques. The researchers used five measuring instruments based on existing English-language tests, including TPACK, teacher self-efficacy, perceived ease of use, and perceived usefulness. The researchers used proper translation-back-translation techniques to make the instruments ready for use in Korean. The survey employed a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) to ensure a uniform scale for the instruments. Cronbach's alpha was examined to assess the instruments' internal consistency. In addition to demographic data, participants answered 30 additional questions in the survey.

According to the findings of Joo, Park, and Lim (2018), it was determined that pre-service educators who demonstrate higher levels of Technological Pedagogical Content Knowledge (TPACK) are more likely to increase their confidence in in instructional performance. TPACK significantly influences a teacher's confidence in their ability to effectively use new educational technology and multimedia resources in instructional situations. Preservice teachers who possess significant TPACK proficiencies are more likely to feel more comfortable and effective when using technology as a helpful teaching tool. Both practicing teachers and preservice educators stand to derive advantages from participating in workshops and training initiatives aimed at elevating their TPACK competencies. Teachers' gradual acclimatization to emerging technologies, facilitated by ample time and opportunities for hands-on experience, contributes to the realization of their comfort and perceived utility in integrating technology within their teaching practices. Furthermore, it was found in a study by Joo, Park, and Lim (2018) that the willingness to use technology is positively influenced by a teacher's self-confidence, their perception of ease of use, and how useful they believe the technology to be Nevertheless, the investigation's outcomes indicated that TPACK's influence

on the direct intention to employ technology remains limited, manifesting predominantly through indirect mechanisms. Among these, the perceived usefulness of technology emerges as a more potent determinant of the inclination to integrate technology than either teacher self-efficacy or perceived ease of use.

Refining the subject, Mischne (2012) performed an ex-facto investigation on the correlation between self-efficacy and TPACK. While she introduced the concept of teacher knowledge in her thesis, what she was referring to was TPACK (Technological Pedagogical Content Knowledge). This study sought to examine the possible influence of teacher self-efficacy, teacher knowledge, and teaching experience on the level of technology integration in the educational environment. The main objective of this study was to determine the extent to which measures of self-efficacy, teacher knowledge, and teaching experience can accurately predict educators' performance on an official evaluation of technology usage in the classroom. In order to explore further, Mischne (2012) examines the following particular facets:

1. What are the interrelationships that arise between self-reported levels of teacher self-efficacy, pedagogical knowledge, and teaching experience?
2. To what degree do these criteria accurately predict the level of technology integration in instructional practices?

Mischne (2012) employed an ex post facto research methodology to forecast the integration of technology. This approach examines cause and effect by primarily concentrating on the consequence and striving to ascertain the reason. No manipulation of independent factors or therapy was conducted for the subjects, and the data was obtained via questionnaires. Regarding the findings, Mischne (2012) found that teacher skill, namely their knowledge, was a significant predictor of technology usage in the classroom. There were moderate to substantial connections seen between the utilization of technology by teachers, their knowledge, and their overall competency. The three dependent variables, namely the utilization of technology in the classroom, the utilization of technology to support learning, and overall proficiency, consistently shown statistical significance as predictors of Technological Pedagogical Content Knowledge (TPACK) factors. Consequently, instructors reported an increased frequency in their use of technology and showed greater proficiency in it as their TPACK knowledge expanded. Notably, Mischne (2012) obtained a divergent outcome on teacher self-efficacy. Higher degrees of technology integration would be positively associated with increased teacher self-efficacy ratings. The findings revealed a clear inverse relationship between teacher self-efficacy and technology integration. Specifically, teachers who had a higher sense of self-efficacy reported lower levels of technology use. As

a group, the teachers were confident in their ability to effectively handle their classrooms, implement teaching strategies, and actively involve students. The Teachers' Sense of Efficacy Scale (TSES) results, however, revealed that instructors who reported prominent levels of self-efficacy utilized technology in the classroom less frequently and performed less proficiently than their counterparts who reported lower levels of self-efficacy.

Gonzales (2013) sought to examine the connection between individuals' self-perceived ability to utilize technologies and their degree of competence in adapting technology to various contexts. Gonzales utilized TPACK as an instrument and highlighted in the hypothesis section of the thesis that TPACK "offers valuable means of assessing the caliber of teachers' incorporation of technology into their classroom teaching" (p. 13). This study examined the interactions between technological self-efficacy, attitudes towards technology integration, and the effectiveness of technology integration in teaching methods among high-school instructors (n = 74). The study utilized an inquiry instrument to measure instructors' self-efficacy and attitudes toward technology. An assessment rubric was used to rate the quality of instructors' lesson plans concerning technology integration.

The results showed significant correlations between instructors' level of self-efficacy in integrating technology and the quality of their lesson plans (r = .41). Furthermore, a significant association was found between teachers' technology self-efficacy and their attitudes towards technology (r = .61). Furthermore, a statistically significant association (r = .26) was found between instructors' attitudes and the efficacy of their technological integration. In addition, the results showed that educators who spent a significant amount of time studying technology integration had considerably greater self-efficacy levels than those who did not participate in external professional development opportunities.

Liu and Kleinsasser (2015) conducted a year-long professional development program incorporating technology. They collected quantitative and qualitative data to understand how six English as a Foreign Language (EFL) vocational high school teachers evaluated their knowledge and skills in Computer-Assisted Language Learning (CALL). The study investigated the teachers' perceived computer self-efficacy and acquisition of technological pedagogical content knowledge (TPACK) by observing their utilization of technology throughout their participation in online project-based English as a Foreign Language (EFL) training. The data analysis revealed the participants' Technological Pedagogical Content Knowledge (TPACK), self-efficacy in using computer technology, and ability to apply and integrate technology in English instruction. It also identified the factors that either facilitated or impeded their professional development in technology. In their study, Liu and Kleinsasser

(2015) examined computer self-efficacy and the TPK, TCK, and TPACK constructs within the TPACK framework. The researchers investigated how English language instructors acquire the necessary skills to utilize technology in their teaching. Specifically, they focused on a year-long on-the-job program incorporating technology, drawing from the TPACK framework and theoretical concepts of computational self-efficacy.

In her Ph.D. thesis, Knapp (2017) described the experiences of three educators who participated in a professional development workshop focused on Technological Pedagogical Content Knowledge (TPACK). The program was carefully designed to improve their ability to effectively utilize technology for teaching social studies. The study also examines whether their workshop participation affects their technological competency and Technological Pedagogical Content Knowledge (TPACK). Furthermore, the study examines the factors that impact the distinct levels of technology integration among instructors, exploring the reasons why certain educators are more prepared to use technological tools compared to others. Knapp (2017) examined the impact of attending a technology, content, and pedagogy-focused institute on a social studies teacher's inclination to use technology in their teaching methodology. The research addressed the following inquiries: (1) What is the impact of a TPACK-focused professional development program in social studies on a teacher's technological efficacy and TPACK? (2) How do teachers' perceptions regarding the effectiveness of technology and their Technological Pedagogical Content Knowledge (TPACK) impact their utilization of technology in the classroom? (3) What are the determinants of the varying levels of willingness among instructors to include technology in the classroom? (4) Which components of a TPACK-centered professional development program are the most productive in effectively integrating technology in the classroom? An investigation was carried out at an educational workshop. The Minnesota Alliance for Geographic Education (MAGE) is an association of educators dedicated to advancing geographic literacy among teachers and students. The summer institute "MAGE" provides participants with course materials, access to the course site, and instructions for the weeklong session. The workshop is jointly organized by two educational institutions associated with MAGE. Participants engage in a classroom where they partake in several learning activities, such as interactive sessions and practical exercises, to develop their technological skills. The emphasis is placed on enhancing teachers' understanding of geographic education standards, technologies, and genuine teaching methods. The TPACK framework is utilized to model the application of technology while acquiring proficiency in various technological tools tailored to geography education. The institute allows social studies instructors to network with

colleagues, participate in educational activities, and incorporate fresh information and contemporary applications into their classes. The workshop instructors encompassed expertise in the fields of pedagogy, technology, and curriculum areas specific to social studies. Teachers wishing to earn graduate credit must create a lesson plan incorporating technology and deliver it in a Pecha Kucha format. According to Knapp (2017), the session positively affected the participants' behavior. They gained enhanced self-efficacy in technology and became more proficient in addressing issues related to incorporating technology in the classroom. This information is vital for anyone engaged in the creation of professional development programs. In addition, social studies instructors may utilize this knowledge to discern the most efficient professional development options for acquiring the skills necessary to seamlessly integrate technology, content, and pedagogy in their teaching methodologies.

In 2019, Fenn emphasized the significant impact of Bandura's Social Cognitive Theory on the environment. This theory asserts that a blend of environmental influences, individual traits, and cognitive processes, such as self-efficacy beliefs, influences human behavior. Hence, it is crucial to take into account the result of the environment and social interactions on behavior while seeking to comprehend and alter it. Michael Fenn's PhD thesis at Concordia University-Portland sought to investigate the relationship between teachers' self-efficacy in utilizing technology and their degree of technology integration. Additionally, the study examined the impact of teachers' ethnicity on these factors from several perspectives. In his 2019 quantitative correlational study, the researcher aimed to establish a relationship between a teacher's level of technology integration in the classroom and their self-efficacy in utilizing technology. Additionally, the study investigated whether their ethnicity influenced the connection between a teacher's technology integration and self-efficacy. In Fenn's (2019) study, a convenience sample of 150 middle school teachers was used to collect data. The objective was to evaluate their perceived levels of inclusion, teacher, and collective inclusion efficacy. In addition, his research examined their attitudes towards inclusion, ability to use technology, and awareness of technical requirements. The results of the initial research question (RQ1) indicated that there was no noticeable connection between teacher self-efficacy and their ability to use technology into their teaching effectively. Nevertheless, the study produced diverse results for the second research question (RQ2) about teacher ethnicity. The study revealed no statistically significant relationship between the self-efficacy of Minority instructors in technology usage and the amount to which they integrated technology into their teaching. This suggests that the ethnicity of teachers is independent of the connection between their confidence in using technology and their actual use of technology in

the classroom. Conversely, the results were statistically significant for Caucasian instructors, demonstrating that teacher ethnicity impacts the connection between their confidence in using technology and their ability to incorporate technology into their teaching. Fenn ascribed the influence of Bandura's Social Cognitive Theory to its impact on the environment. In the discussion section, Fenn (2019) highlighted that the social cognition theory combines the ideas of constructivist thinking and motivational variables based on an agentic perspective that recognizes individuals as being influenced by changes in their environment (Bandura, 2001). Expanding on this viewpoint, Bandura (2006) underlined that the constructivist framework has greatly influenced learning paradigms since its beginning due to its suitability with the modern educational setting, which is further supported by the widespread accessibility of technology. In addition, Bandura (2002) proposed that cognitive processes impact individuals' behaviors, prompting them to participate in or refrain from specified acts. Hence, the instructors' ethnicity, influenced by their previous experiences, life stages, stress levels, and other factors, could impact their ability to incorporate technology. Fenn (2019) obtained statistically significant findings among Caucasian instructors but not among minority teachers.

Zeng, Wang, and Li (2022) conducted a study that explores the moderating elements that might influence the connection between technology integration self-efficacy and TPACK. The study's findings provide valuable insights into the effect of several factors on this connection, which can be crucial in enhancing teaching techniques and fostering student achievement. As educators, we must be aware of these characteristics and make an effort to include them in our teaching methodology. Consequently, the analysis of differences between groups showed that the individuals' genders did not have any influence on the relationship. The correlation between teachers' self-efficacy in utilizing information technology in the classroom and the impact of Technological Pedagogical Content Knowledge (TPACK) was not significant ($Qb = 2.448$, $P > 0.05$). There is a significant positive correlation between the knowledge of teachers, the integration of technology within groups, and self-confidence in Technological Pedagogical Content Knowledge (TPACK). There was no disparity in the proportion of males between the groups. The data shows a substantial numerical difference. The results of this meta-analysis are consistent with the findings of previous research. TPACK did not exhibit any sexual disparity, as indicated by Raymond and Peled (2019). Similarly, Keser et al. (2015) found no variation in teachers' general self-efficacy for the utilization of information technology based on gender. Conversely, the authors identified professional phases as a moderating variable. In their study, Zeng, Wang, and Li (2022)

discovered that analyzing the disparities between preservice and in-service groups revealed how different career stages influence the correlation between teachers' confidence in utilizing technology and their proficiency in integrating technological advances into teaching, also known as Technological Pedagogical Content Knowledge (TPACK). The findings demonstrated a positive association between Technological Pedagogical Content Knowledge (TPACK) and teachers' self-assurance in incorporating technology into their instructional practices throughout their training and professional growth. Notably, preservice teachers exhibited better scores in this regard compared to their counterparts who were already employed as teachers. Zeng, Wang, and Li (2022) ascribed this discrepancy to divergences in their perception and utilization of technology in their pedagogical approaches. Research indicates that instructors infrequently incorporate technology into the classroom despite the considerable potential for its integration (Fraillon et al., 2014). Given this perspective, the correlation coefficient of the preservice group surpasses that of in-service instructors. Further, the findings of the group difference analysis indicated that the kind of instruments does not have an impact on the link between teachers' self-efficacy in integrating information technology and TPACK. This lack of effect was found to be statistically insignificant ($Qb = 1.140$, $P > 0.05$). Similarly, the study's results examining differences between groups indicated that the subjects being taught and the stages of the participants did not have a moderating effect on the link between self-efficacy and TPACK ($Qb = 8.370$, $P > 0.05$).

In 2018, Martin conducted correlational research at Grand Canyon University to examine the association between self-efficacy and TPACK levels. The objective of this quantitative correlational study was to evaluate the association between self-efficacy and the integrated technological, pedagogical, and content knowledge competencies, as defined by the Technological Pedagogical Content Knowledge (TPACK) framework, among National Board-Certified Teachers (NBCTs) in Arizona, USA. Martin conducted a study on a subset of 84 NBCTs from a pool of 1,219 possible participants. These NBCTs completed surveys that were approved for use by the AZ-K-12 Center. The only independent variable included in the study was self-efficacy, which was measured using The Teachers' Sense of Self-Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001a). This scale assessed the level of efficacy in student engagement, instructional tactics, and classroom management. The four criteria consisted of technological knowledge (TK), technological content-area knowledge (TCK), technological pedagogical knowledge (TPK), and technological, pedagogical, content-area knowledge (TPACK). The integrated knowledge competencies were tested using the Preservice Survey of Teacher's Knowledge of Teaching and Technology (Schmidt et al.,

2009). Technological knowledge was evaluated separately, whilst the remaining three variables (TCK, TPK, and TPACK) were quantified as integrated proficiencies encompassing technology, pedagogy, and content-area knowledge.

Regarding study inquiries, Martin sought to determine if there was a correlation with statistical significance between the self-assurance of NBCTs and each of the four TPACK Competencies (which encompass integrated technological, pedagogical, and content-area expertise). The first study findings indicate no statistically significant relationship between technological knowledge and self-efficacy. The correlation coefficients ($rt = 0.136$, $rs = 0.197$, and $r = 0.106$) suggest a weak association, and the p-value ($p > 0.05$) indicates that this association is not statistically significant. The second question revealed a small, although statistically significant, positive correlation between self-efficacy and technical pedagogical expertise ($rt = 0.212$, $rs = 0.301$, and $r = 0.242$, $p < 0.05$). The third question demonstrated a statistically significant positive correlation between self-efficacy and technological content-area knowledge, ranging from minor to substantial. The correlation coefficients for rt, rs, and r were 0.251, 0.332, and 0.268, respectively. The significance level (p) was set at 0.05. The fourth question revealed a statistically significant positive correlation between self-efficacy and technical, pedagogical, and content-area knowledge. The correlation coefficients were $rt = 0.247$, $rs = 0.356$, and $r = 0.265$, respectively. The p-value was less than 0.05.

In the research they conducted, Durak, Uslu, Bilici, and Güler (2022) examined the factors that influence Technological Pedagogical Content Knowledge (TPACK) among 216 science teachers in Türkiye. The investigation aimed to explore the significance of scientific and computational thinking (CT) in enhancing self-confidence and design thinking in teaching. Durak et al. (2022) sought to elucidate the many kinds of technological pedagogical content knowledge (TPACK) that science instructors require in order to implement integrated STEM education effectively. The data were gathered online in five segments, and the suggested model in the study was examined using the partial least squares-structural equation modeling (PLS-SEM) technique. The study revealed a substantial relationship between the self-efficacy of science instructors and their technological pedagogical engineering knowledge (TPEK), T-integrated (I) STEM, and technological pedagogical science knowledge (TPSK). Furthermore, the self-efficacy of science instructors has a significant role in the effectiveness of design thinking. Teaching self-confidence in CT has a beneficial impact on design thinking and the growth of technical pedagogical mathematics knowledge (TPMK), TPEK, and TPSK structures. The talent for design thinking is also associated with TPMK, TPEK, and TPSK structures.

Tunçer (2014) studied the connection between EFL instructors' self-efficacy and TPACK. The researcher evaluated the Turkish EFL pre-service teachers' views on their general teacher effectiveness and its three specific components: engagement with learners, managing the classroom, and pedagogical tactics. In addition, Tunçer (2014) investigated the extent of their Technological Pedagogical Content Knowledge (TPACK) and the association between their teacher effectiveness and TPACK. The study employed a research strategy that incorporated both quantitative and qualitative methods. Quantitative data was collected using three instruments: the English Teachers' Sense of Efficacy Scale, the TPACK-Deep Scale, and open-ended questions. The collection of qualitative data involved gathering the participants' background information and their self-reported accounts of employing technology in their teaching. The study's findings indicated that the Turkish pre-service teachers of English as a Foreign Language (EFL) had elevated levels of teacher effectiveness beliefs and Technological Pedagogical Content Knowledge (TPACK). The correlation study revealed a noteworthy association between the overall effectiveness of teachers and their competency in Technological Pedagogical Content Knowledge (TPACK). Regression study demonstrated that TPACK exerts an impact on each of the three sub-scales of teacher effectiveness. The findings from the open-ended questions further substantiated the correlation between Technological Pedagogical Content Knowledge (TPACK) and teacher effectiveness. In summary, Tunçer (2014) discovered a direct correlation between teacher effectiveness and TPACK, indicating a favorable association. Consequently, educators who possess a profound comprehension of Technological Pedagogical Content Knowledge (TPACK) are more inclined to exhibit elevated levels of teacher effectiveness.

Having concluded the debate on correlational investigations, it is now suitable to shift focus towards experimental studies. Genç and Akıllı (2017) examined the impact of Technological Pedagogical Content Knowledge (TPACK) on the self-confidence and competence views of pre-service teachers in Türkiye. Their study sought to examine the degree of self-assurance among pre-service science teachers in employing technological pedagogical content knowledge (TPACK) over the course of one academic semester. The study was conducted in the autumn semester of the 2016-2017 academic year, with a cohort of 41 prospective science teachers from Duzce University. The study utilized an experimental methodology, notably employing pre-test/post-test design with a sole group. The data collection process utilized Balçın and Ergün's (2016) "Technological pedagogical content knowledge (TPACK) self-efficacy scale for pre-service science teachers on material development." This study specifically investigated the effectiveness of TPACK training

programs in relation to their influence on the TPACK self-efficacy levels of pre-service science teachers. A within-subjects design was utilized to assess the effectiveness of the Instructional Technology and Material Design course on individuals' TPACK self-efficacy levels. Genç and Akıllı (2017) sought to evaluate the causal link between the independent variable, which refers to the activities conducted in the course, and the dependent variable, which pertains to the levels of TPACK self-efficacy among pre-service science teachers. The study findings indicate that the training program resulted in a statistically significant improvement in post-test self-efficacy ratings when compared to the pre-test levels. This result suggests that in-service training programs focused on TPACK, which emphasize the utilization of technological tools and resources, can play a crucial role in enhancing teachers' technology-related knowledge structures, such as TPACK, TCK, TPK, and TK.

In a study conducted by Lopez-Vargas, Duerte-Suarez, and Ibatez Ibañez (2017), the researchers examined the correlation between personal efficacy and Technological Pedagogical Content Knowledge (TPACK) among 208 instructors from a public educational institution in Valle de Tenza, Colombia. The Anova study reveals a substantial correlation between cognitive style and self-efficacy. Computer self-efficacy is positively correlated with each component of Technological Pedagogical Content Knowledge (TPACK). Conversely, there is a negative correlation between self-efficacy and age, as well as between TPACK and age.

CHAPTER III
METHODOLOGY

3.1. Introduction

The present investigation sought to explore the association between self-efficacy beliefs and TPACK dimensions among English as a Foreign Language (EFL) instructors employed at two state universities' foreign language schools in western part of Türkiye. To achieve this goal, an explanatory sequential mixed methods design (Creswell, 2012) was utilized that involved gathering quantitative data followed by elucidating the quantitative findings with in-depth qualitative data. The EFL-TPACK questionnaire and ELTEI scale were used during the initial quantitative phase to collect data from Turkish EFL instructors at two state institutions. The primary objective of this phase was to evaluate the correlation between teachers' self-efficacy beliefs and their TPACK domains. In contrast, the secondary qualitative phase aimed to complement the quantitative data by investigating obstacles faced by Turkish EFL prep school teachers when using TPACK in their classes through exploratory follow-up techniques. The research questions below are intended to be addressed throughout the study.

1) What are the TPACK levels of Turkish EFL prep school teachers at state universities related to components of their TPACK?
2) What are the self-efficacy levels of Turkish EFL prep school teachers at state universities?
3) What is the relationship between self-efficacy beliefs of Turkish EFL prep school teachers and their knowledge domains of TPACK?
4) Do Turkish EFL prep school teachers' TPACK skills differ significantly according to gender and perceived language proficiency?
5) Does Turkish EFL prep school teachers' self-efficacy differ significantly according to gender and perceived language proficiency?
6) What are Turkish EFL prep school teachers' experiences while applying TPACK in state universities?

The section commences with research design, settings, and participants. Subsequently, the data collection segment delves into the intricacies of both quantitative and qualitative data collection tools. Lastly, the data analysis section expounds on the detailed methodology employed in analyzing data during the quantitative and qualitative phases.

3.2. Research Design

The research method of this study is an explanatory sequential mixed method (Creswell, 2012). According to Clark and Creswell (2008), the mixed method is known to combine qualitative and quantitative data in research. In other words, mixed methods design includes at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words) (Greene, Caracelli, & Graham, 1989). The origins of mixed methodology can be traced back to the work of Campbell and Fiske (1959), who employed multiple methods in measuring traits. The rationale behind this approach is rooted in the belief that each individual method possesses its own limitations, which can be mitigated through a mixed methods approach that incorporates diverse data sources. There has been a growing interest in mixed methodology over the years, with researchers from various fields adopting this approach to enhance the rigor and validity of their studies. By combining quantitative and qualitative methods, researchers can obtain a more comprehensive understanding of complex phenomena, such as social and behavioral processes. Moreover, mixed methodology also allows for triangulation of data, which can help to establish convergent validity and increase confidence in findings (Fraenkel, Wallen, & Hyun, 2012). Denzin (1978 as cited in Decrop, 1999) and Jick (1979) introduced the term triangulation by using both quantitative and qualitative data to study the same research question. By the early 1980s, the trend in mixed methods turned into the systematic convergence of quantitative and qualitative data. Then, it continued to develop ways to integrate quantitative and qualitative data. Here, one data is used to check the other's accuracy. Then, one data is used to explain (explanatory) the other data base, to explore the different facets of the other database (exploratory). And a better instrument can be supplied when the other data base is not suitable. Although mixed methodology offers numerous benefits, it also poses several obstacles that require thorough consideration, including the requirement for proficiency in multiple techniques and the possibility of excessive data. Nonetheless, through meticulous planning and implementation, mixed methodology has the potential to serve as a formidable instrument for enhancing knowledge across diverse domains. According Fraenkel, Wallen, and Hyun (2012), conducting a mixed method design has some drawbacks. First, doing research in mixed methodology can be time-consuming and expensive to carry out. In addition, if a researcher opts for a mixed method, it is imperative that they possess proficiency in both qualitative and quantitative research methodologies. Nevertheless, this study presented no challenge as the researcher was already well-versed in the aforementioned techniques, having dedicated ample time and careful planning to neutralize any potential obstacles.

Explanatory design is one of the mixed methods, in which a quantitative method and then a qualitative method to follow up and refine the quantitative findings" (Fraenkel, Wallen & Hyun, 2012, p. 561). The researcher initially examined the quantitative data before conducting a separate analysis to delve deeper into the qualitative findings, thereby enhancing the outcomes of the quantitative study. Creswell's (2014) exploration on 'Explanatory sequential mixed methods' is convincing: "researcher first conducts quantitative research, analyzes the results, and then builds on the results to explain them in more detail with qualitative research (p. 15). The researcher then integrates the two sets of data to provide a comprehensive understanding of the research question. This approach allows for both breadth and depth in the analysis, as well as triangulation of findings from different sources. Furthermore, Creswell (2014) emphasized that this method is particularly useful for exploring complex phenomena or issues that require multiple perspectives to fully understand. By utilizing both quantitative and qualitative methods, researchers can gain a more nuanced understanding of the subject matter. However, it is important to note that this method requires careful planning and execution to ensure that the data collected is complementary and can be effectively integrated. Researchers must also be mindful of potential biases or limitations in their chosen methods. Overall, Creswell's (2014) explanatory sequential mixed methods approach offers a valuable framework for conducting rigorous and comprehensive research that can contribute to advancing knowledge in a variety of fields.

Regarding the philosophical standpoint of this inquiry, it is rooted in pragmatism. This school of thought advocates for researchers to utilize the "whatever works" methodology (Fraenkel et al., 2012, p. 559). Fundamentally, pragmatism contends that the researcher should select the most suitable research question and subsequently opt for methods that are best aligned with it. Drawing from the insights of Pierce, James, Mead, and Dewey (Cherryholmes, 1992), pragmatism stems from actions, situations and outcomes (Creswell, 2014). As pragmatism does not adhere to any particular philosophy or doctrine, researchers enjoy freedom in selecting their preferred methods. In light of this fact and given that research problems represent a crucial juncture in inquiry endeavors, mixed-methods researchers tend to embrace a pragmatic outlook.

3.3. Settings

This study was conducted at two public universities in the western part of Türkiye. The researcher provides detailed information on the research setting, including location details and participant schedules. This account helps readers understand the study context and how

educational environments can be improved for better learning outcomes. Data was collected from field notes during multiple visits to establish rapport with participants.

University A has a larger capacity, accommodating approximately 2,500 students, with 125 EFL instructors. The classrooms, measuring forty meters by forty meters, are well-equipped with technology and comfortable seating arrangements. The university provides ample opportunities for professional development, including workshops, training sessions, and conferences.

On the contrary, University B has a smaller capacity, accommodating approximately 1200 students, with 80 EFL instructors. The campus environment is similarly well-equipped and conducive to learning. The university also provides opportunities for professional development and encourages collaboration among instructors.

Both universities are located in the western part of Türkiye. Both institutions of research have been newly built on the campus. The classrooms are well illuminated and equipped with all the necessary technological resources that teachers may utilize during lectures. Smart boards and head-on projectors are ready for use. Students and teachers have free internet connection available on campus. Additionally, both campuses are situated in verdant surroundings, which can be deemed as a favorable aspect in enhancing their psychological well-being. Regarding seating arrangements, both campuses favor endowing the edifice with integrated desks and writing surfaces.

EFL instructors at both campuses have their own offices to do their job responsibilities. They are accommodated with two or three colleagues in those offices and each participant owns their computer which is supplied by their universities. Regarding collaboration, EFL instructors frequently engage in collaborative efforts with their peers on joint projects or during sessions dedicated to lesson planning. Routine meetings are conducted within these academic spaces to deliberate on the enhancement of the curriculum and the implementation of innovative teaching methodologies. As for their professional development, their academic institutions offer a plethora of resources aimed at fostering continuous professional growth, such as specialized workshops and training sessions. Additionally, instructors are strongly encouraged to participate in reputable conferences or seminars to remain abreast of the most current trends in the realm of language instruction. Regarding support systems, fellow colleagues within the academic sphere serve as an invaluable support system for instructors, extending guidance and aid whenever required. At one of the settings, university provides comprehensive counseling services tailored to assist instructors navigating challenges in both their personal and professional spheres.

Considering the participants' schedule plays a key role in daily routines and indirectly to be effective in the job, the researcher deemed to mention it. At one campus, participants faced a rigorous schedule due to insufficient academic staff, resulting in an overwhelming workload and consecutive classes. The additional responsibility resulted in increased evaluation and feedback requirements during the workdays, leading to mental exhaustion among participants as documented by the researcher's field observations.

3.4. Participants

This study's participants are "English as a Foreign Language (EFL) instructors" employed at two state universities' foreign language schools. One aspect of this study pertains to examining the correlation between EFL instructors' self-efficacy beliefs and their TPACK knowledge domains, with an emphasis on technology integration in teaching.

The used methodology was convenience sampling (Miles & Huberman, 1994). The criteria for choosing the convenience sampling are its easiness and accessibility in recruiting participants. Despite not being fully representative of the entire population, a greater sample size within a shorter duration can be handled. Whereas it may have some drawbacks, it can be said that it provides valuable insights and contributes to the existing body of knowledge in a particular field.

When it comes to determining the appropriate size of a research sample, there is much debate in the literature. According to Fraenkel et al. (2012), the ideal sample size should be as large as possible while still being feasible for the researcher in terms of time and energy expended highlighting "the best answer sample should be as large as the researcher with a reasonable expenditure of time and energy (p. 102)".

After reckoning over the represantiveness issue of the sample, Fraenkell et al. stated their remarks on several types of research, especially on correlation studies:

> There are a few guidelines that we would suggest with regard to the minimum number of subjects needed. For descriptive studies, we think a sample with a minimum number of 100 is essential. For correlational studies, a sample of at least 50 is deemed necessary to establish the existence of a relationship (p. 103).

A larger sample size enables researchers with more assumptions to work with, particularly in statistical analyses where they can select parametric tests with greater freedom. In correlation studies, in order to establish a relationship statistically, a minimum sample size of fifty is necessary, emphasizing the need to carefully assess the sample size in research design, because it may have a significant impact on the validity and reliability of study results.

Finally, to ensure that research results are both significant and useful, choosing an appropriate sample size is very important considering the practical concerns and scientific rigor. This study acquired quantitative data from 86 individuals utilizing scales, while qualitative data were collected from 15 people who had previously completed the tests and were classed based on their TPACK scores.

Table 1

Sociodemographic Characteristics of Participants

Descriptive Information	*n*	%
Age		
Below the mean	43	50
Above the mean	43	50
Degree		
Bachelor's Degree	48	55.8
Master's degree	25	29.1
PhD	13	15.1
Academic Background		
English Language Teaching	52	60.5
Teaching English to Speakers of Other Languages (TESOL)	3	3.5
Translation	3	3.5
Literature	6	7
Others	22	25.5
Previous Teaching Experience		
Institution (Higher Education)	38	44.2
School	27	31.4
Both Institution and School	21	24.4

Of 86 participants who enrolled in the study, the average age was approximately 46.7 years, while the median age was 46.5 years old. What this demonstrated is that there is a relatively symmetrical distribution of ages, slightly skewed towards the older ages. The standard deviation was 6.89 years, which proved a medium level of variability in the EFL prep school instructors' ages. On the other hand, the range varied from 26 to 62 years. This highlights the diversity among the ages of EFL prep school instructors. In addition, when the frequency distribution was analyzed, a concentration of participants clustered around the mean age. A handful of participants were in their early 20s, with a smaller cohort in their 60s. This implied that the sample encompassed individuals from various age brackets, albeit predominantly consisting of middle-aged individuals.

In terms of educational credentials, 55.8% of the participants held a Bachelor's degree, while 29.1% possessed a Master's degree. A Ph.D. constituted 15.1% of the total. An in-depth analysis of the ratio of Bachelor's degree holders reveal a potential bias favoring persons with lower academic qualifications. Nevertheless, the substantial presence of people with Master's and Ph.D. degrees signified a varied spectrum of educational backgrounds within the sample.

Regarding the types of academic background, the academic backgrounds of the participants elucidated that 60.5% of participants possess degrees in English Language Teaching (ELT), which is followed by Teaching English to Speakers of Other Languages (TESOL) with a percentage of 3.5. Translation follows with 3.5%, and Literature with 7.0%. On the other hand, there are a smaller distribution of participants holding degrees in American Literature, Cultural Studies, Linguistics, English as a Second Language (ESL), English Literature, and various unspecified fields.

This picture suggests that the majority of the participants are graduates of specialized training in English language instruction and associated fields. Nonetheless, the inclusion of participants with diverse academic backgrounds such as literature, translation, and cultural studies, suggests a degree of heterogeneity within the sample.

As for the prior teaching backgrounds of the participants, 44.2% of the participants have had previous teaching experience in educational institutions. These institutions are schools, which have 31.4% of distribution and a combination of both (24.4%). The fact that a substantial number of participants had had experience in educational institutes suggests potentially reflecting the specific study context. Yet, the inclusion of individuals with experience in schools and a mix of both indicates a diverse range of exposure to different teaching environments within the sample.

The researcher also highlighted the age categories in which the volunteers possessed prior teaching expertise. The primary age demographic targeted by the participants is young adults, with 33.7% of respondents demonstrating expertise in this area. This is succeeded by adult-adolescent (26.7%), adult (17.4%), and young-adult-adolescent (26.7%) categories. A minority of participants have taught young (4.7%), adolescent (4.7%), adolescent-young (2.3%), and young-adult-adolescent (4.7%) groups. This distribution reflects a varied level of teaching experience among the participants, particularly highlighting a focus on young people and adults. However, the limited number of participants with teaching experience among younger age groups (youth and adolescents) reveals a possible shortfall in their knowledge in this domain.

Subsequently, all participants were contacted to gauge their willingness to partake in the qualitative segment of the study. Out of the total, 15 participants expressed their availability to proceed with the research. Among 15 participants who consented to continue, only two were found to fall below the mean TPCK (3.87) score. While the one was around the mean 3.91, the rest were above the mean score.

3.5. Data Collection

3.5.1. Quantitative Data Instruments

Quantitative data tools include close-ended questions, predetermined approaches and numeric data (Cresswell, 2014). Generally, quantitative data tools are employed in research which tests or verifies theories; identifies variables to study; and relates variables in questions or hypotheses. In this research, EFL-TPACK scale (Bostancioğlu & Handley, 2018) to measure EPACK levels of EFL teachers and ELTEI (Akbari & Tavassoli, 2014) scale to measure self-efficacy of EFL teachers was used as quantitative tools.

3.5.1.1. EFL-TPACK Scale: Technological Pedagogical Content Knowledge for English as a Foreign Language.

Bostancioğlu and Handley (2018) created and implemented theory and technology independent scale since other scales in the field either focuses solely on the communicative aspect of the language teaching (Baser, Kopcha & Ozden, 2016) or are led by the view of socio-constructivist and socio-cultural theories of learning. For this concern, pool of 76 items were generated on TPACK's domains from several studies (Mishra & Koehler, 2006; Schmidt, Bavers, Thompson, Mishra, Koehler & Shin, 2008, van Olphen, 2008; ISTE, 2008; Healey et al., 2008; Levy, 2003; UCLES, 2010, Macaro et al, 2012). Then, it was subjected to content validation through a panel of 36 experts. By revising some items and deleting the inappropriate ones, the resulting questionnaire included 65 items. Then, construct validity of the scale was conducted with Exploratory Factor Analysis and Confirmatory Factor Analysis via 542 English language teachers. Finally, with 36 items, the scale was understood to be valid and reliable. The composite reliability (CR) levels surpass 0.70, signifying the model's reliability. Additionally, the Average Variance Explained (AVE) levels exceed 0.50 for all factors, thus indicating convergent validity.

3.5.1.2. ELTEI: English Language Teaching Efficacy Instrument

This instrument reflects different context in ELT classes through relevant scenarios. To compensate for the lack of specific contextualization in one by Tschannen-Moran and

Woolfolk Hay, (2001), Akbari and Tavassoli (2014) constructed this scale on Bandura's Socio-Cognitive theory (1977). Obtaining categories by interviewing 18 ELT teachers and observing their classes; components and sub-components of ELT Teacher Efficacy were determined by Akbari and Tavassoli for content and construct validity checks, the scale was administered to 206 ELT teachers by Akbari and Tavassoli. The reliability of the final version of 32 item-scale is .83. And it includes those components: Efficacy in Classroom Management and Remedial Needs; Efficacy in Classroom Assessment and Materials; Efficacy in Skill and Proficiency Adjustment; Efficacy in Teaching and Correcting Language Concepts; Efficacy in Age Adjustment; Efficacy in Social Adaptation; and Core Efficacy.

3.5.2. Qualitative Data Instrument: Interview

The interviews have been widely used to gather "data from people about opinions, beliefs, and feelings about situations in their own words." (Ary et al., 2009, p. 438). Along with providing in-depth data about the participants, they are considered to be good at extracting information on research sites, context and even their attitudes toward specific events (Ary et al., 2006). Whereas Patton (1990) categorized them as the informal conversational interview, the general interview guide approach and the standardized open-ended interview; interviews are nowadays classified as structured interviews which are like the verbal equivalents of questionnaire; unstructured ones which have abundant data and emergent style because of its natural way (Mackey & Gass, 2015); and the semi-structured one in which "the area of interest is chosen and questions are formulated but the interviewer may modify the format or questions during the interview process" (Ary et al., 2009, p. 438). As to this research study, semi-structured individual interviews were employed considering that the data gathered from the first quantitative phase influenced the preparation of the interview protocol. Regarding that, open-ended questions of the semi-structured interviews were to apply to 15 EFL teachers who are with low or high TPACK according to the statistics gathered from the research's quantitative instruments. As Dexter labeled the interview as "conversation with purpose" (Dexter, 2006, p. 136), it is predicated on a phenomenon, which is here why they consider themselves as technologically, pedagogically and contently as low or high; and how and where that occurred in their teaching backgrounds. Interviews are required to gather data when past events cannot be acquired since those are not replicable (Merriam, 2009). This study shed light on how Turkish EFL teachers ended up in their present level regarding TPACK. The researcher considers each interviewee as a unique participant in the phenomenon inside the study, so open-ended questions and less rigid structure through the interview guide help him carve out data better.

Referring to the type of philosophical understanding, Roulston (2010) categorized conceptions of interviews. Apart from romantic, constructivist, post-modern, transformative and de-colonizing interviews, *neo-positive conception* tries to produce good quality data through maintaining a neutral stance thus decreasing the risk of bias. Neo-positive conception that aims to create high-quality data by staying neutral and reducing the chances of bias. This means that when using the neo-positive conception approach, researchers try to gather information without letting their personal opinions or beliefs influence the results. By staying neutral and unbiased, the data collected is more likely to be accurate and reliable. Overall, the goal of the neo-positive conception is to ensure that the data collected is of decent quality and free from bias, making it more reliable for making decisions or drawing conclusions. Ultimately, the choice of philosophical understanding should be based on the research question and context, rather than blindly following a particular approach. Concerning the nature of this study, the interview was constructed around Roulston's neopositive philosophical understanding on interview.

The semi-structured interview questions were prepared after delving into existing literature to unearth key themes and topics that align with the research objectives. Since the current study employs an explanatory sequential methodology, it is essential to unveil the concealed insights into how and why EFL educators with varying levels of Technological Pedagogical Content Knowledge (TPACK) perceive their experiences both within and outside the classroom in relation to the research objectives. This process involved scouring through a plethora of scholarly articles, books, and other academic sources to gain a comprehensive understanding of the subject matter. Later, the researcher collaborated with experts in the field in crafting interview questions that are not only comprehensive but also insightful. These experts were the ones who grabbed their PhD degrees in ELT. By tapping into the knowledge and experience of these experts, researchers can ensure that the questions delve deep into the core of the research topic. However, the researcher needed to get a review again on the sequence and flow of interview questions playing a pivotal role in facilitating a natural conversation and extracting in-depth information from participants. Before conducting full-fledged interviews, it is imperative to pilot test the questions with a small sample of participants. Considering that "pilot interviews are essential for testing your questions" (Merriam, 2009, p. 95), the researcher conducted a pilot interview with an English language instructor in the field. This pilot testing phase allowed the researcher to fine-tune the clarity and effectiveness of the questions, ensuring that they elicit the desired responses, and not using some gestures in the interview. The researcher applied the ethical rules, first getting the

consent of the participants and giving them pseudonyms rather than calling out their real names. During the interview, they were audio recorded, also notes were taken too in a quiet and peaceful place where they felt free. Semi-structured interview protocol was followed, and the transcripts were distributed to the participants to obtain valid and subjective data, a process referred to as member checks. This entails requesting input on your preliminary results from certain individuals you questioned (Merriam, 2009).

3.6. Data Analysis

In the current investigation, the data analysis process encompasses both quantitative and qualitative analyses due to the completion of data collection in two distinct phases.

3.6.1. Quantitative Data Analysis

In this research, IBM SPPS Statistics 22 was used to conduct descriptive and inferential analysis of the ELTEI and EFL-TPACK scales. Since missing data can be a really "serious problem" (Ary et al., 2009, p. 380), diagnostics tests run to exclude data with missing values. Only one value was missing. And the data with missing values was excluded. At last, the final participants became 86.

Afterward, the quantitative data was examined using descriptive statistics. This involved analyzing the maximum and minimum scores, as well as calculating the mean and standard deviation for each variable, as can be seen in Table 2. From here, Efficacy in Classroom Management and Remedial Action, Efficacy in Classroom Assessment and Materials Selection, Efficacy in Skill and Proficiency Adjustment, Efficacy in Teaching and Correcting Language Components, Efficacy in Age Adjustment, Efficacy in Social Adaptation and Core Efficacy is abbreviated as ECMRA, ECAMS, ESPA, ETCLC, EAA, ESA and CE respectively.

Table 2

Descriptive Statistics on TPACK and Self-efficacy

	N	Mean	SD	Min	Max
TK	86	4 .12	0 .75	2	5
PK	86	4 .38	0 .52	3	5
CK	86	4 .53	0 .47	3	5
TCK	86	4 .19	0 .68	2 .33	5
PCK	86	4 .36	0 .55	2 .33	5
TPK	86	3 .93	0 .74	2	5
TPCK	86	3 .87	0 .82	2	5

ECMRA	86	2 .26	0 .54	1 .25	4 .13
ECAMS	86	2 .37	0 .57	1 .2	4 .2
ESPA	86	2 .37	0 .57	1 .2	4 .2
ETCLC	86	3 .50	0 .57	1 .6	4 .8
EAA	86	2 .55	0 .79	1	4 .33
ESA	86	3 .75	0 .90	1	5
Core Efficacy	86	3 .79	0 .79	2 .5	5

Notes: ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA means Efficacy in Skill and Proficiency Adjustment; ETCLC means Efficacy in Teaching and Correcting Language Concepts; EAA means Efficacy in Age Adjustment; ESA means Efficacy in Social Adaptation; and CE means Core Efficacy. TK stands for Technological Knowledge; PK stands for Pedagogical Knowledge; CK means Content Knowledge; TCK means Technological Content Knowledge; PCK means Pedagogical Content Knowledge; TPK means Technological Pedagogical Knowledge; and TPCK means Technological Pedagogical Content Knowledge

Since the distribution of quantitative data significantly impacts the selection of appropriate SPSS tests, it is crucial to determine the normality of the data. The normality of data distribution was evaluated through a normality test (Fraenkel et al., 2012). Despite occasional confusion, it is essential to clarify that the emphasis lies on the normality of errors rather than the data itself, as highlighted by Field (2024). The table presented below displays the results of the normality tests conducted in the current study.

Table 3

Normality Test Statistics for the Quantitative Data

		Statistic	SE	Value when Skewness and kurtosis divided by SE
TK	Mean	4 .12	0 .08	
	Variance	0 .56		
	SE	0 .75		
	Skewness	-1 .10	0 .26	-4 .24

	Kurtosis	0 .73	0 .51	1 .43
	Mean	4 .38	0 .05	
	Variance	0 .27		
PK	SE	0 .52		
	Skewness	-0 .70	0 .26	-2 .70
	Kurtosis	-0 .15	0 .51	-0 .29
	Mean	4 .53	0 .05	
	Variance	0 .22		
CK	SE	0 .47		
	Skewness	-0 .93	0 .26	-3 .58
	Kurtosis	0 .34	0 .51	0 .67
	Mean	4 .19	0 .07	
	Variance	0 .46		
TCK	SE	0 .68		
	Skewness	-0 .56	0 .26	-2 .15
	Kurtosis	-0 .43	0 .51	-0 .85
	Mean	4 .368	0 .05	
	Variance	0 .30		
PCK	SE	0 .55		
	Skewness	-0 .82	0 .26	-3 .17
	Kurtosis	0 .85	0 .51	1 .65
	Mean	3 .93	0 .08	
TPK	Variance	0 .55		

	SE	0 .74		
	Skewness	-0 .30	0 .26	-1 .17
	Kurtosis	-0 .61	0 .51	-1 .18
	Mean	3 .87	0 .08	
	Variance	0 .67		
TPCK	SE	0 .82		
	Skewness	-0 .43	0 .26	-1 .67
	Kurtosis	-0 .83	0 .51	-1 .61
	Mean	2 .26	0 .05	
	Variance	0 .30		
ECMRA	SE	0 .54		
	Skewness	1 .10	0 .26	4 .25
	Kurtosis	2 .03	0 .51	3 .95
	Mean	2 .37	0 .06	
	Variance	0 .32		
ECAMS	SE	0 .57		
	Skewness	0 .7	0 .26	2 .69
	Kurtosis	0 .72	0 .51	1 .40
	Mean	2 .37	0 .06	
	Variance	0 .32		
ESPA	SE	0 .57		
	Skewness	0 .7	0 .26	2 .69
	Kurtosis	0 .72	0 .51	1 .40

	Mean	3 .50	0 .06	
	Variance	0 .33		
ETCLC	SE	0 .57		
	Skewness	-0 .38	0 .26	-1 .46
	Kurtosis	0 .68	0 .51	1 .32
	Mean	2 .55	0 .08	
	Variance	0 .62		
EAA	SE	0 .79		
	Skewness	0 .14	0 .26	0 .56
	Kurtosis	-0 .68	0 .51	-1 .33
	Mean	3 .75	0 .09	
	Variance	0 .81		
ESA	SE	0 .90		
	Skewness	-0 .85	0 .26	-3 .28
	Kurtosis	0 .94	0 .51	1 .83
	Mean	3 .79	0 .08	
	Variance	0 .63		
Core Efficacy	SE	0 .79		
	Skewness	-0 .08	0 .26	-0 .31
	Kurtosis	-0 .93	0 .51	-1 .82

To determine the appropriate tests for the analysis, the researcher ascertained the normal distribution of the data errors. The first method to determine normality is to examine the data's skewness and kurtosis. To adhere to the criteria of normal distribution, the skewness and kurtosis values should ideally fall within the range of -1 to +1 (Büyüköztürk, Çokluk, & Köklü, 2011, p. 48), or alternatively, between -1.5 and +1.5 (Tabachnick et al., 2013); or even

further, between -2.00 and +2.00 (George & Mallery, 2019). Accordingly, Table 3 suggests that apart from ECMRA's kurtosis (2,03), all the components of TPACK and self-efficacy fall between the area to be regarded as the normal distribution. However, Büyüköztürk (2011) suggests, the quotient of skewness and kurtosis values divided by their respective standard errors should ideally range between ±1.96. When the values in the last column are checked, Table 3 shows that those of TK (-4,24), PK (-2,70), CK (-3,58), TCK (2,15), Efficacy in Classroom Management and Remedial Action (4,25; 3,95), Assessment and Materials Selection (2,69), Efficiency in Skill and Proficiency Adjustment (2,69), Efficiency in Social Adaptation (-3,28) did not seem to ideally have ranged between ±1.96, which suggested that the data was not normally distributed. Thus, Kolmogorov Smirnov was run.

Table 4 Tests of Normality

Tests of Normality

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
TK	0.17	86	0
PK	0.14	86	0
CK	0.17	86	0
TCK	0.16	86	0
PCK	0.19	86	0
TPK	0.11	86	0.012
TPCK	0.12	86	0.002
ECMRA	0.09	86	0.035
ECAMS	0.12	86	0.001
ESPA	0.12	86	0.001
ETCLC	0.10	86	0.013
EAA	0.13	86	0.001
ESA	0.15	86	0
Core Efficacy	0.16	86	0

Notes: ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA means Efficacy in Skill and Proficiency

Adjustment; ETCLC means Efficacy in Teaching and Correcting Language Concepts; EAA means Efficacy in Age Adjustment; ESA means Efficacy in Social Adaptation; and CE means Core Efficacy. TK stands for Technological Knowledge; PK stands for Pedagogical Knowledge; CK means Content Knowledge; TCK means Technological Content Knowledge; PCK means Pedagogical Content Knowledge; TPK means Technological Pedagogical Knowledge; and TPCK means Technological Pedagogical Content Knowledge

Table 4 shows the significance levels (p) of TPACK and self-efficacy components according to Kolmogorov-Smirnov test. To be regarded as normally distributed. p values are > 0.05 value. According to the table, since the significance level is below .05, the data is NOT normally distributed, which led me to run non parametric tests for the rest of the research. Regarding the point, Field (2024) put emphasis on the misconception of normality pointing out that model errors are normally distributed as well. Field (2024) claimed that the assumption of normality is about understanding how the data points gather and spread out in a statistical model.

To gain a more comprehensive understanding of how the test was conducted in the study, the research inquiries were addressed accordingly.

1) What are the TPACK levels of Turkish EFL prep school teachers at state universities related to components of their TPACK?

For the first research question, the quantitative data was examined using descriptive statistics. This involved analyzing the maximum and minimum scores, as well as calculating the mean and standard deviation for each variable.

2) What are the self-efficacy levels of Turkish EFL prep school teachers at state universities?

Referring to the second research question, as happened in the first research question, descriptive statistics was employed to address it. The quantitative data was examined using the explore function of SPSS Statistics 22 on the self-efficacy levels of the participants.

3) What is the relationship between self-efficacy beliefs of Turkish EFL prep school teachers and their knowledge domains of TPACK?

It was aimed to investigate the relationship between self-efficacy beliefs of Turkish EFL teachers and their knowledge domains of TPACK (Technological pedagogical content knowledge). After getting their scores (means) on EFL-TPACK scale and ELTEI scale, Spearman rho was run to explore the possible relationships between them.

4) Do Turkish EFL prep school teachers' TPACK skills differ significantly according to gender and perceived language proficiency?

To investigate how gender and perceived language proficiency influence TPACK skills among Turkish EFL prep school teachers, Mann-Whitney U test was used. This analysis provided

insights into whether there are significant differences in TPACK skills based on gender and perceived language proficiency, and if these factors interact to influence the outcome variable.

5) Does Turkish EFL prep school teachers' self-efficacy differ significantly according to gender and perceived language proficiency?

For the fifth research question, the Mann-Whitney U test was employed to explore how gender and perceived language proficiency impact self-efficacy skills among Turkish EFL prep school educators.

4.6.2. Qualitative Data Analysis

The sixth research question was:

6) What are Turkish EFL prep school teachers' experiences while applying TPACK in state universities?

The qualitative data, which was gathered through the individual semi structured interviews, was audio taped and transcribed by the researcher. Thematic analysis is used to analyze data.

Flick (2014) defines the process of data analysis as the systematic examination and interpretation of both linguistic and visual material. The primary goal is to uncover "the implicit and explicit dimensions and structures of meaning within the material," shedding light on what is being represented (p. 5). This process not only reveals what is being conveyed but also highlights the intricate structures of meaning that shape our interpretations.

This study aimed to gain profound insights into Turkish EFL instructors, delving into and scrutinizing the data using thematic analysis (Braun & Clarke, 2006). Moving beyond the initial stages of data analysis, researchers often engage in thematic coding to identify patterns and connections within the material. Through this systematic approach, themes emerge that provide insight into the central ideas and concepts present in the data. By organizing data into coherent themes, researchers can draw meaningful conclusions and generate valuable insights that contribute to the broader understanding of the subject matter. (Braun & Clarke, 2006).

Moreover, data analysis extends beyond the mere extraction of information; it involves a critical examination of the data to discern underlying trends, relationships, and implications. Braun and Clarke (2006) contended that this rigorous process of analysis not only illuminates the surface-level content but also uncovers the nuanced subtleties that enrich our comprehension of the data.

Braun and Clarke (2006) identified six steps in thematic analysis. The first step was *Familiarizing Data* as the first step. Researchers are advised to meticulously take notes while repeatedly reviewing the transcripts. The researcher made concise entries in journals during

the process of familiarizing themselves with the material. Upon embarking on the initial step outlined by Braun and Clarke (2006) in the process of thematic analysis, the researcher immersed in the qualitative data, specifically the interview transcripts, through thorough and repeated readings to acquire a comprehensive understanding.

Upon immersing in the qualitative data, the researcher proceeded to the second step and code the interview transcripts meticulously, identifying recurring patterns and themes that emerged from the participants' narratives. Merriam and Tisdell (2015) elucidated that coding entails the assignment of succinct designations to data for facile retrieval, facilitating the efficient extraction of specific data points. These designations may encompass single words, letters, numerical figures, phrases, hues, or amalgamations thereof. The researcher conducted the coding. This process followed searching and reviewing themes, as described as the third and fourth step, to organize the data into meaningful themes and subthemes, allowing for a structured analysis of the information. Through this systematic approach, the researcher aimed to uncover the underlying meanings and insights embedded within the data, ultimately contributing to a rich and nuanced understanding of the research topic. In order to enhance the strength of my data, the researcher kept asking/reminding those questions:

- Is this labelled as a theme (or a code)? (Braun & Clarke, 2006)
- Are categories related to the purpose of the research? (Merriam & Tisdell, 2015)
- Are they *exhaustive* enough to place all the data related to the research questions? (Merriam & Tisdell, 2015)
- Are categories mutually *exclusive* enough to be “fit into only one category” (Merriam & Tisdell, 2015, p. 212)
- Are categories *sensitive and congruent* enough to the data (Merriam & Tisdell, 2015).

As Merriam and Tisdell (2015) asserted, data analysis is an intricate process wherein the researcher examines both the overarching perspective (the forest) and the intricate details (the trees) to effectively scrutinize data. Thus, the initial step was to maintain a clear focus on the study's objective. Subsequently, the researcher carefully evaluated the theoretical framework employed. Lastly, the researcher deciphered the data by discerning discernible patterns and insights pertinent to the research inquiries. This was like looking at the individual trees in the forest. After coding, the researcher took a step back and analyzed the overarching themes that surfaced. Ultimately, the researcher scrutinized the individual data components (trees) to ascertain their alignment with the overarching themes (forest) as the fifth step in the data analysis, which is defining and naming the themes. Finally, the researcher authored the report.

As the researcher delved deeper into the thematic analysis, the researcher engaged in constant reflection and interpretation of the data, questioning my assumptions and interpretations to ensure the validity and reliability of the findings. By maintaining a reflexive stance throughout the analysis process, the researcher sought to mitigate any potential biases or preconceived notions that could influence the interpretation of the data. This critical reflexivity enabled the researcher to approach the analysis with an open mind, allowing for new perspectives and insights to emerge from the data, enriching the overall depth and complexity of the study. Lester et al. (2020) contended that among the other qualitative ones, thematic analysis comes forward in some ways. First, thematic analysis is applicable for analyzing several types and sizes of data sets. In addition, it can lead to theory-driven or data-driven findings and address diverse research questions (Braun & Clarke, 2006). That is why it is suitable for this research.

3.6.2.1. Peer Debriefing

To ensure consistency in the data, peer debriefing, which allows the researcher to revise and assess the transcribed data collaborated with an additional researcher to determine the definitive version of the themes (Janesick, 2007) during the qualitative data analysis procedure, was employed. Debriefers conduct their duties in partnerships or small groups. Certain debriefing groups convened for the duration of the dissertation defense, which extended from the proposal (Spall, 1998). In this thesis, the researcher reached a consensus on themes as a prerequisite for peer debriefing, collaborating with his supervisor.

4.6.2.2. Member Checking to validate.

All the participants were asked to review transcripts for increased validity. As Morse (2014) stated that member check needs to be conducted meticulously because such inappropriate approaches reduce the quality of the data. Here, in the present study, the researcher aimed to foster a collaborative approach with participants by giving respect to their voices. Rather than sharing them with the results or any part of the research, the researcher just invited them to ask the specific name or category he or she mentioned in the transcript in the interview and aimed to get much clearer data from them.

4.6.2.3. Verifying the data

Morse (2014) argued that peer review is beneficial in fostering the conceptualization and abstraction of data. The researcher in the present study asked his peers to assist to find rough spots. One of those peers was the one with PhD in ELT and had been teaching for 15

years when the research was in progress. The other was also English teacher who had been pursing PhD degree in ELT. The researcher sometimes gathered in an online conference, get their feedback and insights. Each peer shared their perspective on potential areas for improvement, highlighting specific details that could be refined. The researcher listened attentively, taking notes, and asking clarifying questions when needed. Together, brainstormed solutions and strategies to address the rough spots were identified. Meriam (2015) posited that an audit trail intricately outlines the process of data collection, category derivation, and decision-making during the inquiry. To establish this trail, the researcher is required to maintain a meticulous research journal or record detailed memos throughout the research process. To prioritize confidentiality and maintain honesty, the researcher in the present study took a research journal in data collection and data analysis process. He

kept a detailed journal documenting the actions, remarks, and reflections on collecting data through interviews.

CHAPTER IV

RESULTS

This study employs an explanatory sequential mixed methods design to investigate the relationship between self-efficacy beliefs and TPACK dimensions among English as a Foreign Language (EFL) instructors at schools of foreign language in two state universities in western Türkiye. A complete explanatory sequential mixed methods design (Creswell, 2012) was utilized to attain this purpose, involving the collection of quantitative data followed by an in-depth qualitative analysis to elucidate the quantitative findings. The EFL-TPACK questionnaire and ELTEI scale were utilized in the preliminary quantitative phase to collect data from Turkish EFL educators at two public institutions. The primary aim of this phase was to assess the correlation between instructors' self-efficacy beliefs and their TPACK domains. The subsequent qualitative phase sought to augment the quantitative data by investigating the challenges encountered by Turkish EFL preparatory school teachers in integrating TPACK into their instructional practices through exploratory follow-up procedures.

4.1. RQ1. What are the TPACK levels of Turkish EFL prep school teachers at state universities related to components of their TPACK?

To answer RQ1, descriptive analysis was run by SPSS IBM 22 in order to get mean, standard deviation and standard error, minimum and maximum numbers. The thorough analysis enabled researcher to get a general overview by displaying the average scores of the dimensions of Technological Pedagogical Content Knowledge (TPACK) among English as a Foreign Language (EFL) instructors.

Table 5

Descriptive Statistics of the Technological Pedagogical Content Knowledge (TPACK) Components of the Participants

Components of TPACK	N	Range	Min	Max	M	SE	S D
TK	86	3.00	2.00	5.00	4.12	.080	.75
PK	86	2.00	3.00	5.00	4.38	.056	.52
CK	86	2.00	3.00	5.00	4.53	.051	.47

TCK	86	2.67	2.33	5.00	4.19	.073	.68
PCK	86	2.67	2.33	5.00	4.36	.059	.55
TPK	86	3.00	2.00	5.00	3.93	.080	.74
TPCK	86	3.00	2.00	5.00	3.87	.088	.82

Notes: TK stands for Technological Knowledge; PK stands for Pedagogical Knowledge; CK means Content Knowledge; TCK means Technological Content Knowledge; PCK means Pedagogical Content Knowledge; TPK means Technological Pedagogical Knowledge; and TPCK means Technological Pedagogical Content Knowledge.

Table 5 summarizes the distribution of results for the Technological Pedagogical Content Knowledge (TPACK) components across 86 individuals. The average scores for each TPACK dimension—Technological Knowledge, Pedagogical Knowledge, Content Knowledge, and TPACK—are significantly elevated, ranging from 4.12 to 4.53. The median scores for each dimension demonstrate an increased tendency for increased values, suggesting that the majority of individuals exhibited above-average knowledge and skills in these domains. When the standard deviation of each dimension is analyzed, consistency is noticed in the participants' judgments. These judgements are present in the ratings for each dimension because they range from 2 to 3. As easily understood, a lesser degree of knowledge among certain participants is reflected by lowest scores, whilst some high levels of Technological Pedagogical Content Knowledge (TPACK) are seen in all domains.

Table 6

Frequencies on the TPACK Dimensions of the Participants

Components of TPACK	N	M	SE	SD	Variance
TK	86	4.12	.08	.75	.56
PK	86	4.38	.05	.52	.27
CK	86	4.53	.05	.47	.22
TCK	86	4.19	.07	.68	.46
PCK	86	4.36	.05	.55	.30
TPK	86	3.93	.08	.74	.55
TPCK	86	3.87	.08	.82	.67

Notes: TK stands for Technological Knowledge; PK stands for Pedagogical Knowledge; CK means Content Knowledge; TCK means Technological Content Knowledge; PCK means Pedagogical Content Knowledge; TPK means Technological Pedagogical Knowledge; and TPCK means Technological Pedagogical Content Knowledge.

Table 6 provides more information concerning the frequency of the TPACK dimensions. The standard deviations for each dimension are minimal, signifying a limited degree of variability among those who provided scores. The score range for each dimension is between 2 and 3, indicating a rather limited distribution. Although the minimum scores reflect a lower level of knowledge among certain participants, the maximum scores of 5 across all dimensions reveal that certain individuals had advanced TPACK proficiency in every domain. The SEM (Standard Error of Mean) values for each TPACK dimension are rather low, indicating that the sample means are accurate estimations of the population means. What is understood from this table data is that participants appear to have demonstrated exceptional proficiency in Content Knowledge (CK) within the Technological Pedagogical Content Knowledge (TPACK) framework, as they achieved a mean score of 4.53. The average PK was 4.38, although that of TK was 4.12. The values for TCK, PCK, TPK, and TPCK were 4.19, 4.36, 3.93, and 3.87, respectively.

4.2. RQ2. What are the self-efficacy levels of Turkish EFL prep school teachers at state universities?

In order to address this question, IBM SPSS Statistics 22 was utilized to determine the mean, median, minimum, and maximum values, standard deviation, and standard error. The thorough analysis provided a comprehensive overview by displaying the average ratings of various dimensions and components of self-efficacy levels among educators of English as a Foreign Language (EFL).

Table 7

Descriptive Statistics of the Self-Efficacy Levels of the Participants

Components of Self-efficacy	N	Range	Min	Max	Mean	SE	SD
ECMRA	86	2.88	1.25	4.13	2.26	.059	.54
ECAMS	86	3.00	1.20	4.20	2.37	.061	.57
ESPA	86	3.00	1.20	4.20	2.37	.061	.57
ETCLC	86	3.20	1.60	4.80	3.50	.062	.57
EAA	86	3.33	1.00	4.33	2.55	.085	.79
ESA	86	4.00	1.00	5.00	3.75	.097	.90
Core Efficacy	86	2.50	2.50	5.00	3.79	.086	.79

Notes: ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA means Efficacy in Skill and Proficiency

Adjustment; ETCLC means Efficacy in Teaching and Correcting Language Concepts; EAA means Efficacy in Age Adjustment; ESA means Efficacy in Social Adaptation; and CE means Core Efficacy.

Table 7 offers statistical data that outlines the self-efficacy levels of EFL preparatory school instructors across various fields, *ECMRA, ECAMS, ESPA, ETCLC, EAA, ESA and Core Efficacy*. The average results across all dimensions ranged from 2.26 to 3.79, which indicates a moderate to high level of self-efficacy overall. The varied standard deviations from 0.55 to 0.90 signified a moderate level of diversity in self-efficacy across several variables. Most instructors indicated moderate to high self-efficacy in classroom management, assessment, skill adaptation, and language instruction, despite demonstrating lower self-efficacy in age adaptation and social engagement.

When data were analyzed with a more meticulous lens, EFL instructors seemed to demonstrate a moderate level of self-efficacy in Classroom Management and Remedial Action, with a mean score of 2.26. The moderate standard deviation signifies a degree of diversity in assessed competency. In detail, the self-efficacy level of Classroom Assessment and Materials Selection was analyzed with an average of 2.37, and it seemed that instructors had a moderate score on this dimension of self-efficacy as well as having a comparable standard deviation to the preceding dimension. Afterwards, concerning Skill and Proficiency Adjustment, EFL instructors seemed to demonstrate medium self-efficacy in modifying their expertise to meet students' needs, with a mean of 2.37 and again a moderate standard deviation. Furthermore, in the category of Teaching and Correcting Language Components, the self-efficacy level was significantly extreme totaling 3.50 along with a huge standard variation while they indicated a modest self-efficacy in adapting their instructional techniques for various age groups, with an average score of 2.55 and a notably high standard deviation, reflecting greater variability in this dimension. In addition, in Social Interaction and Adaptation, they exhibited a substantial degree of self-efficacy, with a mean of 3.75 and a moderate standard deviation. Finally, in Core Efficacy, they indicated the highest degree of self-efficacy regarding their essential teaching competencies, with an average score of 3.79 and a moderate standard deviation.

Table 8

Frequencies on Self-Efficacy Levels of EFL Prep School Teachers

Components of Self-efficacy	N	Mean	SE	SD	Variance
ECMRA	86	2.26	.059	.54	.30
ECAMS	86	2.37	.061	.57	.32
ESPA	86	2.37	.061	.57	.32
ETCLC	86	3.50	.062	.57	.33
EAA	86	2.55	.085	.79	.62
ESA	86	3.75	.097	.90	.81
Core Efficacy	86	3.79	.086	.79	.63

Notes: ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA means Efficacy in Skill and Proficiency Adjustment; ETCLC means Efficacy in Teaching and Correcting Language Concepts; EAA means Efficacy in Age Adjustment; ESA means Efficacy in Social Adaptation; and CE means Core Efficacy.

As to variability, SD values ranged from 0.55 to 0.90. This picture indicated that there was moderate variability in self-efficacy across different dimensions. Conversely, the SE demonstrated the accuracy of the sample mean in estimating the population mean. Lower SE values suggest greater precision. Table 8 showed that the SEM values are relatively small, indicating that the sample means are likely to be good estimates of the true population means. The variance values in the table ranged from 0.30 to 0.81, reflecting the moderate variability in self-efficacy levels.

4.3. RQ3. What is the relationship between self-efficacy beliefs of Turkish EFL prep school teachers and their knowledge domains of TPACK?

In order to answer this question, the researcher calculated whether the data gathered through the quantitative scales were normally distributed or not. Based on the normality tests and the values of kurtosis and skewness, the data revealed that it is non-normal, which led me to use non-parametric tests in looking at the correlation between TPACK and self-efficacy dimensions of EFL Prep school instructors.

Table 9

Spearman Correlation Coefficients (Rho)

	TK	PK	CK	TCK	PCK	TPK	TPCK	ECMRA	ECAMS	ESPA	ECLC	EAA	ESA	CE
TK	1													
PK	.61	1												
CK	.50	.60	1											
TCK	.65	.67	.61	1										
PCK	.45	.66	.67	.78	1									
TPK	.67	.69	.57	.81	.75	1								
TPCK	.63	.62	.55	.77	.67	.86	1							
ECMRA	-.26	-.48	-.39	-.31	-.36	-.28	-.19	1						
ECAMS	-.17	-.25	-.11	-.13	-.15	-.12	-.10	.32	1					
ESPA	-.17	-.25	-.11	-.13	-.15	-.12	-.10	.32	1.0	1				
ECLC	.03	.15	.31	.27	.33	.28	.33	-.09	.19	.19	1			
EAA	-.07	-.19	-.34	-.12	-.19	-.09	-.09	.50	.24	.24	-.17	1		
ESA	-.00	.03	.13	.24	.26	.25	.26	.01	.16	.16	.52	-.05	1	
CE	.17	.40	.46	.53	.53	.49	.51	-.12	-.02	-.02	.59	-.08	.34	1

Notes: ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA means Efficacy in Skill and Proficiency Adjustment; ETCLC means Efficacy in Teaching and Correcting Language Concepts; EAA means

Efficacy in Age Adjustment; ESA means Efficacy in Social Adaptation; and CE means Core Efficacy. TK stands for Technological Knowledge; PK stands for Pedagogical Knowledge; CK means Content Knowledge; TCK means Technological Content Knowledge; PCK means Pedagogical Content Knowledge; TPK means Technological Pedagogical Knowledge; and TPCK means Technological Pedagogical Content Knowledge

Table 9 shows the correlation matrix of Spearman correlation coefficients (rho) on TCK (Technological Content Knowledge). PCK (Pedagogical Content Knowledge), TPK (Technological Pedagogical Knowledge), TPCK (Technological Pedagogical Content Knowledge), TK (Technological Knowledge), PK (Pedagogical Knowledge), and CK (Content Knowledge) and Self-Efficacy Measures, as follows: Efficacy in Classroom Management and Remedial Needs, Efficacy in Classroom Assessment and Materials Adjustment, ESPA, Efficacy in Teaching and Correcting Language Concepts, Efficacy in Age Adjustment Efficacy in Social Adaptation Core Efficacy.

The data in Table 9 provided some facts on self-efficacy and TPACK associations. For instance, positive correlations between Core Efficacy specific TPACK components were noticed, such as PCK (0.53), which signified that heightened pedagogical content knowledge is linked to elevated core self-efficacy. Furthermore, Efficacy in Social Adaptation also demonstrates a favorable yet moderate correlation with TPACK dimensions (0.24 for TCK), which indicated that enhanced TPACK may facilitate teachers in adapting to the social intricacies within the classroom. On the other hand, TCK (Technological Content Knowledge) and Efficacy in Teaching and Correcting Language Concepts had a moderate correlation (0.27). This positive moderate correlation indicated that teachers' technological content knowledge expands, so does their confidence in imparting and rectifying language concepts. The relatively same moderate correlation was seen between TPK (Technological Pedagogical Knowledge) and Efficacy in Teaching and Correcting Language Concepts with .28. While technically moderate, this correlation is relatively low, suggesting that TPK knowledge may offer some assistance in language instruction but proves to be a limited factor in bolstering self-efficacy in this particular domain. However, the same component of self-efficacy had a relatively more moderate correlation (.33) with TPCK (Technological Pedagogical Content Knowledge. On the other hand, Technological Pedagogical Knowledge correlated positively with Efficacy in Social Adaptation (.25) and Core Efficacy (.49).

What is more, some moderate correlations between Content Knowledge (CK) and multiple facets of teacher self-efficacy were noticed in the data, which had researcher see significant insights into the relationship between subject matter competence and a teacher's

confidence in particular areas. CK demonstrates a moderate positive correlation of 0.31 with Efficacy in Teaching and Correcting Language Concepts. This enabled researcher to highlight a remark that EFL instructors with a deep comprehension of content perceive themselves as more competent in teaching and correcting language concepts, which seems likely to be owing to their improved capacity to tackle content-related questions and provide clear explanations. Furthermore, a slight positive correlation of 0.13 between CK and social adaptation efficacy suggests another remark on some associations which shall be covered in the discussion part. Specifically, teachers with a firm grasp of content knowledge may feel better equipped to tailor their teaching methodologies to accommodate diverse social and cultural requirements in the classroom. The correlation between CK and core self-efficacy is more pronounced at 0.460, indicating that a solid grounding in content knowledge can significantly contribute to teachers' overall self-efficacy in their professional roles. This reflects a fundamental belief in their proficiency to impart lessons, underpinned by their expertise in the subject matter.

In regard to the correlation between Pedagogical Knowledge and Core Efficacy, Table 9 shows that they are essential components in shaping EFL Instructors' effectiveness in the classroom and this is shown with moderate positive correlation of 0.400, which highlighted the significance of not only possessing content knowledge but also understanding how to effectively deliver that knowledge to students may be interrelated. Teachers who exhibited strong pedagogical skills coupled with a sense of core efficacy are more likely to engage students, create meaningful learning experiences, and foster a positive classroom environment. As to the negative correlations between TPACK components and self-efficacy of EFL Prep school instructors, table 9 suggests that PCK and Efficacy in Efficacy in Classroom Management and Remedial Action with -0.36. Likewise, Efficacy in Classroom Management and Remedial Action showed relatively negative correlations with TPK (-0.28), TK (-0.26), PK (-0.48) and CK (-0.39). Efficacy in Classroom Management and Remedial Needs had a noticeable negative correlation with TCK (−0.31), indicating that as teachers focus on technological content knowledge, they may feel less self-efficacious in classroom management.

As for the inverse relationships between TPACK components and self-efficacy of EFL Prep school instructors, the table indicates that Pedagogical Content Knowledge (PCK) and Efficacy in Classroom Management and Remedial Action exhibit a correlation of -0.36. Similarly, Efficacy in Classroom Management and Remedial Action demonstrates negative correlations with Technological Pedagogical Knowledge (TPK) (-0.28), Technological Knowledge (TK) (-0.26), Pedagogical Knowledge (PK) (-0.48), and Content Knowledge (CK)

(-0.39). Efficacy in Classroom Management and Remedial Action also displays a significant negative correlation with Technological Content Knowledge (TCK) (-0.31), suggesting that as educators concentrate on technological content knowledge, their self-efficacy in classroom management may diminish.

Until now, the correlations between the dimension of TPACK and self-efficacy have been presented. In aim of highlighting the shade on why these inverse correlations between ECMRA and TPACK occur, the researcher has tendency to demonstrate the items of the factor of Classroom Management and Remedial Action. It included items with the gist presented on the table below. These items retained data on *controlling students' disruptive behavior, having good time management skills, making students follow classroom rules, asking good questions, helping students who think they are weak, helping students to self-correct themselves, using teacher-correction appropriately, correcting errors in listening and reading.*

Table 10 Gist of the Items in ECMRA

Gist of the Items in ECMRA

Item No.	Gist of the Item
5	Controlling students' disruptive behavior
23	Having good time management skills
25	Making students follow classroom rules
3	Asking good questions
29	Helping students who think they are weak
8	Helping students to self-correct themselves
26	Using teacher-correction appropriately
22	Correcting errors in listening and reading

Table 10 shows eight items under the factor of Classroom and Remedial Action in the ELTEI scale used in the research: items 3, 5, 8, 22,23, 25, 26, and 29.

4.4. RQ4. Do Turkish EFL prep school teachers' TPACK skills differ significantly according to gender and perceived language proficiency?

Descriptive statistics on gender and perceived language proficiency are given below. Gender category is divided as male and female. Perceived language competence consists of B2, C1 and C2 according to CEFR level.

Table 11

Descriptive Statistics on Turkish EFL prep school teachers

Measure	N		M		SD	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*
TK	20	62	4,47	4,01	0,61	0,77
PK	20	62	4,51	4,36	0,55	0,52
CK	20	62	4,61	4,54	0,55	0,45
TCK	20	62	4,38	4,15	0,80	0,65
PCK	20	62	4,50	4,36	0,78	0,47
TPK	20	62	4,19	3,88	0,84	0,70
TPCK	20	62	4,09	3,85	0,94	0,77

The distribution of EFL instructors based on gender and perceived language proficiency is reflected in Table 11. As be seen, the predominant demographic among them is female, accounting for 73.3% of the total. Regarding self-reported language proficiency, a considerable proportion of them indicate a C2 level, reflecting a superior level of linguistic aptitude. It is worth noting that there are some instances of missing data pertaining to gender within the dataset.

In order to answer the first part of RQ4, the researcher used SPSS IBM 22 to compare the means of TPACK components (TK, PK, CK, TCK, PCK, TPK, and TPCK). Since the data in this research was not normally distributed, a non-equivalent of t test: Mann Whitney U was chosen to compare the means.

Table 12

Comparing Means of TK, PK, CK, TCK, PCK, TPK AND TPCK on Gender

	N	U	Z	p	r	SE
TK	82	370.500	-2.70	.007	-0.30	92.08
PK	82	498.500	-1.33	.183	-0.15	91.30
CK	82	513.500	-1.18	.238	-0.13	90.16
TCK	82	455.500	-1.79	.073	-0.20	91.75
PCK	82	427.500	-2.13	.033	-0.23	90.34
TPK	82	454.500	-1.79	.072	-0.20	92.10
TPCK	82	482.000	-1.49	.135	-0.17	92.22

Notes: The significance level is .05. TK stands for Technological Knowledge; PK stands for Pedagogical Knowledge; CK means Content Knowledge; TCK means Technological Content Knowledge; PCK means Pedagogical Content Knowledge; TPK means Technological Pedagogical Knowledge; and TPCK means Technological Pedagogical Content Knowledge

In this dissertation, the null hypothesis posits that there is no substantial disparity among the variables. In terms of the mean of TK (Technological Knowledge), Table 12 indicates that the p value of .007 is below the 0.05 significance threshold, indicating the rejection of the null hypothesis. Therefore, the distribution of TK varies across Gender categories. The U value of 370.500 proves a difference in the distribution of ranks between female and male instructors. The Z value of -2.70 suggests a large effect size. On the other hand, the r value of -0.30 indicates a large negative effect size.

Another variable related to Gender is PK (Pedagogical Knowledge). The Mann-Whitney U test reveals that the 0.18 value for PK is greater than the 0.05 significance level, indicating the acceptance of the null hypothesis. There is no notable difference across gender categories in Pedagogical Knowledge. The U value of 498.500 suggests that there is a difference in the distribution of ranks between the female and male instructors. The Z value of -1.33 suggests a small to moderate effect size. The r value of -0.15 indicates a small negative effect size.

With respect to CK (Content Knowledge), the distribution remains consistent across genders as the 0.23 value exceeds the 0.05 significance level. The p-value of 0.23 exceeds the conventional significance level of 0.05. The U value of 513.500 signifies a disparity in the distribution of ranks between the female and male instructors. The Z value of -1.18 indicates a diminutive effect size. And r value is -0.13, which equals to a negative small effect size between female and male instructors. Female instructors tend to have higher CK scores than male ones.

Similarly, there is no significant distinction across gender categories in TCK (Technological Content Knowledge) with a value of 0.073. The r value of approximately -0.20 indicates a moderate negative effect size. Then, the Z value of -1.79 suggests a moderate effect size. The U value of 455.500 indicates that there is a difference in the distribution of ranks between the two groups (female and male).

However, the null hypothesis is rejected in terms of Pedagogical Content Knowledge due to the p value being less than the 0.05 level. This suggested a significant difference across gender categories. Regarding the U value of 427.500, a disparity in the ranking distribution is available between female and male instructors. In addition, the Z value of -2.13 shows a moderate effect size. The r value of -0.23 shows a moderate negative effect size.

The values for TPK and TPCK (0.07 and 0.13 respectively) surpass the 0.05 significance level, indicating no significant divergence across gender categories in TPK and TPCK. As to the

TPCK, the U value of 482.000 indicates a disparity in the distribution of ranks between the female and male cohorts, while the Z score of -1.49 implies a substantial effect size.
The p-value of 0.13 exceeds the conventional significance threshold of 0.05. This indicates that we are unable to dismiss the null hypothesis. Insufficient evidence was found to determine a substantial difference in TPCK scores between female and male teachers. An R value of roughly -0.17 signifies a moderate negative effect magnitude. Conversely, the correlation coefficient (r) in TPK is -0.20, which indicated a moderate negative effect size. The U statistic in TPK equals 454.500, while the Z score is noted as -1.79. The p-value of 0.072 surpasses the conventional significance threshold of 0.05, which indicated that the null hypothesis cannot be rejected. To summarize thus far, there exists a notable disparity among gender categories in terms of Technological Knowledge and Pedagogical Content Knowledge, while no significant variance was observed in PK, CK, TCK, TPK, and TPCK across genders, and female teachers generally scored higher than male teachers in these areas.

The last part of RQ4 is related to the perceived language proficiency of EFL prep school instructors. Through the scale, the researcher asked participants to evaluate themselves their language level according to Common European Framework of Reference for Language apart from the other four different skills, listening, reading, writing, and speaking. The general level of perceived proficiency level was assessed, and they were classified as two groups with the one with C1 perceived general language level and C2 perceived general language level. The ones who preferred to answer this part and the ones with less than C1 perceived language level were omitted from the test.

Table 13

Participants' Perceived Language Proficiency across B2, C1 And C2 Level

Measure	N			M		SD	
	B2	*C1*	*C2*	*C1*	*C2*	*C1*	*C2*
TK	1	16	63	3,92	4,19	0,88	0,70
PK	1	16	63	4,03	4,48	0,57	0,49
CK	1	16	63	4,26	4,64	0,56	0,43
TCK	1	16	63	3,95	4,28	0,60	0,68
PCK	1	16	63	4,02	4,49	0,67	0,49
TPK	1	16	63	3,44	4,09	0,69	0,71
TPCK	1	16	63	3,39	4,06	0,89	0,71

Notes: CEFR means Common European Framework for Reference

The table 13 illustrates the distribution of English as a Foreign Language (EFL) preparatory school instructors' perceived language proficiency across the C1 and C2 levels of

the Common European Framework of Reference for Languages (CEFR). A significant majority of the participants (73.3%) perceive their overall English language proficiency to be at the C2 level, indicating an elevated level of linguistic competence among the EFL prep school teachers. A smaller proportion of participants (18.6 %) perceive their language proficiency to be at the C1 level, suggesting that a considerable number of the participants have achieved advanced levels of language proficiency. And one person is at B2 level. Approximately 7% of the data is missing, either due to participants leaving those sections blank or for other unknown reasons.

Table 14

Comparing Means of TK, PK, CK, TCK, PCK, TPK AND TPCK on Perceived Language Proficiency of C1 and C2

TPACK Components	N	U	Z	p	r	SE
TK	79	600.00	1.17	.239	0.12	81.53
PK	79	739.00	2.90	.004	0.33	80.84
CK	79	716.00	2.66	.008	0.30	79.61
TCK	79	666.00	1.99	.046	0.20	81.16
PCK	79	716.00	2.66	.008	0.30	79.92
TPK	79	751.00	3.03	.002	0.34	81.52
TPCK	79	739.00	2.75	.006	0.27	81.62

Note: The significance level is ,05. Notes: TK stands for Technological Knowledge; PK stands for Pedagogical Knowledge; CK means Content Knowledge; TCK means Technological Content Knowledge; PCK means Pedagogical Content Knowledge; TPK means Technological Pedagogical Knowledge; and TPCK means Technological Pedagogical Content Knowledge

The table 14 illustrates the outcomes of Mann-Whitney U tests comparing the means of various Technological Pedagogical Content Knowledge (TPACK) components (Technological Knowledge - TK, Pedagogical Knowledge - PK, Content Knowledge - CK, Technological Content Knowledge - TCK, Pedagogical Content Knowledge - PCK, Technological Pedagogical Knowledge - TPK, and Technological Pedagogical Content Knowledge - TPCK) between EFL prep school instructors who perceive their language proficiency at the C1 and C2 levels.

The results indicated significant disparities between the two groups regarding their perceived levels of pedagogical knowledge (0.004), content knowledge (0.008), technological

content knowledge (0.046), pedagogical content knowledge (0.008), technological pedagogical knowledge (0.002), and technological pedagogical content knowledge (0.006). Across these dimensions, individuals identifying their language proficiency as C2 exhibited notably higher mean scores compared to those identified as C1. This implies that a superior language proficiency level correlates with a more profound comprehension and assimilation of the various TPACK components.

Regarding the Content Knowledge between EFL prep school instructors who perceive their language proficiency at the C1 and C2 levels, a difference in the distribution of ranks between the two groups (CEFR Level C1 and CEFR Level C2) is shown by a U value of 716.000. Furthermore, a standardized test statistic that aids in assessing the significance of the difference between the two groups is the Z value of 2.66. A higher difference is indicated by a larger absolute Z value, whereas a Z value around zero suggests a lesser difference. The Z score in this instance is comparatively high, indicating a significant difference between the groups. Compared to the usual significance level of 0.05, the p-value of 0.008 is lower. Thus, the null hypothesis can be disproved. To put it another way, there is proof that there is a notable variation in the CK of EFL prep school instructors who perceive their language proficiency at the C1 and the ones who perceive themselves at C2 levels. A medium magnitude of effect is indicated by the computed effect size (r), which is roughly 0.30.

As for PCK, a U value of 716.000 demonstrates a difference in the distribution of rankings between the two groups (CEFR Level C1 and CEFR Level C2) with respect to the Pedagogical Content Knowledge between EFL prep school instructors who consider their language competency at the C1 and C2 levels. Moreover, 2.66 is the Z value. While a Z value around zero denotes a smaller difference, a larger absolute Z value indicates a larger difference. In the present instance, a significant difference between the groups is shown by the relatively high Z score. The p-value of 0.008 is less than the typical significance level of 0.05. Therefore, it is possible to invalidate the null hypothesis. In other words, there is evidence that there is a significant difference between PCK of EFL prep school instructors who perceive their language proficiency at the C1 and PCK of the ones who perceive themselves at C2 levels. A medium magnitude of effect is indicated by the computed effect size (r), which is roughly 0.30.

Regarding PK, the typical significance level of 0.05 is exceeded by the p-value of 0.004. Thus, the null hypothesis can be disproved. Put a different way, there is evidence to support the belief that people at CEFR Level C1 and CEFR Level C2 differ significantly in their PK. Then, a moderate to large effect size is represented by the computed effect size (r),

which is roughly 0.33. The comparatively big Z score of 2.90 reveals an important distinction between the groups. A discrepancy in the distribution of ranks between the two groups (CEFR Level C1 and CEFR Level C2) is illustrated by a U value of 739.000.

Regarding the TCK, a small to moderate effect size is suggested by the r score of 0.203. The observed difference between the two groups is roughly two standard deviations from the mean, according to a Z score of 1.996. This implies that it is improbable that the difference happened by accident. A p-value of 0.04 means that, in the absence of a difference, there would be a 4.6% chance of seeing such a difference between the groups. The null hypothesis is rejected since the p-value is below the generally accepted significance level of 0.05, indicating that the two groups' TCK levels differ statistically significantly.

In reference to TK, the observed difference between the two groups is roughly one standard deviation from the mean, according to a Z score of 1.17. This implies that it is unlikely that the difference happened by accident. A little effect size is suggested by the r score of 0.120. If there were really no difference between the groups, there would be a 23.9% likelihood of seeing such a difference, according to a p-value of 0.239. It is unable to reject the null hypothesis since the p-value is higher than the generally accepted significance level of 0.05, indicating that there is no statistically significant difference between the two groups' TK levels.

As to TPCK, moderate effect size is suggested by the r score of 0.27. The observed difference between the two groups is roughly 2.76 standard deviations from the mean, according to a Z score of 2.75. This implies that it is highly improbable that the disparity happened accidentally. 739.000 is the U value. If there were indeed no difference between the groups, there would be a 0.6% probability of detecting such a difference, according to a p-value of 0.006. The null hypothesis is rejected since the p-value is below the generally accepted significance level of 0.05, indicating that there is a statistically significant difference between the two groups' TPCK levels.

As the last part of TPACK components, TPK statistics are as follows: p-value: 0.002, U: 751.000, Z: 3.03, r: 0.301. If there were indeed no difference between the groups, there would be a 0.2% chance of detecting such a difference, according to a p-value of 0.002. The null hypothesis is rejected since the p-value is below the generally accepted significance level of 0.05, indicating that the two groups' TPK levels differ statistically significantly. There appears to be a significant difference between the groups, as indicated by the moderate to large effect size (r). The observed difference between the two groups is roughly three standard

deviations from the mean, according to a Z score of 3.030. This implies that it is highly improbable that the disparity happened accidentally.

No substantial variance was observed between the two groups concerning their perceived levels of technological knowledge (TK, p=.239). This suggests that technological knowledge, while crucial, may not be as markedly influenced by language proficiency as the other TPACK components.

4.5. RQ5. Does Turkish EFL prep school teachers' self-efficacy differ significantly according to gender and perceived language proficiency??

In order to answer this question, the researcher ran SPSS IBM 22 to describe the descriptive statistics for gender and EFL prep school instructors who perceive their language proficiency at the C1 and C2 levels. The first part of the question is the distribution of means of self-efficacy levels of EFL instructors on gender. There were 20 male and 62 female participants in calculating the means scores of them.

Table 15 Comparing Means of Self-efficacy Components on Gender

Comparing Means of Self-efficacy Components on Gender

Self-efficacy	N	U	Z	p	r	SE
ECMRA	82	750.50	1.41	.15	0.16	92.27
ECAM	82	697.00	0.83	.40	0.09	91.88
ESPA	82	697.00	0.83	.40	0.09	91.88
ETCLC	82	497.50	-1.33	.18	0.15	91.78
EAA	82	760.00	1.52	.12	0.17	91.78
ESA	82	508.50	-1.22	.22	-0.13	91.01
Core Efficacy	82	,541.50	-0.86	.38	.10	90.83

Notes: The significance level is ,05. ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA means Efficacy in Skill and Proficiency Adjustment; ETCLC means Efficacy in Teaching and Correcting Language Concepts; EAA means Efficacy in Age Adjustment; ESA means Efficacy in Social Adaptation; and CE means Core Efficacy.

As seen in table 15, there is no difference across gender regarding the components of self-efficacy of EFL prep school instructors as the p values of Efficacy in Classroom

Management and Remedial Action (0.15), Efficacy in Classroom Assessment and Materials (0.402), Efficacy in Skill and proficiency Adjustment (0.40), Efficacy in Teaching and Correcting Language Components (0.18), Efficacy in Age Adjustment (0.12), Efficacy in Social Adaptation (0.22) and Core Efficacy (0.38) are more than 0.05 level.

As for the mean scores of female and male participants in each component of self-efficacy, the inferential calculations showed that the mean of male participants in CE was 3.95 while the one of female participants was 3.75. Regarding EAA, male's mean score was 2.3 whereas female's mean 2.61. In addition, in ECMRA, the mean score of males was 2.08, while the female's mean was 2.29. In ECAMS, males' mean showed 2.3; however, mean of female equaled to 2.39. Male participants' mean was 2.3, 3.92 and 3.69 for ESPA, ESA and ETCLC, respectively. Female participants' mean was 2.39, 3.71 and 3.46, respectively.

Regarding the efficacy in Classroom Management and Remedial Action, if there were really no difference between the groups, there would be a 15.7% chance of seeing such a difference, according to a p-value of 0.15. The null hypothesis cannot be rejected since the p-value is higher than the generally accepted significance level of 0.05. The efficacy in Classroom Management and Remedial Action of male and female participants does not differ statistically significantly. A minor effect size is suggested by the r score of 0.16. The observed difference between the two groups is almost 1.41 standard deviations from the mean, according to a Z score of 1.41. This implies that it is improbable that the difference happened by accident. The self-efficacy scores of male and female students did not differ statistically significantly, according to the Mann-Whitney U test. The effect size (r) is small, further suggesting a minimal difference between the groups. The Z score of 1.41 provides additional evidence of the non-significance of the difference.

When looked at the Classroom Assessment and Materials, a negligible effect size is apparent by the r score of 0.09. The difference that is seen between the two groups is almost 0.84 standard deviations from the mean, according to a Z score of 0.838. This implies that it is not probable that the difference happened by accident. The results demonstrated that the two groups do not differ statistically significantly ($p = 0.402$). The conclusion that the observed difference is not practically important is further supported by the effect size ($r = 0.097$), which indicates a small difference. It was discovered that the U statistics, which quantify the difference between the groups, was 697.000. The conclusion that there is no significant difference between the two groups is further supported by this result and the Z score of 0.83.

The p-value for the efficacy of Skill and Proficiency Adjustment is 0.402, and the U value is 697.000. Z is equivalent to 0.838. The value of r is 0.097. The efficacy of male and

female students in Skills and Proficiency adjustment was compared using the Mann-Whitney U test. The results suggested that the two groups do not differ significantly (p = 0.402). The idea that the observed difference is not practically important is further supported by the effect size (r = 0.097), which indicates a small difference. On the other hand, it was discovered that the U statistics, which quantifies the difference between the groups, was 697.000. The result that there is no significant difference between the two groups is further supported by this result and the Z score of 0.838.

As to Efficacy in Teaching and Correcting Language, the r score of 0.154 suggested a small effect size. Then, a Z score of -1.33 indicated that the difference is likely to have occurred by chance. In addition, the Mann-Whitney U test revealed no statistically significant difference between Efficacy of Teaching and Correcting Language of female and male students. As well as Z's providing additional evidence of the non-significance of the difference, the results also indicated that there is no statistically significant difference between the two groups (p = 0.18). The effect size (r = 0.15) suggests a small difference, further supporting the conclusion that the observed difference is not practically meaningful. The U statistics, which is a measure of the difference between the groups, was found to be 497.500. This value, along with the Z score of -1.33, further supports the conclusion that there is no significant difference between the two groups.

For the Efficacy in Age Adjustment, a p-value of 0.12 indicated that there is a 12.7% chance of observing such a difference between the groups if there is actually no difference. Since this p-value is greater than the commonly used significance level of 0.05, we fail to reject the null hypothesis. Therefore, it was concluded that there is not a statistically significant difference between the perceived general English levels of the two groups. Given that the p-value is above the widely accepted significance level of 0.05, we are unable to rule out the null hypothesis and conclude that there is no statistically significant difference between the two groups' levels of Efficacy in Age Adjustment. There may not be much of a difference between the groups, as indicated by the tiny effect size (r). The difference's non-significance is further supported by the Z score of 1.52. The effectiveness of Social Adaption levels in male and female students was compared using the Mann-Whitney U test. The results showed that the two groups did not differ statistically significantly (p = 0.22). The view that the observed variation is not practically meaningful is further supported by the effect size (r = -0.13), which indicates a modest difference. Core Efficacy of male and female students was compared utilizing the Mann-Whitney U test. The results revealed that there is no statistically significant difference between the two groups (p = 0.38). A minuscule effect size was indicated by the r

score of 0.100. The observed disparity between the two groups is approximately 0.864 standard deviations below the mean, as per a Z score of -0.86. This suggests that the likelihood of this difference occurring by chance is highly improbable. In the scenario where there truly was no distinction between the groups, there would be a 38.7% probability of observing such a distinction, based on a p-value of 0.38. The null hypothesis is refuted as this p-value surpasses the generally accepted significance level of 0.05.

In order to answer the last part of RQ5, the researcher examined the means of EFL prep school instructors' self-efficacy across perceived language proficiency. In this study, there were 63 participants who perceived themselves as C2 and 16 participants who perceived themselves as C1 level. One participant perceived themselves as B2 level. According to the calculations, C1 level participants' mean scores were 2.55 (ECMRA), 2.50 (ECAMS), 2.50 (ESPA), 3.50 (ETCLC), 2.64 (EAA), 3.78 (ESA) and 3.68 (CE). Mean scores of participants at C2 level 2.18 (ECMRA), 2.34 (ECAMS), 2.34 (ESPA), 3.53 (ETCLC) 2.47 (EAA), 3.77 (ESA) and 3.82 for CE.

Table 16 Comparing Means of Self-efficacy Components on Perceived Language Proficiency

Comparing Means of Self-efficacy Components on Perceived Language Proficiency

Self-efficacy	N	U	Z	p	r	SE
ECMRA	79	317.50	-2.28	.02	.26	81.66
ECAM	79	466.50	-.46	.45	.05	81.34
ESPA	79	466.50	-.46	.45	.05	81.34
ETCLC	79	553.00	.60	.54	.06	81.27
EAA	79	435.00	-.84	.39	.09	81.25
ESA	79	536.50	.40	.68	.04	80.52
Core Efficacy	79	545.00	.51	.61	.05	80.40

Notes: The significance level is ,05. ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA means Efficacy in Skill and Proficiency Adjustment; ETCLC means Efficacy in Teaching and Correcting Language Concepts; EAA means Efficacy in Age Adjustment; ESA means Efficacy in Social Adaptation; and CE means Core Efficacy

Table 16 presented the results of Mann-Whitney U tests comparing the means of various self-efficacy components between EFL prep school instructors who perceive their

language proficiency to be at the C1 level and those who perceive their language proficiency to be at the C2 level. The results revealed a significant difference between the two groups in terms of their perceived self-efficacy in classroom management and remedial action. EFL prep school instructors who perceive their language proficiency to be at the C1 level have significantly higher mean scores in this dimension compared to those who perceive their language proficiency to be at the C2 level. A moderate effect size is calculated by the r score of 0.26. This signifies there is a statistically significant difference between the groups and that the difference's practical significance or impact is probably significant. The observed difference between the two groups is roughly 2.28 standard deviations below the mean, according to a Z score of -2.28, which showed that it is highly unlikely that the disparity happened accidentally. The null hypothesis is rejected since the p-value of .022 is below the generally accepted significance level of 0.05, indicating that the two groups' Classroom Management and Remedial Action Efficacy levels differ statistically significantly.

However, no significant differences were found between the two groups in terms of their perceived self-efficacy in classroom assessment and materials, skill and proficiency adjustment, teaching and correcting language components, age adjustment, social adaptation, and core self-efficacy. When scrutinized in depth, it is as follows.

For Efficacy in Classroom Assessment and Materials Selection and Skills and Proficiency Adjustment, a comparison was made between the ones with the perceived general English proficiency of CEFR C1 and those with C2 using the Mann-Whitney U test. According to the statistics, the two groups at both factors did not differ statistically significantly ($p = 0.45$). In addition to confirming the conclusion that the observed difference is not practically significant, the effect size ($r = 0.052$) indicates a minimal difference. U statistics of 466.500, in conjunction with the Z score of -0.46, provided more evidence in favor of the conclusion that the two groups do not differ significantly. Thus, there is not a significant difference between CEFR the ones with C1 and C2, for both Efficacy in Classroom Assessment and Materials Selection and Skills and Proficiency Adjustment.

As to Age Adjustment factor, to compare efficacy scores on Age Adjustment of CEFR C1 and C2, the Mann-Whitney U test was used. It was seen that the two groups do not differ statistically significantly ($p = 0.39$). An insignificant difference is suggested by the size effect ($r = 0.09$). It was discovered that the U statistics, which quantify the difference between the groups, was 435.000. The conclusion that there is no significant difference between the two groups is further supported by this value and the Z score of -0.84.

As for the Core Efficacy, given that the p-value above the widely accepted significance level of 0.05, it is not possible to able to rule out the null hypothesis and come to the conclusion that there is no statistically significant difference between the two groups' Core Efficacy levels. There is no statistically significant difference between the two groups, according to the Social Adaption data (p = 0.687). The conclusion that the observed difference is not practically important was further supported by the effect size (r = 0.04), which indicated a minimal difference. Moreover, the U statistic was found to be 536.500, leading to the conclusion that there is no significant difference between the two groups is further supported by this value and the Z score of -0.40. Regarding the Efficacy of Teaching and Correcting Language, the frequently accepted significance level of 0.05 is less than the p-value of 0.54. This suggested that the null hypothesis cannot be ruled out. In other words, the effectiveness of teachers with CEFR C1 and C2 in teaching and correcting language does not differ statistically significantly.

4.6. RQ6. What are Turkish EFL prep school teachers' experiences while applying TPACK in state universities?

For the sixth research question, a thematic analysis (Braun & Clarke, 2006) was done to elucidate the quantitative findings with in-depth qualitative data. The following themes emerged: experiences of applying TPACK, barriers to applying TPACK, and facilitators of high TPACK proficiency.

4.6.1. Experiences of Applying TPACK

The data gathered through research questions in the interview showed that the codes extracted clustered around their experiences while applying TPACK skills in class. The first subtheme was determined by consensus as *Positive Experiences.* The second was decided as *Negative Experiences*; the third subtheme was *Pedagogical Practices in Technology Integration*. The fourth subtheme was Continuing Education.

Subtheme 1:

Positive Experiences

Subtheme specifies the participants' inspiration and enjoyment caused by the students when teachers employ TPACK skills in class.

Table 17. Experiences of Applying TPACK: Subtheme 1

Experiences of Applying TPACK: Subtheme 1

Subtheme 1	Codes	f

Positive Experiences	Inspiration from Student Joy of Learning	9
	Positive Feelings	6

Table 17 showed the codes emerging from the dataset under subtheme of positive experiences. The first code of Inspiration from Student Joy of Learning was expressed in participants' words nine times. As can be seen in table 17, being affected by the excitement of the students and other positive emotions are among the most common codes. When the teacher uses educational technology in their classroom, the excitement and happiness they see on the student's face makes them use TPACK skills more. This shows that student involvement and enjoyment are important for improving the teacher's ability to use technology well in their teaching. By leveraging these positive emotions, educators can further improve their TPACK proficiency and create a more dynamic and interactive learning environment for their students. For example, Participant 4 expressed that: "I have a lot of resources from there. There were computer labs. In the laboratories, more available students were coming, and that is, motivation was coming. It was very enjoyable; it was very new to them." The same participant echoed again that "You perceive that you are shaping something through your actions and existence. Their enjoyment is evident in the expressions of the children as they acquire knowledge." Inspired by students' joy of learning, Participant 62 stated that:

> I saw that this enhances the children's motivation. I manipulated the situation to my advantage in this manner. By presenting myself as somewhat uninformed and placing them in the role of educators, I aim to enhance motivation; however, there are excessively many of them.

Additionally, the same code was uttered in the words of Participant 66 like:

> My primary motivation is likely to prevent the lecture from becoming tedious. The student must provide a complete response to the subject, ensuring that the text read is not left unresolved. I do not recall that it elicits something within me. I was unaware of this song in this class. We had an instructor who informed us about this dialogue. I wish for the students to remember me by the film I presented to them.

Incorporating technology in the classroom is essential for maintaining student interest and participation. This sentiment was shared by many participants, who emphasized the importance of utilizing technological tools to enhance engagement and learning outcomes. By using technological tools, Participant 74 stressed the matter of engagement: “In fact, if you want to catch up with students, I think we need to use such tools if you want to keep them "engaged" in class.". In English lessons, it was apparent that teachers frequently use technology in order to keep the student active in the classroom. On the other hand, Participant 77 echoed the same code. Incorporating technology in the classroom has greatly contributed to student motivation and participation. The easy access to information, learning materials, and tools to work together made the learning experience more interesting and relevant for students:

> Now, of course, we can do brainstorming without this technological tool, but brainstorming is much more by using ChatGPT or another tool. What can I say, we can do brainstorming in a shorter time in a more fun way. For example, we work on it. I can do it not to depend entirely on him, but to motivate him a little more.

Table 17 demonstrated participants’ positive emotions when they applied the relevant educational material into their instructions. For instance, Participant 4 said that “It's one of the times I enjoyed using technology. In the name of teaching, right? I understand correctly. Yes, I mean, there are applications like the Kahoot application, but when motivation drops, they support them.” The participant was able to keep the students active in the lesson by using the application below. And he was able to perceive this activity with the happiness he saw on the faces of the students. Likewise, Participant 5 echoed:

> By reflecting on the board, the children also participate in the lesson and by processing them in the form of mutual questions and answers about what the children should or should not have an answer to the question on the board. I think it makes for more enjoyable lessons.

Participant 28 expressed positive feelings: “I mean, that's how I enjoy it” when technological tools were instructed into instruction. These were particularly quotes of positive feelings when participants applied TPACK. However, the adverse subtheme emerged as well, which is Negative Experiences.

Subtheme 2

Negative Experiences

This subtheme encompasses the problematic situations expressed by the participant while applying TPACK skills in class. Especially, negative feelings, adaptation challenges, economical burdens and challenges emerged as codes under this subtheme.

Table 18. Experiences of Applying TPACK: Subtheme 2

Experiences of Applying TPACK: Subtheme 2

Subtheme 2	**Codes**	**f**
Negative Experiences	Negative Feelings	5
	Adaptation Problem	4
	Challenges	2

While there are positive emotions, negative situations can also be experienced in English classes. These behaviors can be negative emotions you feel when the English teacher cannot show the required level of knowledge in front of the students, or they can turn into a technology problematic spiral due to some events such as adaptation problems despite the materials he transfers to the classroom with his high level of technological knowledge. In this regard, the first code emerging under negative experiences is named as negative feelings, which occurred when participants applied to TPACK skills. For example, Participant 4 expressed his disappointment when he left behind students' technological knowledge, stating that:

> Since the students are ahead of us and have much more time and knowledge, I could not spare as much time as them because of our work, children, marriage and many other things. So, there were times when I felt like I was left behind.

As can be seen in the quote above, Participant 4 expressed his disappointment when he did not demonstrate sufficient technological knowledge in front of the students. In a similar vein, the

same situation was seen in the words of Participant 5, like: “So it turns out that the teacher is lacking there in this area. Since a motivation has regressed a little, I start with a low motivation, if I can recover later, what a deal.”, which showed how participants felt negative feelings in front of their students when they could not handle the problematic situation related with the technology. In similar vein, the same participant elaborated that “if technology goes beyond me, that is, if it is something that I can't do, I think that if I am lagging behind, I get demoralized and my influence on the lesson decreases.” As the participant stated, when technology takes precedence over the English teacher's knowledge in a negative way, the English teacher was disappointed here, one of the main reasons for this is that the English teacher has insufficient TPACK skills.

Regarding the second code of negative experiences, participants uttered those moments that usually happened when they had difficulty in adaptation. Adaptation problems may mostly arise from the generation gap between the English teacher and the student, for example, the participant below prefers to use a dictionary as a printed publication but refrains from using a digital dictionary or states that he is not used to it and cannot get used to it. Adaptation Problem was expressed by Participant 10, stating that “I still like to use dictionaries. Can you imagine? So, I can't tell my students to use dictionaries anymore. Because they don't even know what it is. I'm just getting used to the digital dictionary”. To put it another way, it is useful to look at the following example given by the participant 54 from his own life: It was expressed to simplify the process in order to eliminate adaptation problems. It is effective in terms of solving adaptation and adaptation problems by not acting as if everyone knows the problem and transferring it to English teachers, who are the stakeholders of the event, in a simple process when a new technology is integrated. adaptation problem was clarified with an example given by Participant 54 that:

> What can be done here? What can be done here is to simplify the application or application that uses the user. For example, my mother said this; let me give you an example. My son said to me, "Can you get a phone?" In other words, of course, there are a lot of applications in this from the current phones that move with the touch pad, but what did I do? For example, people like my mother can use messages, WhatsApp, and the 4 main applications on the home screen. I left all the rest of the applications in a big way; she does not need

> them. To the extent that she can use it, my mother, who is now a primary school graduate, can call me on WhatsApp and send me voice messages.

A teacher may unknowingly offend or alienate their students by using inappropriate language or examples, leading to a breakdown in communication and trust. It is important for educators to be mindful of these factors in order to create a positive and inclusive learning environment. Not considering the level differences, not examining the material beforehand, and not checking whether the cultural elements are suitable for the students' situation can create negativity, as in the example below. For instance, Participant 66 felt a negativity while applying TPACK skills in class and uttered that:

> That moment of the speech, I mean, it's a long speech, but I found that basic "I have a dream" part. The 45-minute speech was not written at a level that children could understand without subtitles. It was A2 level. The students could have advanced to a maximum of B1. They followed. Of course, they didn't understand every nuance, but it was commendable that they followed the subtitles, and at least they understood the meaning of the speech. There was a huge text of lectures about him. He is not mentioned in the conversation. What specific motivation drove its writing, and what transpired during the senior year? But the speech does not have its own text.

A historical character that was thought to be loved by the students was intended to increase the excitement of the lesson, but it did not have the desired effect on the students, and we see in the example above that TPACK abilities, which means technological pedagogical field knowledge, can be an obstacle to the teacher when they are not used together. In addition, Participant 10 said that:

> For example, we experienced this a lot during the pandemic period. We entered such a digital environment that we were not prepared for it; we did not know it at all. We had already entered a period of unfamiliarity. Therefore, it was a period unknown globally. Furthermore, from a professional standpoint, we have no knowledge or understanding of this period. We were left alone with the programs. I felt it there, so I wish we could have known more.

As can be seen, the Covid-19 days caught English teachers unprepared, teachers who did not improve themselves much in the field of educational technology were suddenly left alone with their technological devices and lamented being prepared before. Likewise, Participant 66 shared a similar challenge she experienced:

> Of course, if you are constantly encountering obstacles. The last time I had a problem was in the last 3 weeks. I'm noticing that I can't enter my last 2 weeks of school in my book password. I type it correctly; I check the password keyboard; it comes out cappy or something; it's not that; I type the password; it doesn't accept it; I write it; it doesn't accept it.

As can be seen in the quote above, Participant 66 constantly encountered problems at different times. This example has emerged to us as one of the different difficult situations faced by English teachers, as code of Challenges.

Subtheme 3

Pedagogical Practices in Technology Integration

The third subtheme was related to the pedagogical practices that participants applied in and out of class via TPACK skills. This subtheme showed what types of in-class activities they practiced and how they managed to do out of class. It can be seen in the table above that Participants said that they did activities on grammar-based activities, speech-based activities and vocabulary teaching while using their TPACK skills. At the same time, English teachers used technological pedagogical domain knowledge, such as using some tools for classroom management and measuring the knowledge taught.

Table 19

Experiences of Applying TPACK: Subtheme 3

Subtheme 3	**Codes**	**f**
Pedagogical Practices in Technology Integration	Grammar-oriented Activities	7
	Speaking-oriented Activities	5
	Vocabulary-oriented Activities	4
	Listening-oriented Activities	4
	The Use of Technology	3

Classroom Activities	Management	2
Assessment Tools		2

Table 19 suggested that participants used their TPACK skills in and out of class to teach specific skills. For example, Participant 4 narrated how they incorporate online and technological tools in and out class to instruct grammar drills:

> In the Main Course, there is a revise and check section, preferably in two units. They exist again. We also give homework outside of class. There are also places to do in grammar books in parallel with the unit we share with students in the Pacing Schedule. We shared them online with the book.

Here the quote showed how participants processed lectures. The pacing schedule referred to the schedule that instructors are supposed to follow. Likewise, Participant 10 expressed his motivation to use technology in grammatical points of instruction: "For example, while doing the grammar study, I want to immediately reflect some practical studies on that grammar topic from google like this. I want to create resources and show them to my students from there." In similar vein, Participant 66 pointed out that:

> Students ask a lot of questions, "Teacher, I'm confusing this topic with the if clause topic, where can I study". I go into Google; I say if clause type 2. I write down the age and level of the students. A2, B1 site, B1 according to him, if I come across it, I review it back. I convey to the students what I like, the question styles, the way I like the expression style, or I send a link.

The point of Participant 66 was a kind of out-class activity. Here, it was apparent how the English teacher acts as a guide to his students. The teacher, who determines the criteria according to the needs and level of the English learner, can then make suggestions on the internet by using his technological pedagogical content knowledge. In contrast, classroom activities may encompass grammar exercises to consolidate the subject matter. This kind of activity was expressed in the words of Participant 76: "We use all of these to make a grammatical reinforcement needed for topic repetition". Another code emerging in the

participants' words was Vocabulary-oriented Activities. Participant 66 declared this practice, stating that "I say, look, there is such a site. It's nice that they create lists for you to develop vocabulary". Their competence in vocabulary was reinforced by some online sources out of class. The same participant stated that "And they have a tough time with vocabulary. There are Vocabulary gaming sites. According to your place, you choose a card at work. According to that card, you come across words and create your own word groups." On the other hand, listening-oriented activities were delivered by research participants, as seen in Table 19. For instance, Participant 10 used TPACK skills to deliver listening oriented activities, stating that "They have their books open in front of them and watch the online book online from the smart board. They do the activities what we call listening by listening there." In similar vein, Participant 37 responded that "….so that the listening tracks can reach the student instantly with a click. Apart from the listening track, there is a lot of video material. He can watch them comfortably." He then continued that:

> After all, I love teaching listening. To teach listening, for example, it is not easy to learn listening, but students at a poor level feel especially bad about themselves... Now, since teaching listening naturally requires a lot of multimedia and audio visuals, yes, it was definitely an important resource for me in terms of integrating new technology into my class.

Participant 54 also echoed this code of listening oriented activities, stating that "Of course, we use it. We project the digital version of book through projection. We do all the activities of listening and reading from there through the digital book." In addition, the code of the use of technology was uttered by participants pointing out that they used technology in their instruction. Participant 4 stated that "I was the head of e-learning at the school. Before Covid-19, I prepared lessons using their studios by working in partnership with the distance education center of university". Another code emerged regarding speaking oriented activities. Participant 4 elaborated on their schedule stating that "In particular, we have worksheets prepared by our material office every week. We give them on a unit basis. There is speaking material. We use it both for the lesson and give homework for the presentation or in case the matter has not been finished." Likewise, Participant 72 stressed that they used TPACK skills mostly in delivering speaking oriented activities: "In other words, at the beginning of the lesson, mostly with speaking activities… For example, a format for students with a short video. Immediately followed by a conversation, to learn what they know about it." As can be seen until here, participants used their TPACK skills in or out classroom in order to enhance students' such

skills as grammar, vocabulary, listening and speaking. In addition, they applied TPACK in order to manage the classroom environment effectively and assess students' levels on some aspects. To illustrate the code of classroom management, Participant 74 showed how a specific online platform could be used to manage the classroom effectively:

> I upload all the materials I make in class there. More precisely, I was creating a classroom for all my classes there. I was throwing some activities at them; I was doing their checks through it (Edmodo). It was a platform that worked very well, but as you know, they shut it down, but I am now carrying out the same work on teams. As I get the class list, I immediately create a classroom for that class.

Another point uttered by the same participant is Assessment. Participant 74 continued to state that assessment can be done effectively thanks to TPACK skills: "I upload my materials there. Sometimes I upload quizzes at work. Students can contact me from there. I think this is very useful in terms of interaction and student-teacher interaction". To sum up, the subtheme of Pedagogical Practices in Technology Integration entails Grammar-oriented Activities, Speaking-oriented Activities, Vocabulary-oriented Activities, Listening-oriented Activities, The Use of Technology, Classroom Management Activities and Assessment Tools.

Subtheme 4

Continuing Education

Table 20

Experiences of Applying TPACK: Subtheme 4

Subtheme 4	**Codes**	**f**
Continuing Education	Attending Workshops, Seminars and Conferences	18
	Professional Development	10
	Feedback through Experience Sharing with Colleagues	11

The fourth subtheme pertains to Continuing Education in applying TPACK in class. Codes emerged from participants' experiences while applying TPACK skills. The codes clustered around the Subtheme of Continuing Education, which seemed to be determinants in fostering participants' TPACK skills. As seen in Table 20, the first code of Attending Workshops, Seminars and Conferences appeared in participants' words. For instance, Participant 78 expressed that:

> However, for example, I received training on digital media literacy in May. And that's a very interesting way, you know, that I was doing a discourse analysis. When your students read something, you know, by whom it was said, in what context? Digitally, how can images be changed with artificial intelligence in this business?

Similarly, Participant 74 shared how she managed to acquire her TPACK skills, stating that "There are seminars given by the Professional Development Unit in our school and we hold meetings. That's where I get it, so that's where it comes from". That is, attending conferences had a key role in shaping their TPACK skills. A similar opinion was shared by Participant 72, too, stating that:

> During that period (Covid-19), I attended both online training and conferences. I did some reading, and I think I have a long way to go, because something changes every day, and you know it. New technologies appear every day. New apps come out every day. I think maybe that's why.

Another code emerging under this subtheme was Professional Development which seemed to be effective in the fact that participants developed their TPACK skills in their instruction. Participant 72's professional development, as stated that "In my doctoral study, I also researched a thesis topic on integrating technology with English teaching", appeared to be effective in shaping participants' TPACK skills as well as the professional development of Participant 74's who stated that "I am currently working on my PhD. I think he has an impact as well. Maybe it had an impact on me in terms of awareness, it had a positive effect." In similar vein, Participant 77 claimed that attempts for professional development may have role

in shaping TPACK skills of teachers, saying that “The courses I took in my master's and doctorate as well. Frankly, it encouraged me to use it, so I can say that both my classroom teaching experience and the courses I took during my higher education pushed me to use technology more.”

Table 20 showed that Feedback through Experience Sharing with Colleagues emerged as a code to back up the subtheme. In the example below, it was seen that English teachers develop their knowledge of the technological pedagogical content knowledge by exchanging information with other English teachers and diversify their teaching methods in terms of the use of different technological tools. In this regard, Participant 62 uttered that:

> Sometimes we compare lessons or something. We're hearing it from someone else. I immediately looked at it and examined it. Oh, yes, let me say that this can be useful for me and invite him to take a written note and use it later, in an environment that I think I can use.

As seen, peer learning was a determinant factor in using and learning TPACK skills. Peer learning appeared to be a likely factor in learning not only among English learners but also among English teachers. The same participant added more that:

> Our teachers, who are more experienced in technology, can also help young people with classroom management, language teaching, more effective use of traditional methods and language teaching methods, and a better understanding of their children's psychological structures.

It is apparent that teachers are more inclined to learn from each other. Bandura’s vicarious experiences come forward here. They were defined that by analyzing the triumphs and mistakes of other individuals can get useful insights on task execution and enhance their own performance. This can be achieved through different strategies, like pursuing mentorship or examining the techniques of specialists in a specific domain. As seen in Participant 62’s comments, feedback from colleagues was influential in fostering TPACK skills in class. Similarly, Participant 66 agreed upon this sentiment that “If I hear something from my colleagues, I sometimes learn something. I learn from my environment; I learn from technical services. I'm probably trying to learn something more about sharing or from people”.

Technological Tools and Resources

Subtheme 5

Table 21

Experiences of Applying TPACK Subtheme 5

Subtheme 5	**Codes**	**f**
Technological Tools and Resources	Online, Multimedia and Interactive Sources	17
	(Overhead) Projectors	7
	Mobile Systems	6
	Interactive White and Smart Boards	5
	Internet	5
	AI	4
	Educational Technology and Digital Software	4
	Sound Systems	3

Table 21 presented the codes emerging from data under the subtheme of Technological Tools and Resources. English teachers benefit from the internet and artificial intelligence as much as they use smart boards. At the same time, they use the sound systems of the classrooms for education. Although a wide range of tools can be used in the educational field, these codes uncovered what type of tools are more inclined to use in and out of classroom. Online, Multimedia and Interactive Sources was the most frequently used code participants expressed. Sharing on a certain online tool was one of the applied ways of applying TPACK skills, as seen in the words of Participant 5 that "Technology is to be able to reflect on the things I find on the internet, for example, on WhatsApp, and I give homework on WhatsApp". In addition, though they had problems frequently on internet cutoffs, processing lectures on online version of course book was again frequently declared by participants. For example, Participant 28 stated that "Our books are online. I follow it on the online platform. For us to do the lessons efficiently, we need to master that system." When they wanted to go beyond schedule, movies

and series on online websites were integrated into instruction, like Participant 28 stating that "I am constantly trying to include technology in lessons from TV series, books, online platforms. If there is any kind of technology or new software and application used in language teaching, I adopt it". In similar vein, Participant 37 used online tools for more skill-based teaching, saying that:

> For example, one of them is dailyenglish.com. After that, dictation.com is not used in the classroom and is given as obligator by the school. I said, "Go home today and make 200 of these." It's very simple, "write from dictation", someone reads it, you write it, it's a simple exercise, but it's a very important exercise. I'm not just saying this based on my personal experience, for example, in the PT (Pearson) exam, "Write from dictation" is a question type, one of the 20 question types, and the scores obtained in it affect both the listening score and the writing score.

(Overhead) Projector was one of the frequently used codes by participants. They are mostly used to project the course material. The quotes of Participant 28 that "Of course, computers are already available. We project them on the board with the projector", the one of Participant 54 that "Technological devices, of course, are available in every classroom with a computer available and a projector", and the one of Participant 62 that "Now, if you ask about our own classrooms, our immediate thing is computers and over-head projectors" suggested that EFL instructors in research frequently made use of projectors with computer in their classrooms. Projectors are a kind of non-portable item. However, Mobile Systems like laptops are portable came after as a code and were preferred by participants. Mobile phones and tablets, especially those of students, appeared to be used by EFL instructors for several purposes. Participant 62 gave an example of this:

> Cell phone. We also use it, that is, when it is necessary in the lesson. As you know, students at the university do not have a problem with the use of mobile phones. They can easily keep it with them. Therefore, this allows us to play

> together in common groups, and learn in the form of games, or use applications in the form of trivia quizzes.

As can be seen in the quote, participants mostly used students' mobile phones in English lessons to play games together or to increase cooperation. On the other hand, one of the codes that emerged in the verbal interviews with the participants is the Interactive White and Smart Board. Participants answered the question of what kind of technological devices they use in the classroom by saying smart boards. For example, Participant 72 answered that "I use my smart board computer and my laptop". Again, Participant 77 responded that "I use smart board". Another code that is frequently mentioned by the participants is AI. Other frequently used tools were Sound systems, Educational Technology and Digital Software. Participant 37 made the following comments about Digital Software:

> Yes. For example, I currently have my own account on Oxford Learners Bookself. The name of the account that is readily available in the classrooms belongs to the university. Yes, it's good, it's good to have it there, but when I wanted to do that lesson somewhere else, for example, there was an interruption above. There was no lesson in the Russian classroom below, when I want to use it, we don't have an English account there, but when I can do this using my own account, I still need a projection and sound system. So, something that is needed here is not that the teachers necessarily use the one there, but look, this is the version of it installed as software on the downloaded computer. But the fact of this is that you are informed from the account you opened with your own name.

The participant stated that it is not enough to integrate technology into the classroom, but also that the department should inform the English teachers about the internet, or the software integrated. Participants hoped that the teacher would also benefit from knowledge about how to solve such situations if there was no internet or application used in the classroom. Regarding the Interactive Software, Participant 54 stated that: "There is online platform of the publishing house where we used the exercises and examples and then we uploaded them to the Sakai platform. We can also use the presentations made by the students by reflecting them in this way."

4.6.2. Barriers to Applying TPACK

The data gathered from the interview showed that the codes extracted clustered around the second subtheme of Barriers to Apply to TPACK skills in class. The subthemes under this

theme are Institutional and Departmental Context, Knowledge and Skill Deficiencies, Teacher-based Concerns, Student-based Concerns, Lack of Knowledge and Skills, Individual and Contextual problems. Those subthemes refer to the types of problematic situations or experiences participants encounter while trying to apply TPACK.

Subtheme 6

Institutional and Departmental Context

The sixth subtheme is related to the impediments which directly concern institutional or departmental situations. Infrastructure and planning of schedule were considered as matters of this subtheme.

Table 22

Experiences of Applying TPACK Subtheme 6

Subtheme 6	**Codes**	**f**
Institutional and Departmental Context	Lack of Infrastructural Concerns	15
	Concerns on Departmental Context	13
	Pre-need Analysis in training	10
	Time Constraints Stemmed from Curriculum Pressure	7

Table 22 showed the barriers participants encountered while applying TPACK skills in terms of institution and department. The first code was decided to be Lack of Infrastructural Concerns. When participants tried to apply their TPACK skills in or out class, they stated such barriers as lack of internet or hardware. For example, Participant 4 expressed that "As an institution, I don't see a time right now that will support teachers to develop more technologically or in classroom environments". On the other hand, Participant 62 stressed this matter, stating that "if I give an example in terms of our own university and our own high school, it takes a very long time to renew our hardware devices, for example, our PCs and

projectors". Similarly, Participant 66 claimed that some teachers changed their habit of use due to the aged technological material in institution, stating that:

> Computers are also a bit slow no longer than their old performance. These are at least 15 to 20 years, computers sometimes do not turn on, sometimes you forget their connection, doing every job repeatedly will waste at least 15 minutes. That's why everyone prefers to open and leave, that is, in tennis.

The cutoff of electricity seemed to be problematic in the words of Participant 79 that "It may be that the Internet is off. You know, I think the biggest obstacle is the technical use of the internet. I would like to think that yes, technical glitches."

Table 22 demonstrated Concerns on Departmental Context as second code of this subtheme. Participant 5 expressed the deficiency of the department that:

> Now, first, the school needs to introduce the method that it deems necessary or appropriate to use in English management, to inform the teachers about how to use it in the classroom, and to make the teacher feel "okay, I can do this".

From the quote, it is apparent that the Department has some responsibilities towards its teaching personnel in applying TPACK skills. This could be better understood from the utterances of Participant 62: "What about the book that is taught there? I wasn't familiar with the online app because it didn't have anything. It arrived too late. We even did the first week of classes without anything without books." Participant added on this matter, stating that "In other words, course material is not enough in some subjects." In addition, instructors seemed to feel difficulty in the first weeks of the semester looking at the quote of Participant 76:

> Of course, buying a book is obligatory in general terms because you are progressing that resource book, but sometimes it happens, especially in the first weeks of school, that is, the first weeks and when the book is changed. Because some students don't buy their books as a set. Some of them take it when the time comes, or especially in the first weeks, there are a lot of times when students come without resources, but there is a flow of programs. It

> needs to be followed and yours now. You need to start the lesson from the source.

Another code emerging in the dataset pertains to Pre-need Analysis in Training, which was supposed to be pre-programmed according to the needs of the faculty in the department rather than the dictated. This showed that however beneficial it seems to be, a training session needs to be planned on the needs of that department, participants thought. For example, Participant 54 thought that "They can make the necessary learning outcomes in line with the needs of the institutions and train their teachers in this sense in their own institutions". Participant 72 agreed upon that, stating that "In-service trainings on this subject should be increased and while increasing them, lecturers should be consulted about their needs and in-service programs should be prepared accordingly". Participant 77 uttered this code, too:

> I believe that, whether it's about technology, whether it's about technology skills, whether it's methodological, whether it's about other areas. Training should be given to the needs of teachers. So, we all know that here there are ready-made one-day or multi-hour training courses from the publishing house. There is no continuity of these. Unfortunately, we don't know if it was implemented in the classroom. Therefore, I think that there should be personalized, individualized training that spread over time depending on the needs of the teacher and the institution and address the teacher's additional in-class needs.

The other code emerging was Time Constraints Stemmed from Heavy Schedule. Applying TPACK skills may require sparing time in instruction time, however this, according to participants, is not applicable due to heavy and tight schedule. Participant 10 shared this that "In other words, our curriculum is so intense that we can only train our digital problem book". In similar vein, Participant 66 expressed the same feelings, stating that:

> In other words, we are a school that depends on many books. There are features that need to catch up. We have a lot of books and materials to catch up with, and going out of the program is a serious luxury, or bringing extra costs is a serious waste of time and luxury.

Subtheme 7

Knowledge and Skill Deficiencies

Table 23

Barriers to Applying TPACK: Subtheme 7

Subtheme 7	**Codes**	**f**
Knowledge and Skill Deficiencies	Technological Gap from Generational Differences	19
	Lack of Knowledge	8

Knowledge and Skill Deficiencies emerged as subthemes, and Technological Gap from Generational Differences and Lack of Knowledge clustered around this subtheme. While applying TPACK skills, participants stated that they mostly suffered from those barriers which had an adverse impact on their TPACK skills.

Table 23 showed that the code of Technological Gap from Generational Differences is the most frequent one among others. It includes the moments when participants felt difficulty in applying TPACK due to the reasons caused from generational gaps. The mentioned gaps were related sometimes to the choice of materials in class or the relationship between student and teacher. Participant 4 provided an explanation between them and their students, like: "The new generation is already doing most of the learning through technology. It's not like we used to be it was hard to get information in the past. So that's how we grew up." Participant here pointed out that the type of growing up is different, continuing that "We had Meydan Larousse (encyclopedia), and we had discs that we could access so much. There was no other". Stunned with why students cannot write letters, Participant 76 uttered that "I mean, why don't students write letters right now, don't want to write, and don't normally write them anyway? None of these children are a very interesting example. They didn't write any letters". Additionally, participants tried to apply TPACK skills to elaborate on a specific topic in the instruction however generational gap encountered them again. Participant 66 said that:

> There is already a generation gap. A person who is not already alive (Martin Luther King). I had the piece read and we solved the exercises, but the student was very bored. Most of them didn't even want to read it. Because it doesn't

> mean anything to them. So, it's a story that stays very much in the 1960s. I said, "Do you know this person?" "Sir, we don't know much". First, I had a piece of reading and then I gave information about it and about general culture. Have you heard this conversation anywhere? Somewhere in a movie? Have you ever come across it? They said that teacher, it didn't come out.

Table 23 showed that Lack of Knowledge emerged eight times.

The second code is related to the deficiency of knowledge in applying TPACK skills into instruction. For instance, Participant 79 explained why some teachers avoid using TPACK skills in class, stating “Yes, a little bit of technology. I think it's because they're afraid of the use of technology, or because they know little. I think that's the way it is”. And Participant 62 acknowledged the lack of knowledge, saying that “On return from the pandemic, I did not work in national education for the first time. Of course, we don't use a smart board either. When I first saw the smart board there, of course, I faltered a little.” Likewise, Participant 5 expressed in different way that:

> In other words, no matter what the management needs, if it needs it, it is technological development, but we will apply it in the classroom. Okay, do I know about this? Let me know first. I think he should first empower me on how to implement this and then say let's implement it.

Subtheme 8

Teacher-based Concerns

Table 24.

Barriers to Applying TPACK: Subtheme 8

Subtheme 8	**Codes**	**f**
Teacher-based Concerns	Age-Related Resistances	14
	Sense of Failure	8
	Lack of Time for TPACK	2

The eighth theme was about the concerns based on teacher-related causes in applying TPACK skills. Table 24 presented Sense of Failure, Age-Related Resistance and Lack of Time for TPACK are the codes emerging in the dataset.

Sense of Failure emerged as another code under this subtheme. Participants' lack of knowledge on TPACK skills occasionally hindered their skills in class since sometimes, as they claimed, did not want to be embarrassed in front of students as a teacher. Thus, it's a little bit because they're afraid of technology. This could be due to their fear of using technology or their lack of knowledge. Participant 79 shared ideas in the interview that "I think it's a little bit because they're afraid of technology. because they are afraid of the use of technology or because they have little knowledge. I think that's the way it is.". In similar vein, Participant 77 expressed ideas about the experiences teachers felt on Covid-19 days:

> And our teachers were very nervous at first. So, those are the questions "how do I turn on the camera? Will the student hear me? How can I use the system here as I use the blackboard in the classroom? Now the student does not open the camera, but how can I still reach him?" And they had a lot of tensions because they didn't know how to use both technology and the pedagogy of technology. They were upset.

Participant 76 supported this sentiment, stating that ""Can I do it? " The question arises. These are all my observations. Recently, when an innovation comes, the teachers have "oh how do we do it". Additionally, Participant 66 stated that "So sometimes it happens in this belief: "I'm not very good at technology, do I know if I'll do something wrong? " That fear also occurs." As can be seen in the quotes, Sense of Failure in teachers caused stress on them and hindered them to apply TPACK skills in language instruction. On the other hand, Age-Related resistance stood out as a code according to participants' comments. Their fear of failure and resistance to applying TPACK skills due to their older age emerged as codes. For example, Participant 5 admitted this barrier was due to older ages of participant, stating that "I think it's about age. I know that teachers who are over a certain number of years have more problems in keeping up with technology, and I know that my friends around me have similar problems" and adding that "As a teacher who was older and had become acquainted with technology later. I think that there is a need for education and information to use this technology behind the classroom". Participant 10 agreed with the previous colleagues, supporting that "as for

colleagues who have 25 years or more of working experience, we have not been able to integrate technology into our classrooms because we are trained with more traditional methods because we do not come from online". In similar vein, participant 54 shared an opinion on their colleagues' resistance to TPACK skills because of older age:

> But here the population is very... When the population is an elderly population. In other words, when we look at the principle that the tree cannot be bended when it is old, or the principle of "you can't teach any trick to old dog" as in English, it is difficult to provide this integration to teachers above a certain service.

In addition to that, Participant 5 stated that "The Turkish education system requires older teachers to be trained in technology on these issues, to inform them beforehand, and then to apply it in the classroom". In similar vein, Participant 66, relatively older than the other colleagues, accepted that "It is not easy for our generation to catch up with the computer, to catch up with the internet environment, to catch up with innovations". The same sentiment was shared with Participant 76 who considered that "There is a population that is getting older and approaching retirement. Of course, not everyone is like that, so as people get older, people move away from technology, but there is a little more hesitation." On the other hand, Lack of Time for TPACK emerged in the participants' interview twice, emphasizing that they could not find time in their daily life to sharpen their TPACK skills. For example, Participant 4 declared that:

> Since the students are ahead of us and have much more time and knowledge, I could not spare as much time as them because of our work, children, marriage, and many other things. So, there were times when I felt like I was left behind.

Subtheme 9

Student-based Concerns

Table 25

Barriers to Applying TPACK: Subtheme 9

Subtheme 9	**Codes**	**f**
Student-based Concerns	Learner Differences	10

Learner Differences, which can be identified as the problematic situation caused from the different learner profiles hindered or slowed the flow of applying TPACK according to participants' quotes. For example, Participant 28 explained a kind of difference in learner profile:

> I always see phones in their hands, which is what we've become. We used to watch the movie for 2 hours, but now for some reason we feel the need to check the phone every 15 minutes and half an hour. Even we are in a situation where this generation has grown up with this, always expecting something to be interesting, enjoyable, and so on.

The security of the smart boards in class emerged as another aspect of the issue. Participant 66 considered the responsibility of securing the technological material as a barrier to them, stating that:

> The internet is a vast thing, if you want to use it well, it is a good thing if you use it responsibly, but how much responsibility do 18 or 19-year-old students carry? I don't know if s/he'll carry it at 18 or 19 years old or not. In other words, the English material should remain open during the English lesson and breaks, but when you enter the classroom, you see them open a song and find them listening. It is not possible to turn it on and off every time. You know, the computers are turned off every time I get out of class. I'll turn it back on when it comes. It's a waste of time.

Subtheme 10

Lack of Knowledge and Skills

Table 26

Barriers to Applying TPACK: Subtheme 10

Subtheme 10	**Codes**	**f**
Lack of Knowledge and Skills	Lack of Motivation and Reluctance to Explore	8
	Lack of Professional Training on TPACK	8
	Seeking Assistance on Technology Integration	4

Table 26 presented the codes around the subtheme of Lack of Knowledge and Skills: Lack of Motivation and Reluctance to Explore, Lack of Professional Training on TPACK, and Seeking Assistance on Technology Integration. The first code, occurring eight times in the interviews, was Lack of Motivation and Reluctance to explore. Participant 66 highlighted this code referring to the Covid-19 days when most teachers with low TPACK levels were unprepared, stating that:

> The fact that education was online had to nudge us or the teachers a lot. We are used to the comfort of the classroom environment, but we had a hard time. At that time, it was necessary not to break away from technology. Once we are disconnected, I think it will be difficult to fill that gap.

This lack of motivation, as Participant 66 observed, hindered the colleagues there from seeing some problems in the work, stating that:

> I said, you had such a problem, and I did. Another teacher had lived the day before, but like no one else, he did not tell when. No one reported this to the

> administration, or no one informed the technical service. Everyone has either passed it over or waited for it to be resolved on their own.

As seen in the quote above, the lower the motivation was, the lower the TPACK skills. Similarly, Participant 76 said that “These (low TPACK) are generally related to, based on my observations, "Now I'm in retirement. I do not need to learn". I feel that it is connected to what you need”, which was supported by Participant 79 saying that “If there are those who do not use such digital platforms, I can say that they are teachers who do not like to go out of their comfort zone. Or it could be because they don't think they're good with technology”. In addition to this code, Lack of Professional Training on TPACK was regarded as code. Participant 5 shared this deficiency during the instruction, stating that “If there is a situation such as you do everything yourself, edit it yourself and bring it to the classroom, this creates problems here. Then we need a know-how or technical support because we can't do it right away”. Since the participant had a lack of training on TPACK, this contributed to low TPACK skills. Then Participant 5 continued to express this sentiment that:

> I think that it is necessary for the teacher to receive such training for a certain period to get prepared. In other words, no matter what the management needs, if it needs it, let it be a technological development, but we will apply it in the classroom. Okay, do I know about this? Let me know first. I think they (management) should first empower me on how to implement this and then say let's implement it.

Another code occurring in this subtheme was Seeking Assistance on Technology Integration. According to the quotes of Participant 51, teachers with low TPACK frequently sought assistance from their peers or technical department, stating that:

> Since all this is happening, I don't know what more they may need, what they want from whom, but something like this happens. Some people's friends may have trouble using these opportunities. Then they want technical support, and they want technical support. Because we are so crowded, very few people get support. Among colleagues, one knower helps the other.

From another quote from Participant 62, it was understood that low TPACK teachers sought Assistance on Technology Integration. For instance, Participant 62 told that “Even now, many

of our teachers come to us and ask for help with some programs and even applications in our classroom."

Subtheme 11

Technological and Resource Constraints

Table 27

Barriers to Applying TPACK: Subtheme 11

Subtheme 11	**Codes**	**f**
Technological and Resource Constraints	Limited Technical Support and Infrastructure	5
	Budget and Economic Constraints	2

Limited Technical Support and Infrastructure, as seen in Table 27, emerged as code under Technological and Resource Constraints. Participant 54 acknowledged that the motivation of teachers to apply TPACK skills in classroom decreased when they encountered problematic situations related to infrastructural reasons, saying that "You are individually demotivated. Your motivation is lowered due to problems arising from the applications and the system." Furthermore, Budget and Economic Constraints emerged as code in data. The permanent lack of technological material due to economic reasons somehow led teachers in the field to develop low TPACK skills. Participant 62 expressed that "For example, projectors are very old, they heat up quickly, and the thing is that they have come to the end of their economic future. Therefore, first, budget support is very important here", stressing that the budget support helps them to build high TPACK skills, or they, as seen in quote, had low TPACK skills due to Budget and Economic Constraints.

5.6.3. Facilitators of High TPACK Proficiency

The third subtheme the codes clustered around is Facilitators of High TPACK Proficiency. Subthemes of Professional Development and Learning, Personal Attributes, Pedagogical and Instructional Factors, Support, Collaborative Platforms and Networks, and Pedagogical Approaches emerged.

Subtheme 12

Personal Attributes

Table 28

Facilitators of High TPACK Proficiency: Subtheme 12

Subtheme 12	**Codes**	**f**
Personal Attributes	Curiosity	12
	Motivation	7
	Exploration	3
	Proactive Approach	2

Among the other codes clustered around subtheme of Personal Attributes, Curiosity was the most frequently used one in dataset according to Table 28. According to Participant 37, curiosity led him to approach to technological devices in childhood, facilitating him to enhance TPACK skills, stating that "Technology is my area of interest, as I wanted to own a computer and then had my family buy that computer, and then I broke it up a lot times and fix it myself". And Participant 28 supported this, saying that "I have been interested in technology since my childhood. I have been using the internet since it first came out." In similar vein, Participant 62 said that "Let me put it this way, I've never lost my curiosity toward integrating technology". Again, Participant exposed curiosity, stating that "Apart from that, after I became aware of the existence of something, I was interested in it because of my own curiosity to try it." Furthermore, Motivation was another code emerging in dataset. In this regard, Participant 4 commented that "This (when teacher uses TPACK skills in class) motivates you. Our job is

all like a stand-up show. This is a must if you want to be an effective teacher". Similarly, Participant 51 stated that "Depending on the topic we are covering, it is good to reinforce it and to make learning beautiful and exciting. I don't know, I use songs and other listening for support, motivation". A poignant reflection on this experience was captured by Participant 54 that:

> Yes. Of course, of course, there are many. When we look at it, we have to overlap all of the applications that we need to do in line with our belief, motivation, and goals through this technology. In other words, many things, from the evaluation criteria of an online assignment to the uploading of the materials made at work to the system and delivering them to the student, have just started, especially this year. In this sense, it is more motivating for us.

Exploration was noticed as code in participants' quotes. Basically, as a teacher with high TPACK skills, a habit of exploring contemporary trends and technologies came forward in their comments. For example, Participant 62 shared experiences of times when he first encountered Windows and Microsoft, stating that:

> I improved myself by researching and learning on my own and buying books about the programs I had to use. For example, Microsoft Office had just come out. Windows. So, Windows 95, for example, I started with the first Windows 95 to use user-friendly interfaces. I don't know if it's Windows 95 or Windows 98, I don't know if it's Microsoft office programs, or even some programming languages, such as Python, by looking at them, I don't know if I have books like Photoshop in my library. In this way, I can say that I tried to adapt myself to the conditions of the day, at least in terms of technology.

One of aspects of teachers with high TPACK, which emerged in dataset as code, was to be proactive toward the unexpected and sudden circumstances while applying TPACK skills. Participant 66 pointed to look at online materials beforehand, stating that:

> It makes more sense to look at it beforehand, that is, to look at it at home and open it, but we can use it on the internet. The best example of this is on the internet, even when students need it. If they go to the computer, they open any song they want. So, when you come back, you can be in class dancing or something. So, the student also uses the computer and the internet, but this may not be very secure. This can be a bit of a problem.

Subtheme 13

Lifelong Learning

Table 29

Facilitators of High TPACK Proficiency: Subtheme 13

Subtheme 13	**Codes**	**f**
Lifelong Learning	Continuous Professional Development	10
	Training Sessions	5
	Experience Sharing	5

Table 29 presented the codes under subtheme of Lifelong Learning: Continuous Professional Development, Training Sessions, and Experience Sharing. Participant 72 highlighted the significance of lifelong learning and professional development, stating that “Thanks to my belief in lifelong learning, I understood the importance of technology more and tried to apply it, and I want to improve myself even more at this point”. In similar vein, Participant 76 pointed out that professional development can change positively the emergence of TPACK skills in teacher career: “But I did my master's degree on improving speaking skills and reducing speech anxiety…That's why I had the chance to observe this directly with my own thesis, and I did this by using and integrating technology”. Participant 77 shared the same sentiment, uttering that “The courses I took in my master's and doctorate as well. Frankly, it encouraged me to use it, so I can say that both my classroom teaching experience and the courses I took

during my higher education pushed me to use technology more." Another code emerging from the data was Training Sessions. For example, Participant 5 underlined the training sessions that focus on enhancing TPACK skills, stating that:

> Taking short-term training and informing the teachers about how it should be used and making them competent in that field. And then I think it would be right for him to want or demand that it be applied in the classroom, that is, to take training that would be nice to take a short-term course.

Participant 54 also paid attention to the effect of training sessions in enhancing teachers' TPACK skills, saying that:

> Each time, an application like this was made. We were taken to the seminar hall, and the representative of the authorized publication would come and explain to us how to use the book to the teachers in the whole hall via a computer and projection, using only himself.

The other code in this subtheme is Experience Sharing. Through peer learning, participants said that they benefited each other in terms of enhancing TPACK skills. This can be easily understood from the quote of Participant 72 that "As a change, perhaps the experience sharing of lecturers can be supported more". Likewise, Participant 79 said that:

> And in our conversations with our friends, sometimes we exchange information, and "that's what I used. It went very well in class, that's what I used. Here's how it works", you know, we benefit a lot through our own personal friendships. I think the exchange of information is very important.

Subtheme 14

Pedagogical and Instructional Factors

Table 30

Facilitators of High TPACK Proficiency: Subtheme 14

Subtheme 14	Codes	f

Pedagogical and Instructional Factors	Adaptation and Adjustment	12
	Student Motivation	5
	Active Implementation of TPACK Skills	4

As seen in Table 30, the subtheme of Pedagogical and Instructional Factors encompasses the codes of Adaptation and Adjustment, prioritizing Student Motivation and Active Implementation of TPACK Skills. First, the Adaptation and Adjustment code occurred twelve times, which was used to describe participants' skill of adjustment of material, skill of adapting to new situation. For instance, Participant 51 had a kind of adaptation, stating that "That's why I think so because I tried to adapt technology to my own learning system and transfer my own experiences to students". Similarly, Participant 62 were proud of adaptation skill and said that "Our own programs, our game programs. At school, we were able to write library programs and recording programs. Therefore, since I met them early, it was quite easy for me to adapt them to my own teaching life on the computer." On the other hand, Student Motivation is another code that participants prioritized in class. For example, Participant 37 share how important incorporating TPACK skills into teaching that "Because I see that the lessons become easier, and I get better efficiency when I see that they are followed in this way (integrating technological and online sources). I believe that this should be part of the lesson." Backing up this position, Participant 76 said that "They were born into technology. It is obvious that they use their phones like such an organ. Therefore, you will increase the student's motivation for the lesson." As seen in the quotes, participants with high TPACK skills prioritized the motivation of their students. Moreover, Participants with high TPACK skills were understood to actively implement their TPACK skills into their teaching methodology. Participant 4, having grabbed MA and PhD degrees abroad, uttered that:

> I also studied abroad in England. Abroad, my master's and doctorate were all about teaching English. That's why I had to be intertwined with technology and online resources in the subjects I worked on. I can say that is my main starting point… I actively use it in my classes.

Similarly, Participant 74 mentioned the use of TPACK skills in both daily life and work life, stating that "In other words, I probably used these tools last year when I was implementing a program that I designed myself". Those codes showed that some participants actively implemented TPACK skills from their personal life into work and tried to be proactive and prioritized student motivation while using TPACK skills. One of other important subthemes under the subtheme of Facilitator of High TPACK Proficiency is Support.

Subtheme 15

Support

Table 31

Facilitators of High TPACK Proficiency: Subtheme 15

Subtheme 15	**Codes**	**f**
Support	Technical Support	13
	Institutional Support	3

Table 31 presents the codes of Technical Support and Institutional Support. Participants with high TPACK skills were understood to seek help Technical Support from related departments in their institutions. While Participant 51 said that "Within the framework of the possibilities here, they (colleagues) mostly get help from our technical affairs unit", Participant 66 stated that "I learn from my environment, I learn from the technical service". Teachers with high TPACK skills effectively use technical service unit when a sudden situation arises, like the situation of Participant 66: "I am one of the teachers who are most involved with technical service in this school. When the technical service sees me, they say, "Sir, what is broken again?" or "What? Is the internet gone again?" or "Like the electricity is gone again?" A problem means I equals me." On the other hand, Institutional Support was expressed in a way that participant 4 knew institutional power is poignant at solving problematic situations: "In

other words, management is very important in these works, the more skillful the management is if the management can convey your messages and expectations, the better".

Subtheme 16

Collaborative Platforms and Networks

Table 32.

Facilitators of High TPACK Proficiency: Subtheme 16

Subtheme 16	**Codes**	**f**
Collaborative Platforms and Networks	Collaborative Professional Development and Experience Sharing Environment	17
	Content Sharing Grouping Environment	11
	Expert Panels, Conferences and Sessions	7

Table 32 presented codes under the subtheme of Collaborative Platforms and Networks. There are several tools that English teachers use when applying their technological pedagogical knowledge in their classrooms or using these skills in relation to their work. These are professional development and experience sharing environments that increase collaborative learning, content sharing environments, and various environments that enable more effective use of communication. Regarding the Collaborative PD and Experience Sharing Environments, Participant 54 share what they did in the research site:

> Each time, an application like this was made. We would take him to his hall and the representative of the authorized publication would come and tell us how to use the book using only himself and the whole hall through a computer and projection. When we passed this book, we made the following application: We took our professors to the laboratories in groups.

As can be seen in the quote, instead of an ordinary in-service training, a collaborative environment has been created in the form of small group work that will increase cooperation and at the same time share experience. The aim here was to touch the English teacher who wants to improve his knowledge of the technological pedagogical content as an individual. In ordinary educational environments, there may be shyness during the training in a crowded environment, whereas a group of teachers who share experiences among their friends and in a

small group are considered to benefit more from such training. Similarly, Participant 72 said that those kinds of environments should be encouraged, stating that “Learning communities can be supported among lecturers”. Again, the participant envisioned a different type of training and how this training should be done. Accordingly:

> For example, experience can be shared through online platforms. Face-to-face with teachers who want to meet at the appropriate time. Formal informal opinion is one thing, sorry, so meetings can be held, but they should be both formal and informal. It's always formal, and it can be a little boring. In other words, I think it should be designed in such a way that it should be integrated into our daily workflow. Because otherwise, when it's too didactic, it can be very boring and repulsive. Because the pace of work is already high on teaching tasks.

In addition to the quote above, the participant 77 stated that they learned to use new experiences and tools from his friends through WhatsApp groups:

> For example, I learned while chatting with my friends, and one of my friends said: "There is such a tool in the classroom to do this activity. Have you ever tried it? Do you know" that we have WhatsApp groups. In terms of professional development, we have groups where we can encourage and motivate each other in this way. We share with each other the various tools we find there as well.

On the other hand, another code emerging was Content Sharing Grouping Environment. It can be defined as the code used for the students in the classroom to share the content of the lecture or improve teachers’ knowledge of the technological pedagogical content by subscribing to several social media platforms. Accordingly, Participant 76 said that:

> That is, it can be done in class. For example, if it is a writing activity, we used to be able to do it on Twitter, but now it is something I do on WhatsApp, for example. We generally use technology in the lesson. In other words, our WhatsApp groups are usually ours. In other words, most of our teacher’s

> friends also have. For the sake of easier communication in the classroom. It doesn't matter if students have any task at work via WhatsApp. They write such tiny notes to write about it, they open polls, they play with each other, and so on. So, can you do it through another app? Whatever is most practical at that moment, I should be able to choose what best suits the flow.

Another code that has emerged is Expert Panels, Conferences, and Sessions. For example, Participant 72 said that "Through conferences by reading and following current research, I improved TPACK skills. For example, there were courses given within university. I participated in them." Similarly, Participant 79 stated that "Service trainings, such as in service trainings. Yes. Workshops. Online meetings. I improved my TPACK skills like that." In similar vein, Participant 76 expressed that:

> Yes, institutions should support teachers with in-service training, they should offer these opportunities, and when they put it into a new application, they should provide them with in-service training in the same way. It happens online, it happens face-to-face. It should support it by giving options.

Subtheme 17

Pedagogical Approaches

Table 33

Facilitators of High TPACK Proficiency: Subtheme 17

Subtheme 17	**Codes**	**f**
Pedagogical Approaches	Adapted, Personalized, Tailored Content for Specific Purposes	7
	Guidance from Students	7
	Feedback and Evaluation Oriented Online Tools	3

Table 33 presented the subtheme of Pedagogical Approaches under the subtheme Tools for Achieving High TPACK Skills. As can be seen in the table, the first code is that English

teacher tries to adapt the content specifically to own lesson by using TPACK skills. For example, Participant 62 tried to adapt materials into teaching, stating that “Previously, I was trying to prepare worksheets and make discussions and vocabulary teaching with the movie. So that's how it first started”. Similarly, Participant 66 said that “instead of using games prepared by others, I always prefer to use them as I have prepared”. Another code, Guidance from Students, emerged. This code shows that teachers with high TPACK also benefit from the knowledge of the students in their classrooms. The English teacher, who improves himself or herself with peer learning, also develops his or her own skills by making use of the technological knowledge of his students and as a return, he is useful to his or her student in a pedagogical sense. Accordingly, Participant 28 stated that:

> For example, if I can't do something, or if I don't know how to use it, I consult with my students to use that system. I was like, "Something like that, but I didn't know about it. I don't hesitate to ask my students if you are using this and that. Because in this regard, we are actually intertwined with a generation that can use it best and most efficiently.

Similarly, Participant 62 uttered that “For example, they became teachers to me. "My teacher, look, do like this, we're going to do this, we're going to do this", and so on.” And Participant 28 shared the same sentiment that “When these come to my students, I ask them and say, "Oh, is there something new like this?" and learn from them and try to share with other classes”. Finally, the final code was about the Feedback and Evaluation Oriented Online Tools. Participant 76 used TPACK skills to evaluate the taught skill at classroom level by an online tool and stated that “I may not be a Kahoot guy, but here it is. You know that you have used an application called Mentimeter. It seems more user-friendly to me.” Similarly, Participant 77 used a similar online tool and said that “I play games, such as Kahoot Quizlet, quizzes or I show the games I have created with various applications on the board, we watch videos”. And added that “So now we have fewer students using pen and paper, and I'm giving students this freedom, I say, guys, look, I've created a link for you. If you wish, make the assignment I gave you from this link or write it on paper. I say I'm ready to give any kind of feedback”.

CHAPTER V

DISCUSSION, CONCLUSION, AND IMPLICATIONS

This section is the part where the results of the study are discussed in relation to the research questions. The results are articulated to end the study, and the pedagogical implications are covered for the educators to understand how self-efficacy beliefs impact their ability to integrate technology effectively into their teaching practices. The qualitative data provided valuable insights into the challenges and successes of teachers in applying their TPACK knowledge in the EFL classroom. Overall, the study highlights the importance of ongoing professional development in enhancing teachers' self-efficacy and TPACK integration, ultimately improving student learning outcomes. A sequential explanatory mixed methods strategy was employed, which entailed collecting quantitative data and subsequently clarifying the quantitative results with comprehensive qualitative data. The study aimed to examine the relationship between teachers' self-efficacy beliefs and their TPACK domains, while the subsequent qualitative phase sought to enhance the quantitative data by exploring the experiences of Turkish EFL preparatory school teachers in utilizing their TPACK skills.

5.1. Summary and Discussion of the Results

This study investigated the relationship between the domains of Technological Pedagogical Content Knowledge and self-efficacy of 86 EFL prep school instructors in western Türkiye in 2023-24 academic year. A comprehensive explanatory sequential mixed methods design was employed to achieve this objective, combining the gathering of quantitative data succeeded by a thorough qualitative analysis to clarify the quantitative results. The EFL-TPACK questionnaire and ELTEI scale were both used in the initial quantitative phase to gather data from Turkish EFL instructors at two public institutions. The main objective of this phase was to evaluate the relationship between instructors' self-efficacy beliefs and their TPACK domains. 86 participants voluntarily participated in research. For the qualitative phase, 15 participants were interviewed.

According to the quantitative data of this study, 86 EFL prep school teachers working in the study area had high TPACK scores. The research utilized descriptive statistics for self-efficacy beliefs and TPACK knowledge areas, with Spearman correlation analysis and the Mann-Whitney U test for data evaluation. The increased average scores for each TPACK category signified the teachers' moderate to high self-efficacy. Additionally, the study revealed

a positive correlation between TPACK and self-efficacy domains. A notable gap existed between gender groups in TK and PCK, with males generally surpassing females. Concerning perceived language proficiency, significant disparities were seen between teachers at C1 and C2 levels across all TPACK dimensions, except for Technological Knowledge (TK).

The findings of the study demonstrated that EFL prep school instructors encountered barriers to apply TPACK skills in regard to context of both institution and department, deficiencies of both knowledge and skill, constraints on technology and resource and teacher and student-based concerns. Moreover, it has been uncovered that professional development learning opportunities like experience sharing and training sessions, personal attributes such as curiosity and motivation, adaptation and adjustment along with getting support from institution and technical unit were the qualities of EFL prep school teachers with high TPACK. To attain this high level, they were found to use several tools: such technological tools and resources as online, multimedia and interactive ones, mobile systems, internet, interactive white and smart boards; collaborative platforms and networks such as content sharing grouping environments and collaborative PD experience sharing environments and expert panels, conferences and sessions; pedagogical approaches such as using feedback and evaluation oriented online tools and guidance from students. A comprehensive summary of both quantitative and qualitative findings is articulated in the next section.

5.2. TPACK

In this study, the first and fourth questions gave descriptive information on the technological pedagogical content knowledge of the participants and showed how these TPACK dimensions differed according to gender and perceived language proficiency. Moreover, the qualitative findings were found to enlighten the quantitative results on the high scores of TCK, TPK, TPCK.

The mean of TPCK dimension was found to be 3.87. The dimension of TPACK with the highest mean score was Content Knowledge (4.53), whereas the dimension with the lowest mean score was Technological Pedagogical Content Knowledge (3.87). Participants demonstrated exceptional Pedagogical Content Knowledge (PCK) with a mean score of 4.36, reflecting a robust comprehension of successful content instruction. Technological Knowledge (TK) scores were marginally lower at 4.12, indicating potential for enhancement in the integration of technology within content knowledge. The average score for Technological Pedagogical Knowledge (TPK) was 3.93, signifying a necessity to improve the participants' proficiency in utilizing technology within instructional methodologies.

Within the scope of increased levels of TPACK dimensions, the current study is compatible with findings of the study of Mashadi et al. (2023) examining the influence of COVID-19 on the technological pedagogical content knowledge (TPACK) of 288 male and female English as a Foreign Language (EFL) instructors from Basrah, Iraq. Additionally, in Turkish context, the study by Atar, Aydın and Bağcı (2019) aligns precisely with our research findings since TPACK dimensions were found be high among participants as well as the significance of PK, CK and TK on integrating technological tools into classroom. Similarly, the findings of Yüksel and Yasin (2014)'s study examining the levels of TPACK of 24 EFL teachers produced relatively similar results, however EFL instructors in their study possessed a moderate degree of TPACK. Another study aligning with results of the current study belonged to the Sarıcoban, Tosuncuoğlu, and Kırmızı (2019) who found that participants perceived themselves as proficient in classroom management, modifying lesson plans to accommodate students' skills, and evaluating students' learning progress regarding PCK. Regarding technological content knowledge (TCK), participants showed remarkable skill in utilizing multimedia components (e.g., films and slideshows) to articulate ideas across various English topics. Moreover, they skillfully utilized technological instruments (e.g., online conferencing and discussion boards) to engage virtually with multilingual groups. In similar vein, Abubakir and Alshaboul (2023) discovered that all levels of TPACK were elevated in their study investigating EFL teachers' TPACK in writing sessions at English preparatory schools in Qatar. In our study, CK exhibits the highest mean score compared to other dimensions.

The fourth research question aimed to find how TPACK dimensions differ according to gender and perceived language proficiency. Despite the previous studies undertaken by Argon et al. (2015), Tuncer and Bahadır (2016), and Kazu and Erten (2014) specifically identifying variations in TPACK levels based on gender, the quantitative analysis of Mann Whitney U test in the current study suggested that a considerable variation existed across gender categories for Technological Knowledge and Pedagogical Content Knowledge; however, no substantial differences were noted in PK, CK, TCK, TPK, and TPCK between genders, with male teachers typically achieving higher scores than their female counterparts in these (TK and PCK) domains. Our study also contradicted with Kozikoğlu and Babacan's (2019) study analyzing the causal connection between technological pedagogical content knowledge competencies and attitudes towards technology among Turkish EFL educators because our study suggested that male participants had higher scores on TK and PCK while TPACK skills are more prevalent among female teachers in study of Kozikoğlu and Babacan.

Koçoğlu's (2009) study had similar finding with regard that males' technological knowledge was higher than females.

As for the perceived language proficiency, upon the outcomes of Mann-Whitney U tests comparing the means of various Technological Pedagogical Content Knowledge (TPACK) components between EFL prep school instructors who perceive their language proficiency at the C1 and C2 levels, the current study suggested that notable variations existed between the two groups concerning their perceived levels of pedagogical knowledge (0.004), content knowledge (0.008), technological content knowledge (0.046), pedagogical content knowledge (0.008), technological pedagogical knowledge (0.002), and technological pedagogical content knowledge (0.006). Individuals reporting their language skills as C2 demonstrated significantly higher mean scores than those identifying as C1 across these categories. This indicated that a higher degree of language ability is associated with a deeper understanding and integration of the various TPACK components. Although there has been a scarcity in the literature regarding English language proficiency, it was a predominant factor in shaping TPACK development of EFL instructors (Yang & Yang, 2025). Yang and Yang uncovered six significant subthemes in TPACK development in EFL instructors. One of them was language proficiency placed under the subtheme of personal literacy. Similarly, Kasim et al. found that the level of English literacy is a crucial determinant of the utilization of technology in education. Though the results did not give results at lower level in the study, which categorized self-reported proficiency in six levels from level 1 to level 6, the likelihood of advancing technology utilization from Level 3 to Level 4 is 3.06 times greater for teachers with strong English proficiency compared to those with poor fluency. That is, the higher the perceived language proficiency, the higher the likelihood of using technology utilization is. From a different viewpoint, Cambridge English Teaching Framework, published online in 2019, asserted that the higher the language ability is, the more chances of EFL Teacher on exhibiting the proficiency to proficiently and precisely employ classroom language, including topic introduction, activity instructions, classroom management, language explanation, assisting students with learning difficulties, and discussing learners' progress, which can be explained as Pedagogical Knowledge. Additionally, Cambridge English Teaching Framework also claimed that a proficient EFL teacher have more chances on exhibiting the practical capability to furnish precise instances of the linguistic concepts being instructed (such as model sentences) to emphasize the form, meaning, usage, and sound of the target language, which can be explained as content knowledge. Besides, exhibiting the capability to recognize faults committed by students in both classroom settings and external written assignments can

be explained as Content knowledge. Moreover, the ability to assess the accuracy of the learner's output regarding form, meaning, usage, and pronunciation, categorized as content knowledge, were considered to be high if the language proficiency of EFL teacher is high.

Regarding the qualitative findings, the participant responses reinforced the quantitative findings of the research. The participants' responses showed that the use of technology in instruction was considerably seen in EFL prep school instructors with the help of their technological content knowledge. Delineated by Mishra and Koehler (2006) as pertaining to the ability to choose the most appropriate technological tools for a specific discipline, participants' TCK helped them to choose the most suitable one among such Online, Multimedia, and Interactive sources as internet websites and course book's interactive. From a pedagogical lens, they utilized their Technological Pedagogical Knowledge, including the selection, application, and integration of technology inside the classroom, while adapting and tailoring specific technological material provided online as well as understanding the capabilities and limits of various technologies and their potential to improve student learning.

Regarding how participants gained TPACK skills, collaborative platforms and networks for professional development helped them to achieve via experience sharing, content sharing and guidance from students, as expected. Similarly, Nazari et al. (2019) found that novice EFL teachers competent in TK worked with PD communities, wrote reflective journals, attended workshops and seminars and watched PD videos on YouTube for enhancing TK, shared experiences for PK and attended training courses for CK, whereas experienced teachers preferred to learn from students for TK, asked feedback for PK and attended seminars and asked colleagues for CK. In similar vein, the current study found out EFL teachers attended expert panels, seminar, conferences online and face-to-face and actively engaging in learning from their peers and students. Notably, small group collaborative professional development was evident in the participants' comments.

Another finding extracted from participants' responses in the current study was the need for assistance with integrating technology into instruction and support in institutional and departmental context. Based on the subthemes in this study, participants, especially the ones with low TPACK, stated they sought assistance while applying TPACK. Besides, having support from institutions in terms of infrastructure and technological materials was identified as significant facilitators of being a high TPACK profile EFL teacher in this study. On the report of British Council and TEPAV, West et al. (2015) conducted research on EMI instruction in Turkish universities, examining five levels of contextual analysis in English: international context (globalization), national context (medium of instruction), institutional

context (language teaching), departmental context (English language teaching), and departmental context (English as medium of instruction). In the report, it was recommended that EMI academics had to receive training and assume responsibility for their students' learning by implementing various linguistic and technological tactics to enhance educational outcomes as institutional support. Moreover, all English instructors were advised to participate in a brief, intense training program, while select educators at each university needed to be provided with extended training opportunities, such as those offered remotely by some institutions. When considered with those remarks put forward in 2015, the recommendation is still valid according to such subthemes as institutional and departmental support extracted from the current study. In similar vein, the qualitative finding as a subtheme on institutional support aligned with Wang and Zhao's (2021) study revealing that university support for technology positively impacts pre-service teachers' Technological Pedagogical Content Knowledge (TPACK), enhancing their perception, proficiency, and confidence in technology use. Regarding experience sharing, participants' responses revealed that colleague support, referring to the provision of technical assistance and encouragement from fellow educators and was found to be essential for fostering a supportive and collaborative work environment, was one of the experiences of participants with high TPACK. Similarly, Dong et al. (2020) contended that both types of support are crucial for educators to deliver superior education and achieve positive student learning results. Conversely, Joo et al. (2018) discovered that institutional support can exert either a beneficial or detrimental influence on the use of ICT. The research conducted by Farjon et al. (2019) demonstrated that teacher educators who perceived greater institutional support exhibited higher levels of technological proficiency and Technological Pedagogical Content Knowledge (TPACK). Along with previous literature, the current study, as expected, found institutional support was recognized as a component that positively predicts and mediates the Technological Pedagogical Content Knowledge (TPACK) of EFL prep school instructors.

The subsequent finding on qualitative data was pre-need analysis of training. Considered with the report of TEPAV and British Council (2015) presenting that despite the presence of Continuing Professional Development (CPD) units and teacher participation, the survey highlighted that around 20% of universities lacked effective departmental CPD and "using ITC/computers in my class" and "materials development" were identified as needs by prep school teachers, the current study aligned with the study of Bektaş-Çetinkaya (2012) arguing that English language specialists in Türkiye should consider their students' demands, including the global application and purposes of English, while selecting resources and

teaching methodologies, as well as acknowledging the worldwide standing of the language. Likewise, the sharing power, as Bektaş-Çetinkaya (2012) recommended the stakeholders of inner circle, could be considered in the same way via increasing the voices of EFL prep school instructors on pre-needs analysis of training sessions. In the same TEPAV report (2015), maybe seemed to be obsolete but still firm, it was spotted that interviewed teachers expressed that they possessed minimal influence in the methodologies and practices of English instruction, and as a suggestion, reporters recommended policymakers at that time to recruit experienced educators or those acknowledged for their proficiency in English instruction. In similar vein, regarding the same issue of increasing the voice of EFL prep school teachers on pre-planning of training, the participants who participated in the current study responded that they expected their advice to be taken into consideration or their opinions to be valued as stakeholders of language teaching cycle in universities.

Regarding another qualitative finding of the current study is that Age-Related resistance stood out as a code according to participants' comments. Their fear of failure and resistance to applying TPACK skills due to their older age emerged as codes. For example, Participant 5 admitted this barrier was due to older ages of participant, stating that "I think it's about age. I know that teachers who are over a certain number of years have more problems in keeping up with technology, and I know that my friends around me have similar problems." From a quantitative perspective, the current study showed that among 86 volunteers enrolled in the study, the mean age was roughly 46.7 years, and the median age was 46.5 years. This indicates a somewhat balanced age distribution, with a minor bias towards older ages. Based on this findings, Zhang, and Wang (2015) examined the relationship between age and teachers perceived self-efficacy in Technological Pedagogical Content Knowledge (TPACK). Research indicated that older educators generally demonstrate reduced confidence in their technical knowledge (TK) and technical pedagogical content knowledge (TPACK), particularly regarding the utilization of the internet for educational purposes. The older professors' pessimism regarding technology may stem from their limited exposure to it during their formative years.

5.3. Self-efficacy

One of the aims of this study is to evaluate the self-efficacy of EFL prep school instructors. The second question of the study aimed to describe statistics of the self-efficacy of participants, and the fifth question investigates whether EFL prep school teachers' self-efficacy levels significantly differed across gender and perceived language proficiency. Upon thorough analysis, EFL prep school instructors were found to exhibit a moderate level of self-

efficacy in Classroom Management and Remedial Action, reflected by a mean score of 2.26. The moderate standard deviation indicated a level of variability in evaluated proficiency. The self-efficacy level for Classroom Assessment and Materials Selection was evaluated, yielding an average score of 2.37, indicating that instructors exhibited a moderate level of self-efficacy in this area, with a standard deviation like that of the previous dimension. Subsequently, regarding Skill and Proficiency Adjustment, EFL instructors exhibited modest self-efficacy in adapting their expertise to accommodate students' demands, with a mean of 2.37 and a similarly moderate standard deviation. In the domain of Teaching and Correcting Language Components, the self-efficacy level was markedly high, averaging 3.50, accompanied by a substantial standard deviation. Conversely, the self-efficacy in modifying instructional techniques for diverse age groups was moderate, with an average score of 2.55 and a significantly elevated standard deviation, indicating considerable variability in this aspect. Furthermore, in Social Interaction and Adaptation, they demonstrated a significant level of self-efficacy, with a mean of 3.75 and a moderate standard deviation. Ultimately, in Core Efficacy, they demonstrated the highest level of self-efficacy for their fundamental teaching competencies, achieving an average score of 3.79 and a moderate standard deviation.

The result on relatively low level of mean in Efficacy in Classroom Management and Remedial Actions in this current study pointed out that disruptive behaviors may be behind the scenes, as be seen in the studies of classroom management efficacy. Oruc (2011) reckoned the teacher's interpretation of misbehavior is significant. Disruption may be subjective to some degree. Certain instructors may exhibit greater tolerance for external noise and activity within their classrooms. In "interactive" classrooms, student involvement and conversation are promoted. What manners are called disruptive depends on the teacher. In this logic Oruc (2011) wondered what manners are disruptive in higher education context of Türkiye. Oruc (2011) also wondered whether the frequency of these disruptive behaviors changes according to years of teaching experience. In a scale consisting of 3 parts that asks the frequency of the specified activity by selecting, the frequency with which they noted actions such as sleeping, conversing with others, and posing irrelevant questions throughout their classes and other seventeen more, their responses to the disruptive behaviors included alternatives such as ignoring the behavior, expelling the student(s) from the class, or addressing the student(s) individually at a later time. Oruc (2011) found that disruptive behaviors in classrooms include insulting another student, which affects the effectiveness of teaching and learning, and talking with friends, which threatens teacher authority and motivation. Teachers preferred a silent atmosphere and considered noise a threat to their

performance. Sleeping during the lesson was one of the most ignored disruptive behaviors, suggesting teachers may not attend to it unless it affects the lesson's focus adversely.

Based on the previous findings on the self-efficacy studies in the realm of English language teaching, the current research produced corroborated findings as expected. Chacón's study (2005) on self-efficacy perceptions of 100 EFL instructors in Venezuela revealed that their self-efficacy about instructional strategies was higher than engagement and classroom management. They preferred grammar-focused strategies over communication. Advanced language competence enhances their ability to motivate students and inspire project engagement. In a similar manner, the current study found that efficacy in classroom management was outperformed by another factors (M=2.26). Chacón's (2005) research emphasized the vital importance of effective classroom management for instructors' effectiveness. It was also claimed that to ensure effective teaching, it is crucial to devise strategies that anticipate and handle classroom management challenges, as this is vital for establishing an environment that promotes learning. Accordingly, Chacon (2005) believed instructors must cultivate these strategies to guarantee the success and prosperity of their classrooms. Moreover, the instructors' self-efficacy judgments on classroom management approaches have a significant impact. Despite moderate self-efficacy levels in the current study, Alasmari and Althaqafi (2024) employed several ways to efficiently oversee their classrooms and conducted a study to discover these tactics. The research additionally investigated the barriers that impede educators from executing proactive classroom management strategies. The research also examined the relationship between teachers' confidence and their application of classroom management techniques. The study employed a combination of approaches, including a questionnaire and interviews. In total, 80 Saudi English teachers participated in the survey as foreign language instructors, while interviews were done with a cohort of eight teachers. EFL educators regard proactive classroom management strategies as superior to reactive approaches. Regarding the qualitative findings of the currents research, participants' quotes showed that being proactive emerged twice as code in *Facilitators of High TPACK Proficiency.* Despite not occurring too much, it was again meaningful to suggest that EFL Prep school teachers are aware of the situation. Additionally, Chacon's (2005) research identified four categories of obstacles that hinder proactive classroom management strategies: Obstacles to the effective use of e-learning tools can be attributed to various factors, including a curriculum centered on specific subjects, institutional regulations, educators' attitudes towards digital tools, insufficient comprehension of the course plan by teachers, and a lack of student motivation. Interestingly, the qualitative findings of the

current research shed light on the above-mentioned obstacles to the effective use of technology as emerging subtheme of *Barriers to apply TPACK* with subthemes of are Institutional and Departmental Context, Knowledge and Skill Deficiencies, Technological and Resource Constraints, Teacher, and Student-based Concerns. Learner differences, sense of failure and age-related resistances appeared as teacher and student-based concerns as a barrier, whereas lack of knowledge, lack of infrastructural concerns, concerns on departmental context, pre-need analysis in training, and time constraints stemmed from curriculum pressure emerged as barriers related to Chacon's study's impediments.

The fifth question investigates whether EFL prep school teachers' self-efficacy levels significantly differed across gender and perceived language proficiency. Based on the quantitative analysis, there was no difference across gender regarding the components of self-efficacy of EFL prep school instructors as the p values of Efficacy in Classroom Management and Remedial Action (0.15), Efficacy in Classroom Assessment and Materials (0.40), Efficacy in Skill and proficiency Adjustment (0.40), Efficacy in Teaching and Correcting Language Components (0.182), Efficacy in Age Adjustment (0.12), Efficacy in Social Adaptation (0.22) and Core Efficacy (0.38) are more than 0.05 level. The previous findings in the literature produced contradictory results. First of all, Core Efficacy was regarded as self-efficacy of EFL prep school teachers. Veisi et al. (2015) asserted that there was a significant difference between gender and self-efficacy of EFL teachers. The responses gathered by Teacher Sense of Self-efficacy Scale by (Tschannen-Moran & Woolfolk Hoy, 2001) was analyzed by independent t test, and it was found that female EFL teachers had a superior level of self-efficacy than male counterparts. Klassen and Chiu (2010) did a study with approximately 1430 participants and tried to find answers to the relationship between self-efficacy and other factors like years of experience, teaching level, and gender. They proposed that teachers' self-efficacy would rise during the early to mid-career phases but would thereafter fall in the later career stage. Their self-efficacy was categorized as classroom management self-efficacy, which is equivalent to ECMRA in the current study because both focusses on solving students' disruptive behavior, instructional strategy efficacy and lastly student management efficacy. According to the relationship between gender and classroom management self-efficacy, Klassen, and Chiu (2010) found that male instructors had an average of 5% superior self-efficacy in classroom management compared to female teachers. Conversely, EFL prep school instructors were found that despite no meaningful difference, female teachers had a bit more self-efficacy score than male counterparts in ECMRA.

Language proficiency forms the basis of the professional confidence of non-native English educators. Language proficiency has been deemed the most critical attribute of an effective educator (Lange, 1990). In the current study, the findings indicated a notable disparity between the two groups regarding their perceived self-efficacy in classroom management and remedial measures (ECMRA). Instructors at EFL preparatory schools who assessed their language proficiency as C1 exhibited considerably higher mean scores in this dimension than those who assessed their proficiency as C2. Within the scope of the language proficiency, poor proficiency in English has some drawbacks for EFL teachers. Doff (1987) asserted that a teacher's confidence in the classroom is compromised by inadequate proficiency in the English language. Inadequate language proficiency can undermine the teacher's self-esteem and professional standing, as well as disrupt basic instructional practices. Moreover, it may hinder the teacher from meeting the pedagogical demands of a more communicative approach to language instruction. Since the current study found a meaningful difference in ECMRA, the remarks on classroom efficacy could be discussed. For instance, the study by Ghasemboland and Hashim (2013) showed that instructors perceived their efficacy in classroom management to be superior to that in instructional approaches or student engagement. This signifies their robust faith in this specific element, while ECMRA had the lowest level of mean (2.26) among other components. On the other hand, Marashi and Azizi-Nassab (2018) conducted a study in Iran to investigate the relationship among English as a Foreign Language (EFL) instructors' self-efficacy, linguistic proficiency, and classroom management. The researchers utilized the Teacher Self-Efficacy Scale and TOEFL Scores to evaluate the correlation between these variables. The research demonstrated a positive relationship between instructors' self-efficacy and language proficiency. Nonetheless, the study did not identify any direct impact of language proficiency on effective classroom management. Eslami and Fatahi (2008) investigated the association between subskills of language proficiency and self-efficacy of EFL teachers. Positive associations were identified between Iranian EFL teachers perceived self-efficacy beliefs regarding students' interactive involvement, classroom management, and instructional tactics and their self-reported English competence in hearing, speaking, reading, and writing skills. The association coefficients were statistically significant for the teachers' perception of effectiveness for classroom management and speaking proficiency ($r = 0.31$) and among their self-efficacy in implementing instructional tactics and their self-assessed ability in hearing ($r = 0.30$), speaking ($r = 0.39$), and writing correlation coefficient ($r = 0.38$). These findings indicated that, firstly, the greater the proficiency of the Iranian EFL is, the more their self-perception in English speaking, the

higher their sense of effectiveness for administration. Secondly, the greater the proficiency perceived by the teachers in their listening, speaking, and writing talents; the more effective they experienced in formulating effective instructional strategies in the L2 classroom.

The qualitative findings of the current study enlightened the shadow side of the quantitative results. To note, the finding that TPCK and CE have positively correlated each other, which means that when the score of TPCK goes up, the score of CE follows. Thus, the qualitative findings on TPACK brough some noteworthy explanations thanks to quotes from the participants. Accordingly, one of the extracted subthemes was Continuing Education. Under this subtheme, professional development occurred ten times in their comments, which proved a noteworthy element in applying TPACK. Karimi (2011) demonstrated that programs targeting professional development (PD) had a beneficial influence on the confidence of English as a Foreign Language (EFL) instructors in their capacity to teach proficiently. Although the correct conduct of personal development meetings is a separate topic of discussion, Başar, Çeliktürk and Çomoğlu (2020) carried out a comprehensive study that supports the subtheme that has emerged on this subject. Exploring the insights of six English language educators employed at a secondary school and a postsecondary institution in Turkiye concerning the Continuous Professional Development (CPD) initiatives provided by their establishments, Başar et al. (2020) unveiled that the relevance of content delivered through CPD activities to teachers' needs may significantly influence their perceptions of these activities in both contexts. The participants largely concurred that they required CPD activities pertinent to their contextual practices and needs. This finding aligned with the one in the current research. According to the participants' ideas, they demanded a Pre-Needs Analysis in Training should be done during the planning process. Similarly, Oruç Ertürk et. al (2014) made a comprehensive analysis on examining English Language Teachers' perceptions of professional development; the professional development activities in which they participate, and the positive and negative aspects influencing their engagement in these activities. Oruç Ertürk et al. (2014) reckoned that English language instructors in Türkiye were offered a range of activities that they consider to be professional development activities and most of them are input type activities as well as trying out activities. Oruç Ertürk et al. (2014) claimed that EFL teachers are advised to balance between both of them. Similarly, Başar et al. (2020) found that participants anticipated receiving relevant and pragmatic activity concepts for implementation in classrooms. A similar code, Active implementation of TPACK Skills into instruction, emerged in the current study. Moreover, Başar et al. (2020) reckoned that the participants articulated their necessity for increased collaboration in professional development, which

would facilitate shared learning and support among the administration, instructors, and students, fostering collective efforts towards common objectives. Collaboration was stressed by participants in the current study, too. Collaborative Professional Development and Experience Sharing Environment emerged in the participants demanded a collaborative environment established through small group work, enhancing cooperation, and facilitating the sharing of experiences, rather than employing conventional in-service training. They wanted to engage the English instructor seeking to enhance his understanding of technological educational content on a personal level. In conventional educational settings, on the contrary, individuals may exhibit shyness in crowded venues, however a cohort of educators sharing experiences among peers in a smaller group is perceived to derive greater benefits from such training. On the other hand, barriers to applying TPACK were articulated and Time Constraints due to Heavy Workload were articulated as a code in participants' comments. In similar manner, Oruç Ertürk et al. (2014) found that the workload was the primary disruptive factor as an impediment for teacher development.

The emerging subtheme of support included codes of institutional and technical support. Besides, lack of infrastructural concerns and concerns on departmental context were other codes under barriers of applying TPACK skills. Both findings stress the importance of institutional ecology in EFL teachers. While it is important to acknowledge the barriers of applying TPACK skills, it is also crucial to recognize that these challenges can be overcome through professional development and strategic planning within educational institutions. Additionally, focusing solely on barriers may overshadow the potential benefits and opportunities that implementing TPACK skills can bring to teaching and learning. Zhang and Fang (2022) revealed a positive correlation between instructors' self-assurance in their teaching skills, their favorable perception of the school environment, their mental well-being, and their level of enjoyment in teaching. The study also revealed that mental well-being had a crucial role in elucidating the connection between teacher confidence, school atmosphere, and the experience of enjoyment. Additionally, the study further demonstrated that a conducive school atmosphere might enhance teachers' mental well-being and instill a sense of confidence. Experiencing a sense of confidence can also contribute to instructors' mental well-being. Furthermore, Oruç (2009) also stressed that when students and teachers come to a shared point in the education cycle, success is inevitable; however, that one thing deficient was often the help of institutional support. Oruç (2009) discussed the role of technology in education in four parts of the globe: Türkiye, Israel, China, and the United Arab Emirates, and found that institutions should also contemplate certain factors prior to establishing an online course. The

computer literacy levels of both pupils and teachers must be considered. An online educator must provide technical support to students who require Internet connection. Upon the institution's fulfillment of all these requirements, it becomes the responsibility of the instructors to create intuitive websites for their online courses. Upon Oruç's analysis (2009), after approximately fifteen years later, it would not be wrong to conclude that institutional support is a kind of landmark factor in EFL settings. However, what may be some features for the lack of support? The subtheme emerging under Barriers to Apply TPACK was, according to the current study's quotes, may enlighten this part with the most emerged code: Lack of Infrastructural Concerns. It is easy to accept that private schools possess superior financial resources to procure advanced technological equipment and resources through student fees, hence fostering the development and advancement of EFL instructors' technological proficiency (Mashadi et al., 2023). Moreover, private schools frequently conduct technology seminars and professional development initiatives that enhance IT literacy and skills of educators. Private schools foster a supportive environment for technology integration, with administrators and peers encouraging EFL teachers. Students from higher socioeconomic backgrounds are more motivated, promoting technology exploration. Parental demand for technology-driven teaching methods requires teachers to be knowledgeable. Based on the qualitative findings of the current study, collaborative professional development and experience sharing emerged as the most frequent code in the related subtheme, which led to reckoning over what may be done. Though private schools, as illustrated above (Mashadi et al. 2023), can provide those kinds of collaborative activities, the style and type of that specific event matter. Participant 54 underlined that the small group version could be initiated or could benefit from AI (Arefian et al., 2024). According to Arefian et al. (2024), EFL teachers can improve interactive and group methods in systematic reflections by using collaborative reflective practice (CRP) in a community of practice (CoP) with other teachers, peers, students, and other stakeholders. AI could also be a useful mentor for professional development. Arefian et al. (2024) devised a new way for language teachers to improve their skills. They called it the ChatGPT-driven collaborative reflective practice model. This model includes both one-on-one interactions and reflections with ChatGPT and group reflections with peers, with the focus being on how language teachers interact with ChatGPT and each other during their reflection processes. Teachers engaged in individual collaboration with ChatGPT, reflecting on their methods, difficulties, and development. The current study is totally on the same track with Arefian et al. (2024) on creating a reflective atmosphere. The participants noted that one of their features highlighting high TPACK in EFL teachers was to discuss and share their

experiences with colleagues. In the study of Arefian et al. (2024), a type of individualized AI-driven reflective collaboration was enabled, which could be very helpful and supportive for the shy EFL teachers. In a situation where *technological and resource constraints* were evidently shown to be a constraint on the shoulders of institutions and shy and older elderly EFL teachers are evident, it could be an idea to hire or adopt an artificial "intelligence agent" that is especially trained for individualized collaborative practice. Maybe those artificial intelligence agents may be in the form of avatars or characters that the target EFL teacher may fancy according to their hobbies or mood. Or if the situation can be taken one step further, it could be considered to use wearable devices that assess all humanized functions in the body and send those reports to that artificial intelligence agent preparing a special kind of CoP. This personalized approach could help bridge the gap between traditional teaching methods and the needs of shy or older EFL teachers. By having an artificial intelligence agent tailored to their preferences and needs, these teachers may feel more comfortable and supported in their professional development. Additionally, the use of wearable devices to monitor their physical well-being could ensure that they are in optimal condition to engage in collaborative practice, ultimately enhancing their overall teaching experience. The data collected from these wearable devices could also be used to provide personalized feedback and suggestions for improvement, further enhancing the effectiveness of the CoP. Furthermore, the artificial intelligence agent could facilitate communication and collaboration among the EFL teachers, creating a supportive community where they can share ideas, resources, and best practices. This collaborative approach could help to foster a sense of camaraderie and mutual support among the teachers, ultimately leading to improved teaching outcomes for their students. In this way, the integration of artificial intelligence and wearable technology could revolutionize professional development in the field of EFL teaching, creating a more dynamic and effective learning environment for both teachers and students alike. Another contribution concerning the school atmosphere comes from Zhang and colleagues (2023). Zhang and colleagues conducted a study in 2023 on the factors influencing the enjoyment of teaching English as a Foreign Language (EFL) instructors. The study involved 355 instructors who completed online questions. The results showed a positive correlation between instructors' self-assurance, school environment, mental well-being, and teaching enjoyment. The study also found that a conducive school atmosphere enhances teachers' mental well-being. Overall, the findings of Zhang and colleagues' study (2023) suggest that creating a supportive and positive school environment is crucial for enhancing the enjoyment of teaching EFL. By fostering teachers' self-assurance and mental well-being, schools can ultimately improve the quality of education

provided to students. Moving forward, it is essential for schools to prioritize the well-being of EFL instructors to create a more dynamic and effective learning environment for all involved.

5.4. The relationship between Self-efficacy and TPACK

The third question of this study investigates the correlation between the self-efficacy components of EFL prep school teachers and the dimensions of technological pedagogical content knowledge. Positive correlations were observed between Core Efficacy and specific TPACK components, notably PCK (0.53), indicating that more pedagogical content knowledge is associated with enhanced core self-efficacy. Moreover, Efficacy in Social Adaptation exhibits a positive but moderate connection with TPACK dimensions (0.24 for TCK), suggesting that improved TPACK may assist teachers in navigating the social complexities of the classroom. Conversely, Technological Content Knowledge (TCK) and Efficacy in Teaching and Correcting Language Concepts exhibited a moderate connection of 0.27. This positive moderate connection revealed that as instructors' technology content expertise increases, so does their confidence in teaching and correcting linguistic concepts. A moderate connection of 0.28 was observed between Technological Pedagogical Knowledge (TPK) and efficacy in teaching and correcting language concepts. This link, though technically moderate, is quite modest, indicating that TPK knowledge may provide some support in language training but is a limited factor in enhancing self-efficacy in this domain. Nonetheless, the identical aspect of self-efficacy exhibited a comparatively moderate link (.33) with TPCK (Technological Pedagogical Content Knowledge). Conversely, Technological Pedagogical Knowledge exhibited a positive correlation with Efficacy in Social Adaptation (.25) and Core Efficacy (.49). Furthermore, the data revealed considerable correlations between Content Knowledge (CK) and various dimensions of teacher self-efficacy, providing the researcher with significant insights into the relationship between subject matter expertise and a teacher's confidence in specific domains. CK exhibits a moderate positive connection of 0.31 with the efficacy of teaching and correcting language concepts. This allowed researchers to emphasize that EFL instructors with a profound understanding of content view themselves as more proficient in teaching and correcting language concepts, likely due to their enhanced ability to address content-related inquiries and offer clear explanations. Additionally, a modest positive correlation of 0.13 between CK and social adaptation efficacy indicates potential relationships that will be addressed in the discussion section. Teachers possessing a strong understanding of content knowledge may feel more capable of adapting their teaching methods to meet various social and cultural needs in the classroom. The association between content knowledge (CK) and core self-efficacy is notably strong at 0.46, suggesting that a robust foundation in

content knowledge substantially enhances teachers' total self-efficacy in their professional capacities. This likely indicates a core conviction in their ability to teach, supported by their subject matter competence. The correlation between Pedagogical Knowledge and Core Efficacy is crucial in determining the effectiveness of EFL instructors in the classroom, evidenced by a moderate positive correlation of 0.40. This underscores the importance of not only having content knowledge but also comprehending how to effectively convey that knowledge to students. Educators demonstrating robust pedagogical abilities alongside a profound sense of effectiveness are more inclined to engage students, cultivate significant learning experiences, and promote a constructive classroom atmosphere.

The previous findings in the literature backed the finding in the current study regarding the positive association between Core Efficacy and TPACK. Zeng, Wang, and Li (2022) reviewed twenty-eight studies and identified a substantial correlation ($r = 0.607$, $p < 0.001$) between TISE and TPACK. This indicates that professionals with greater confidence in their technological capabilities are more inclined to attain a deeper understanding of the relationships between technology, pedagogy, and content. This discovery highlights the importance of current research. Moreover, it was discovered that educators' technology utilization patterns are linked to their self-efficacy in incorporating information technology. Moreover, the study demonstrated a substantial correlation between instructors' technical habits and their confidence in effectively integrating information technology. The confidence of educators in their capacity to employ technology in the classroom significantly influences the degree to which they act on that belief. The meta-analysis included a limited number of studies: two on university teaching and two on preschool, with teaching subjects being rather varied. The analysis indicated that career stages influenced the relationship between teachers' self-efficacy in technology integration and TPACK, demonstrating a substantial effect. Despite Fenn's (2019) finding of no correlation between TISE and TPACK; aligning with the current study, Bakar, Maat, and Rosli (2020) found positive correlation between TISE and components of TPACK. Bakar, Maat, and Rosli (2020) developed a study examining the interplay between technology self-efficacy and Technological Pedagogical Content Knowledge (TPACK) within mathematics instruction. The researchers sought to assess the level of TPACK knowledge and self-efficacy in technology integration among mathematics instructors, considering their gender and prior teaching experience. The results indicated no statistically significant differences in, respectively, self-efficacy and Technology-Positive Knowledge (TPACK) levels between male and female mathematics teachers, nor among teachers with differing levels of teaching experience. Furthermore, Nathan (2009) identified a

modest correlation between technology integration self-efficacy beliefs (TISE) and technology integration competency levels (TPACK) in his research involving 197 prospective educators. This finding indicates that although a relationship existed between the two characteristics, it was not as significant as the association analyzed by Zeng, Wang, and Li. Birisci and Kul (2019) identified a strong positive correlation between TPCK skill levels and pre-service teachers' self-efficacy attitudes on technology integration. This indicated that novice educators have the capability to incorporate technology into their instruction. Sharmain Brown's 2022 research on rural English foreign language instructors used the TPACK model and Bandura's self-efficacy theory to examine their perceptions of technology integration in teaching. The study found that technology coaches significantly boost confidence, while thorough lesson preparation enhances self-efficacy. The research highlights the usefulness of TPACK in managing pandemic-related educational transitions. Bakar, Maat, and Rosli conducted a study on the integration of technology self-efficacy and Technological Pedagogical Content Knowledge (TPACK) in mathematics education. They found no significant differences in self-efficacy or TPACK levels among teachers, but a strong correlation was found between TPACK and self-efficacy in technology integration, with pre-service teachers showing greater self-efficacy. Likewise, Keser, Yılmaz, and Yılmaz (2015) postulated a correlation between the levels of TPACK competency and the pre-service teachers' self-efficacy perceptions concerning technology insertion. Dikmen and Demirer (2022) contributed to the matter of correlation between self-efficacy and TPACK. The study demonstrated favorable correlations between educators' components of Technology-Practiced Classroom Knowledge (TPACK) and their self-efficacy in technology integration, expectations regarding instructional technology outcomes, interest in educational technologies, and intentions to employ such technologies. It was concluded that certain aspects of pedagogical knowledge, content knowledge, and pedagogical content knowledge did not significantly influence teachers' technology integration self-efficacy, instructional technology outcome expectations, interest in educational technologies, or intentions to employ educational technologies. The research findings indicated a distinct correlation among Technological Knowledge (TK), Interest in Educational Technologies (IET), and Technology Integration Self-Efficacy (TISE). TK exerted the most substantial immediate influence on TISE, which in turn impacted IET. This indicates that instructors' technological ability influences their propensity to employ instructional technology through self-efficacy, interest, and expected results. Dikmen and Demirer (2022) assert that educators with extensive technological skills generally hold a more

favorable view of their ability to utilize technology, fostering a positive attitude towards its incorporation.

Regarding the specific components of TPACK and self-efficacy (core), Martin (2018) concurs with the findings of the current study on the association between CE and components of TPACK. Martin's study (2018) results revealed no statistically significant correlation between technological knowledge and self-efficacy (rt = 0.136, rs = 0.197, and r = 0.106) while the one in the current study was analyzed to be 0.17. The correlation in Martin's study coefficients show a weak link, whereas the p-value ($p > 0.05$) signifies that this association lacks statistical significance. The second finding of Martin (2018) indicated a modest, albeit statistically significant, positive connection between self-efficacy and technical pedagogical skill (rt = 0.212, rs = 0.301, and r = 0.242, $p < 0.05$) whereas the correlation in the current study was 0.49. The third revealed a statistically significant positive link between self-efficacy and technological content-area knowledge, varying from negligible to considerable. The correlation coefficients for rt, rs, and r were 0.251, 0.332, and 0.268, respectively. The correlation between TCK and CE was 0.53. The fourth finding demonstrated a statistically significant positive link between self-efficacy and technical, pedagogical, and topic expertise. The correlation coefficients were rt = 0.247, rs = 0.356, and r = 0.265, respectively. In the current study, the correlation between TPCK and CE was 0.51. As can be seen, Martin (2018) aligned with the findings of positive correlation between self- efficacy and components of TPACK. Likewise, Tunçer (2014) examined the relationship between EFL instructors' self-efficacy and TPACK. The researcher assessed the perspectives of Turkish EFL pre-service teachers about their overall teaching efficacy and its three specific elements: learner engagement, classroom management, and pedagogical strategies. The correlation study demonstrated a significant relationship between instructors' overall performance and their proficiency in Technological Pedagogical Content Knowledge (TPACK). The regression analysis indicated that TPACK influences all three sub-scales of teacher effectiveness. The results from the open-ended questions further confirmed the relationship between Technological Pedagogical Content Knowledge (TPACK) and teacher effectiveness. Tunçer (2014) identified a direct correlation between teacher effectiveness and TPACK, demonstrating a positive association. Thus, educators with a deep understanding of Technological Pedagogical Content Knowledge (TPACK) are more likely to demonstrate higher levels of teaching effectiveness. Another study that supports positive correlation results here is the study conducted by Lopez-Vargas, Duerte-Suarez, and Ibatez Ibañez (2017). The researchers investigated the relationship between personal efficacy and Technological

Pedagogical Content Knowledge (TPACK) among 208 educators from a public educational institution in Valle de Tenza, Colombia. The ANOVA analysis demonstrates a significant relationship between cognitive style and self-efficacy. Computer self-efficacy exhibits a positive correlation with every element of Technological Pedagogical Content Knowledge (TPACK). In contrast, a negative link exists between self-efficacy and age, as well as between TPACK and age.

As for the negative associations between efficacy in ECMRA and components of TPACK, some possible explanations can be put forward in the light of qualitative findings of the current study. Although robust material knowledge, pedagogical proficiency, and technical acumen are vital, good classroom management is equally important for fostering a conducive learning environment. Teachers with low ECMRA and high TPACK components may benefit from professional development and support to enhance their classroom management abilities and successfully incorporate their knowledge and skills into their instructional practices. In the current study with a situation in which a cohort of EFL prep school teachers has diminished efficacy in classroom management (ECMRA) despite exhibiting elevated proficiency in the components of Technological Pedagogical Content Knowledge (TPACK), namely technological knowledge (TK), technological pedagogical knowledge (TPK), content knowledge (CK), and pedagogical knowledge (PK), distractions and disruptions, implementation of innovative strategies, teacher stress and burnout and student engagement could be phenomena. First, although advantageous, technology integration may also present diversions. If participants are unable to proficiently regulate student conduct during technology-driven activities, it may impede learning and result in frustration for both educators and students. Second, implementing creative pedagogical practices that utilize technology necessitates meticulous planning and organization. If participants are perpetually confronted with classroom management challenges, they may lack the time or energy to proficiently devise and execute these solutions. Third, the continual effort to uphold order and discipline may result in heightened stress and fatigue among the members. This may adversely affect their overall well-being and their capacity to be educated successfully. Fourth, ensuring student involvement is essential for successful learning. Persistent misbehavior or distraction among students hinders the establishment of a suitable learning environment and impedes engagement in meaningful tasks. Regarding the distractions and disruptions, Adaptation Problem may explain one of those distractions as mentioned in the quotes of participant. Adaptation problems were found to mostly arise from the generation gap between the English teacher and the student, for example, the participant preferred to use a dictionary as a printed

publication but refrains from using a digital dictionary or states that he is not used to it and cannot get used to it. In addition, teachers occasionally encountered challenges in aligning the curriculum with the appropriate grade and instructional level, despite utilizing internet resources. Utilizing technology media in the classroom without adequate preparation might lead to adverse consequences. Regarding the second matter, the qualitative analysis suggested that Lack of Motivation and Reluctance along with Time Constraints Stemmed from Heavy Schedule could have had a relation because participant stated that nobody notified the problem even though they know there is technological problem in classroom material, which showed the reluctance of EFL teachers in research site. Likewise, stress and burnout may have a relation to this situation. According to Mede (2009), burnout among Turkish EFL instructors is a significant issue, with self-efficacy within social groups predicting burnout. Insufficient support from colleagues can lead to emotional exhaustion and detachment, while additional assistance from administrators can improve connection with pupils and professional achievement. Vesely et al. (2013) emphasized that the numerous demands on teachers, coupled with the relationship between occupational stress, burnout, and diminished job satisfaction, suggest that emotional intelligence (EI) is an essential competency for enhancing psychological well-being, effective pedagogy, and favorable student outcomes. On the contrary, in 2022, Xu and Jia performed a study investigating the correlation between stress and teacher efficacy. The study involved 295 Chinese EFL instructors, comprising both male and female volunteers, who voluntarily consented to participate. The study demonstrated a distinct association between the degree of teacher interest in their work and their confidence in their abilities. Conversely, elevated stress and emotional tiredness among instructors typically result in diminished involvement. No significant link was discovered between self-assurance and stress. The investigation additionally revealed that both self-confidence and stress levels significantly affect students' emotional exhaustion and engagement in their assignments. Regarding the fourth concern, the disruptive behaviors in the classroom, when students consistently exhibit misbehavior or distraction, EFL teachers find it challenging to establish a conducive learning environment and engage them in substantive tasks using PK, PCK, TCK or TPCK. As Oruc (2011) exemplified the disruptive behaviors in the tertiary level EFL classroom, sometimes they can feel exhaustion and even ignore some misbehavior at the expanse of the flow of the lesson. Interestingly, becoming disruptive of a behavior depends on understanding of EFL teacher. According to Oruc's (2011) findings, only 27.8% of instructors with 1-3 years of experience regard "asking irrelevant questions" as disruptive, but the percentages are 65% and 60% for those in the 46-year and 7–9-year experience groups,

respectively. The cohort that predominantly disregarded this conduct was the 4–6-year age group, at 55%. Another habit in which the individuals exhibited variations is "consuming food and beverages after the lesson commences." Only 22.2% of educators with 1-3 years of experience and 33.3% with over 10 years perceive this behavior as disruptive, in contrast to 70% of those with 7-9 years of experience. This trend suggests that the level of tolerance for certain behaviors in the classroom may change as instructors gain more experience in their roles. It is interesting to note the significant increase in the percentage of educators who find consuming food and beverages after the lesson starts disruptive among those with 7-9 years of experience. This implies that as teachers spend more time in the classroom, their expectations for student behavior may become more rigid or defined. Overall, these findings highlight the importance of understanding how educators' perceptions of disruptive behavior may evolve over time. Besides, Stewart (2012) asserted that teachers' self-efficacy, outcome expectations, curiosity, and motivation significantly influence their Technological Pedagogical Content Knowledge and their capacity to integrate technology into their instruction. Experienced in-service instructors generally view technology as a strategy to engage students and improve pedagogical techniques, whereas novice freshman and preservice teachers often consider it primarily as a tool for classroom control. This disparity in viewpoint underscores the necessity of continuous professional development and mentorship for novice educators to perceive technology as a significant teaching resource rather than merely a method of behavior management. Teachers may enhance student learning and develop more engaging and successful teaching methodologies by cultivating a profound comprehension of the potential advantages of technology in the classroom. The transformation of educators' perspectives on technology will remain pivotal in influencing the future of education and equipping students for success in a progressively digital landscape.

5.5. Implications

The current study examined the associations between the components of self-efficacy and TPACK as well as interrogating whether those components, self-efficacy and TPACK, differ significantly across gender and perceived language proficiency. The semi-structured interviews also enlightened participants’ insights about experiences and barriers while applying TPACK skills. As for the pedagogical implications of this study, they could be categorized for EFL instructors, teacher educators, administrators of school of foreign languages, and policy makers.

5.5.1. For EFL Instructors

The current study uncovered that EFL instructors with high TPACK were the ones with curiosity and motivation toward integrating technology into instruction. Additionally, it can be said that they had a motivation to explore new ways of English teaching. They were also skillful at adapting to new challenges and having a proactive way of teaching. Overall, these findings suggest that EFL instructors with high TPACK not only possess the technical knowledge and pedagogical skills necessary for effective technology integration but also demonstrate a willingness to continuously learn and improve their teaching practices. By embracing innovation and actively seeking out new opportunities for professional development, these instructors are better equipped to engage students and create dynamic learning environments that foster language acquisition. Ultimately, their proactive approach to teaching allows them to stay at the forefront of educational trends and make a lasting impact on their students' language learning experiences.

5.5.2. For Teacher Educators

The findings of this research suggest that there is a need for targeted interventions to support teachers in developing their self-efficacy and TPACK skills, particularly for those who may face barriers related to institution and department context. Personalized or small group professional development on fostering TPACK skills could be considered to enhance EFL instructors' TPACK skills by enhancing institutional support in terms of technical units and materials.

Teacher educators should acknowledge that EFL instructors may not handle the issues related to classroom management even if they have a reasonable degree of TPACK skills. Some other variables, as extracted in the qualitative part, could have a relation in classroom management problems like the ones stemmed from learner differences. EFL teacher educators may try to effectively integrate technology into EFL instructors' teaching practices by providing personalized or small-group professional development opportunities and enhancing institutional support through improved technical resources and materials. This could ultimately lead to improved student outcomes and a more engaging learning environment.

Ongoing coaching and mentorship could be encouraged because of playing a crucial role in helping teachers build their confidence and competence in using technology effectively in the classroom. By pairing experienced educators with those who may be struggling or hesitant to embrace new tools, schools can create a culture of collaboration and continuous learning. Accordingly, the state schools may have little chance to adopt a personalized mentor. In this sense, AI agents could be hired to play a role in AI-driven professional development

mentor (Arefian et al., 2024). Depending on the personalized choices, this kind of AI driven small group or personalized professional development training could be encouraged. Furthermore, establishing a supportive community of practice where teachers can share the best practices, troubleshoot challenges, and celebrate successes can further enhance their self-efficacy and TPACK skills. Ultimately, investing in the professional development of teachers can have a ripple effect on student learning and overall school success.

5.5.3. For Administrators of Schools of Foreign Language

Exploring the impact of collaborative teaching practices and peer mentoring programs on the implementation of TPACK skills could provide valuable insights for EFL instructors. Furthermore, investigating the role of school leadership in promoting a culture of innovation and technology integration in the classroom could also be fruitful. Continuing to prioritize professional growth and support of teachers is essential for creating a learning environment that maximizes student potential and fosters academic achievement. By fostering a supportive and collaborative environment, teachers can feel empowered to continuously improve their teaching practices and incorporate modern technologies into their lessons. In addition, strong school leadership can play a crucial role in providing the necessary resources and guidance for teachers to effectively integrate technology into their curriculum. Ultimately, investing in the professional development of EFL instructors and promoting a culture of innovation can lead to a more engaging and effective learning experience for students. Furthermore, professional development opportunities can also help teachers stay current with the latest research and best practices in education. This ongoing learning can not only benefit teachers in their own professional growth, but also positively impact student outcomes. With access to resources and support from school leaders, teachers can confidently implement new strategies and technologies in the classroom to enhance student learning. Additionally, collaboration among educators can lead to the sharing of ideas and innovative approaches, creating a community of continuous improvement within the school. Lastly, enhancing institutional support for teachers in terms of access to technical resources and instructional materials could be further developed based on the findings of this study.

5.5.4. For Policy Makers

Policy makers could focus on developing strategies to address the barriers identified by participants when utilizing TPACK skills, with a particular emphasis on professional development opportunities tailored to individual needs. It is obvious that EFL instructors need empowerment that comes from their institution. When setting policies on English teaching at tertiary level, the effect of institution should not be neglected. Especially, the number of

technical units in schools of foreign languages must be increased because teachers may need a lot of help at several times of the year. Within the scope of 21st century competencies, institutions can work on doing their part.

5.6. Limitations of the Study

Although the sample size of this research was enough for a correlational study, it can be done in much higher numbers in further studies. Additionally, the study was done in the context of state-owned universities. To see the differences between private and state-owned universities better, a context of private universities could be an option regarding their capabilities and professional development facilities better. Regarding the perceived language proficiency, further studies, if applicable, may assess the level of participants based on a CEFR system scale or widely accepted examination.

5.7. Conclusion and Suggestions for Further Research

In conclusion, the explanatory sequential mixed-methods study investigated the association between components of self-efficacy and TPACK among EFL prep school teachers. The study further examined their levels of self-efficacy and TPACK and examined whether those levels of self-efficacy and TPACK differ across gender and perceived language proficiency. Additionally, it tried to examine the quantitative results of the study through qualitative semi-structured interviews. The results of this study showed possible links between EFL-TPACK components and ELT self-efficacy. These findings gave policymakers, teacher trainers, and institutional leaders in Türkiye latest information about aspects of EFL that haven't been investigated much, like managing the classroom, knowing the subject, using technology, assessment, and correcting language. The study also highlighted the importance of providing professional development opportunities for teachers to enhance their EFL-TPACK knowledge and self-efficacy. By understanding how these factors interact and influence each other, educators can tailor their training programs to better support teachers in improving their classroom practices. Overall, this research contributes valuable insights into the complex relationship between self-efficacy, TPACK, and effective English language teaching in Türkiye.

This research also underscores the need for ongoing support and resources for educators as they navigate the challenges of integrating technology into their language teaching practices. It also emphasizes the significance of continuous reflection and feedback to help teachers identify areas for growth and improvement in their EFL-TPACK knowledge.

Overall, these findings suggest that a comprehensive approach to professional development and support is essential for promoting effective English language teaching in Türkiye.

Future study might focus on an experimental assessment of the many components of self-efficacy and TPACK. Furthermore, due to the small sample size (86 individuals), the generalizability of these findings is restricted. Future research should repeat this study with a bigger sample size to validate and expand these findings to a larger community of Turkish EFL teachers. A thorough professional development program, for example, may include seminars on incorporating technology into English language classes, as well as modules on increasing teaching self-efficacy. By increasing the sample size in the study, researchers could collect additional data to support the usefulness of these professional development techniques in boosting English language teaching in Türkiye. Furthermore, given the negative connections, this study requires a more extensive qualitative investigation. As a result, qualitative research may be conducted to explore the connections between classroom management and the aspects of technology pedagogical domain knowledge. This would provide a more comprehensive understanding of how these factors interact and impact English language teaching outcomes. Additionally, incorporating feedback from teachers who have implemented these techniques could offer valuable insights into their effectiveness in real-world classroom settings. Additionally, exploring the relationship between classroom management and technology pedagogical domain knowledge could offer valuable insights for improving professional development programs in Türkiye.

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APPENDICES

APPENDIX 1. STUDENT CURRICULUM VITAE

Student Curriculum Vitae

Personal Information			
Name and Surname	Hasan AKSOY		
Email/Web Page			
Foreign Languages Spoken	English, Spanish		
Specialty	Teacher Education, Foreign Language Education, Technological Pedagogical Content Knowledge		
Educational Background			
	Üniversite	Bölüm/ ABD	Year
Undergraduate	Boğaziçi University	Foreign Language Teaching	2012
MA	Gazi University	English Language Teaching	2015
MA Thesis Title	The Impact of Kinect-based Gaming on L2 Speaking Skills and its implications on Bodily Kinecthetic Intelligence, Learner Motivation and Learner Autonomy		
MA Thesis Advisor	Assistant Professor Korkut Uluç İŞİSAĞ		

Academic Works

Aksoy, H., Urun, M.F. & Comez, R. (2015, 26th of May). Supporting foreign language vocabulary learning through kinect-based gaming. [Paper] 12th ODTÜ ELT Convention, Ankara. https://dbe.metu.edu.tr/convention2015/program.html

Aksoy, H. (2015). *The impact of kinect-based gaming on l2 speaking skills and its implications on bodily kinesthetic intelligence, learner motivation and learner autonomy*. (Thesis No:397434) [Master's thesis, Eğitim Bilimleri Enstitüsü, Gazi University]. Yök Tez Merkezi. https://tez.yok.gov.tr/UlusalTezMerkezi/

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Aksoy, H., & Ürün, M. F. (2017, 23 rd of August). *The impact of kinect-based game on l2 speaking skills and its implications on learner autonomy and motivation*. [Paper] European Conference on Educational Research (ECER), Copenhagen

Urun, M. F., Aksoy, H., & Comez, R. (2017). Supporting foreign language vocabulary learning through Kinect-based gaming. *International Journal of Game-Based Learning (IJGBL)*, *7*(1), 20-35.

Aksoy, H., & Bektaş Çetinkaya, Y., (2018). *The Characteristics of a Good L2 Speaker.* ULEAD 2018 ANNUAL CONGRESS, Manisa, Turkey

Aksoy, H., & Bektaş- Çetinkaya, Y. (2025). Investigating the Association between Technological Pedagogical Content Knowledge (TPACK) and Self-Efficacy among Turkish EFL Prep School Teachers. *Contemporary English Language Studies (in press)*

Aksoy, H., & Bektaş- Çetinkaya, Y. (2025, January 13-15). *A thematic analysis of prep school English teachers' experiences with TPACK implementation.* 13th International Mardin Artuklu Scientific Researches Conference, *Mardin, Turkiye*

Memberships to Scientific Organizations Related to the Field

Awards Received in the Field

APPENDIX 2. ETHICAL PERMISSION FOR RESEARCH

PERMISSION OF ETHIC COMMITTEE FOR APPLICATION

T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ REKTÖRLÜĞÜ
HUKUK MÜŞAVİRLİĞİ

Sayı : E-87347630-659-698344 21.08.2023
Konu : Araştırma İzni- Hasan AKSOY

EĞİTİM BİLİMLERİ ENSTİTÜSÜ MÜDÜRLÜĞÜNE

İlgi : a) 25.07.2023 tarihli ve E-87347630-659-669847 sayılı yazımız.
b) Ege Üniversitesi Rektörlüğünün 18/08/2023 tarih ve 1414766 sayılı yazısı.

İlgi (a)'da kayıtlı yazımız ile bildirilen Enstitünüz öğrencisi Hasan AKSOY'un, "İngilizce Hazırlık Öğretim Elemanlarının Teknolojik Pedagojik Alan Bilgisi (TPAB) ve ÖzYeterlikleri Üzerine Bir Çalışma" konulu çalışma kapsamında uygulama yapma talebine ilişkin olarak tarafımıza gönderilen ilgi (b)'de kayıtlı cevabi yazı ve ekleri, işbu yazımız ekinde sunulmaktadır.

Bilgilerinizi ve gereğini rica ederim.

Prof.Dr. Nükhet HOTAR
Rektör

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: C266509E-35A9-4A30-8B93-D4FE2CCA3BA7 Doğrulama Adresi: https://turkiye.gov.tr/dokuz-eylul-universitesi-ebys
Adres: Kültür Mahallesi Cumhuriyet Blv No:144 35220 Konak/İzmir
KEP Adresi : d
Bilgi için:Gülcan TOPÇU
Sürekli İsci
Telefon No:(

HİZMETE ÖZEL

T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ REKTÖRLÜĞÜ
HUKUK MÜŞAVİRLİĞİ

Sayı : E-87347630-659-698344 21.08.2023
Konu : Araştırma İzni- Hasan AKSOY

EĞİTİM BİLİMLERİ ENSTİTÜSÜ MÜDÜRLÜĞÜNE

İlgi : a) 25.07.2023 tarihli ve E-87347630-659-669847 sayılı yazımız.
b) Ege Üniversitesi Rektörlüğünün 18/08/2023 tarih ve 1414766 sayılı yazısı.

İlgi (a)'da kayıtlı yazımız ile bildirilen Enstitünüz öğrencisi Hasan AKSOY'un, "İngilizce Hazırlık Öğretim Elemanlarının Teknolojik Pedagojik Alan Bilgisi (TPAB) ve ÖzYeterlikleri Üzerine Bir Çalışma" konulu çalışma kapsamında uygulama yapma talebine ilişkin olarak tarafımıza gönderilen ilgi (b)'de kayıtlı cevabi yazı ve ekleri, işbu yazımız ekinde sunulmaktadır.

Bilgilerinizi ve gereğini rica ederim.

Prof.Dr. Nükhet HOTAR
Rektör

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: C266509E-35A9-4A30-8B93-D4FE2CCA3BA7 Doğrulama Adresi: https://turkiye.gov.tr/dokuz-eylul-universitesi-ebys
Adres: Kültür Mahallesi, Cumhuriyet Blv No:144, 35220 Konak/İzmir
KEP Adresi : d[redacted]
Bilgi için:Gülcan TOPÇU
Sürekli İşçi
Telefon No:

HİZMETE ÖZEL

T.C.
EGE ÜNİVERSİTESİ REKTÖRLÜĞÜ
Hukuk Müşavirliği
Sosyal ve Beşeri Bilimler Bilimsel Araştırma ve Yayın Etiği Kurulu

Sayı : E-85553214-600-1414766 18.08.2023
Konu : Araştırma İzni (Hasan AKSOY)

DOKUZ EYLÜL ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Hukuk Müşavirliği)

İlgi : 26.07.2023 tarihli ve E-87347630-659-672165 sayılı yazı.

İlgi yazınız ile "...Üniversiteniz Yabancı Diller Eğitimi Anabilim Dalı İngilizce Öğretmenliği Doktora programı öğrencisi Hasan AKSOY'un, "İngilizce Hazırlık Öğretim Elemanlarının Teknolojik Pedagojik Alan Bilgisi (TPAB) ve ÖzYeterlikleri Üzerine Bir Çalışma" başlıklı çalışması kapsamında Üniversitemizde uygulama yapabilmesi için gerekli iznin verilmesi" hususu belirtilmiş idi.

Anılan yazı ve ekleri Üniversitemiz Yabancı Diller Yüksekokulu Müdürlüğünce incelenmiş olup konu ile ilgili olarak anılan Müdürlüğümüzden alınan cevabi yazıda; "...ilgili çalışma Yüksekokulumuz tarafından uygun görülmüştür." denilmiştir.

Bilgilerinize arz ederim.

Prof. Dr. Mehmet ERSAN
Kurul Başkanı

- 61601054 - 61601054 - 61601054 - 61601054 -

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Belge Doğrulama Kodu :BS5Y5K89KP Belge Takip Adresi : https://www.turkiye.gov.tr/ege-universitesi-ebys
Adres:Ege Üniversitesi Rektörlüğü Hukuk Müşavirliği Gençlik Cad. No:12 35040 Bornova/İzmir Bilgi için: Selda TEMİZTEPEDUMAN
Telefon:+ Unvanı: Birim Evrak Sorumlusu
e-Posta:hı
Kep Adre

ETHICAL PERMISSION

T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ REKTÖRLÜĞÜ
HUKUK MÜŞAVİRLİĞİ

Sayı : E-87347630-659-702325 24.08.2023
Konu : Araştırma İzni-Hasan AKSOY

EĞİTİM BİLİMLERİ ENSTİTÜSÜ MÜDÜRLÜĞÜNE

İlgi : a) 26.07.2023 tarihli ve E-87347630-659-672174 sayılı yazımız.
b) Yabancı Diller Meslek Yüksekokulu Müdürlüğünün 23/08/2023 tarih ve 699653 sayılı yazısı.

İlgi (a)'da kayıtlı yazımız ile bildirilen Enstitünüz öğrencisi Hasan AKSOY'un, "*İngilizce Hazırlık Öğretim Elemanlarının Teknolojik Pedagojik Alan Bilgisi (TPAB) ve Öz-Yeterlikleri Üzerine Bir Çalışma.*" konulu çalışma kapsamında uygulama yapma talebine ilişkin olarak tarafımıza gönderilen ilgi (b)'de kayıtlı cevabi yazı ve ekleri, işbu yazımız ekinde sunulmaktadır.

Bilgilerinizi ve gereğini rica ederim.

Prof.Dr. Hasan Murat TANARSLAN
Rektör V.

Ek: İlgi (b) Yazı (1 Sayfa)

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: 0982A853-00FA-4D4E-992F-0B5EA8DEA70A Doğrulama Adresi: https://turkiye.gov.tr/dokuz-eylul-universitesi-ebys

Adres: Kültür Mahallesi, Cumhuriyet Blv No:144, 35220 Konak/İzmir
KEP Adresi : d

Bilgi için:Gülcan TOPÇU
Sürekli İşçi
Telefon No:

HİZMETE ÖZEL

T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ REKTÖRLÜĞÜ
Yabancı Diller Yüksekokulu Müdürlüğü

Sayı : E-70348285-929-699653 23.08.2023

Konu : Araştırma İzni- Hasan AKSOY

HUKUK MÜŞAVİRLİĞİNE

İlgi : Dokuz Eylül Üniversitesi Rektörlüğü (Hukuk Müşavirliği)'nün 26.07.2023 tarihli ve E-87347630-659-672174 sayılı yazısı.

İlgide kayıtlı yazınızda belirtilen Üniversitemiz Eğitim Bilimleri Enstitüsü öğrencisi Hasan AKSOY' un, "İngilizce Hazırlık Öğretim Elemanlarının Teknolojik Pedagojik Alan Bilgisi (TPAB) ve ÖzYeterlikleri Üzerine Bir Çalışma" başlıklı çalışması kapsamında Yüksekokulumuzda uygulama yapması Müdürlüğümüzce uygun görülmüştür.

Bilgilerinizi arz ederim.

Prof.Dr. Gülmira KURUOĞLU
Yüksekokul Müdürü

- 62015728 - 62015728 - 62015728 - 62015728 -

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: CC14AE21-8478-47B9-B561-EE18B90E620C Doğrulama Adresi: https://turkiye.gov.tr/dokuz-eylul-universitesi-ebys

Adres: /
Tınaztepe
Telefon
Faks: 0

No: 207-AB
İZMİR

Bilgi için:Faruk ZEYTUN
Bilgisayar İşletmeni

HİZMETE ÖZEL

ETHICAL PERMISSION

T.C.
DOKUZ EYLÜL ÜNİVERSİTESİ REKTÖRLÜĞÜ
HUKUK MÜŞAVİRLİĞİ

Sayı : E-87347630-659-669488 25.07.2023

Konu : Etik Kurul İzni- Hasan AKSOY

EĞİTİM BİLİMLERİ ENSTİTÜSÜ MÜDÜRLÜĞÜNE

İlgi : 06/07/2023 tarih ve 651204 sayılı yazınız.

İlgide kayıtlı yazınız ile bildirilen başvuru, Üniversitemiz Sosyal ve Beşeri Bilimler Bilimsel Araştırma ve Yayın Etik Kurulunun 18/07/2023 tarihli toplantısında değerlendirilmiş ve toplantıda alınan 5 sayılı karar ile Hasan AKSOY'un Prof.Dr.Yeşim BEKTAŞ ÇETİNKAYA danışmanlığında yürüteceği, "İngilizce Hazırlık Öğretim Elemanlarının Teknolojik Pedagojik Alan Bilgisi (TPAB) ve Öz-Yeterlikleri Üzerine Bir Çalışma" başlıklı çalışmasının etik açıdan uygun olduğuna karar verilmiş olup, alınan karar Makamımızca onaylanmıştır.

Bilgilerinizi ve gereğini rica ederim.

Prof.Dr. Nükhet HOTAR
Rektör

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: 7B9F4495-9A8D-4ECC-BB8C-E8966F2A2B82 Doğrulama Adresi: https://turkiye.gov.tr/dokuz-eylul-universitesi-ebys

Adres: Kültür Mahallesi Cumhuriyet Blv No:144, 35220 Konak/İzmir
KEP Adresi : d p.tr

Bilgi için:Gülcan TOPÇU
Sürekli İşçi
Telefon No:(

APPENDIX 3. PERMISSON FOR INSTRUMENTS

Gmail Hasan Aksoy <[redacted]>

Permission Letter

Ramin Akbari <[redacted]>
Alıcı: Hasan Ak

19 Ocak 2023 20:39

Dear Hasan,

Please go ahead with the use of the instrument for any research purpose you deem appropriate.

Regards
Ramin

On Wed, Jan 18, 2023 at 6:16 AM Hasan Aksoy <[redacted]>

> Dear Assoc. Prof. Akbari,
> I am writing you to kindly ask your Permission to use one of your instruments in my doctoral dissertation.
>
> Please check the attachment.
>
> I am looking forward to your reply.
> Kind Regards
> Hasan AKSOY

Gmail Hasan Aksoy [redacted]

Permission Request

ALİ BOSTANCIOĞLU [redacted] 23 Ocak 2023 07:59
Alıcı: Hasan Aksoy [redacted]

Dear Hasan,

Thank you very much for contacting me. It is a pleasure for me to receive such a request.

You can certainly use the EFL-TPACK questionnaire in your research.

Please do let me know what you find in your research in the end.

Good luck!

Best wishes

Ali

Recent Publications: Acar-Erdol, T., Bostancioglu, A., & Gozutok, F.D. (2022). Gender equality perceptions of preservice teachers: are they ready to teach it? Social Psychology of Education, doi.org/10.1007[redacted]
Accessible via: [redacted]

Ali Bostancioglu
PhD in Education,
General Office for External Affairs (Coordinator)
School of Foreign Languages (Lecturer)
Iskenderun Technical University
Iskenderun, Hatay, Türkiye (31200)

[redacted]
26[redacted]

From: "Hasan Aksoy" <[redacted]
To: "ali bostancioglu" <[redacted]
Sent: Wednesday, 18 January, 2023 21:49:28
Subject: Permission Request

Dear Dr. Bostancioğlu,
I am writing to you to kindly request your permission to use one of your instruments in my doctoral dissertation. Please keep an eye on the attachment.
I look forward to hearing from you.
Kind regards
Hasan AKSOY

APPENDIX 4. CONSENT FORM FOR PARTICIPANTS

GÖNÜLLÜ KATILIMCI ONAM FORMU

Prof.Dr. Yeşim BEKTAŞ ÇETİNKAYA danışmanlığında Hasan AKSOY tarafından yürütülen "A Study on Prep School EFL Instructors' Technological Pedagogical Content Knowledge (TPACK) and Self-efficacy. İngilizce Hazırlık Öğretim Elemanlarının Teknolojik Pedagojik Alan Bilgisi (TPAB) ve Öz- Yeterlikleri Üzerine Bir Çalışma" başlıklı **araştırmaya** davet edilmiş bulunuyorsunuz. Bu araştırmaya katılıp katılmama kararını vermeden önce, araştırmanın neden ve nasıl yapılacağını bilmeniz gerekmektedir. Bu nedenle bu formun okunup anlaşılması büyük önem taşımaktadır. Eğer anlayamadığınız ve sizin için açık olmayan şeyler varsa, ya da daha fazla bilgi isterseniz sorabilirsiniz. Bu çalışmaya katılmak tamamen **gönüllülük** esasına dayanmaktadır. Çalışmaya **katılmama** veya katıldıktan sonra herhangi bir anda çalışmadan **çıkma** hakkında sahipsiniz. **Çalışmayı yanıtlamanız, araştırmaya katılım için onam verdiğiniz** biçiminde yorumlanacaktır. Size verilen **formlardaki** soruları yanıtlarken kimsenin baskısı veya telkini altında olmayın. Bu formlardan elde edilecek bilgiler tamamen araştırma amacı ile kullanılacaktır.

Araştırmayla İlgili Bilgiler:

c. Araştırmanın Amacı: Bu çalışma, İzmir'deki iki devlet üniversitesinde yabancı dil yüksekokullarında çalışan Türk İngilizce Hazırlık Öğretim Elemanlarının öz-yeterlik inançları ile Teknolojik Pedagojik Alan Bilgisi (TPACK) arasındaki ilişkiyi araştırmayı amaçlamaktadır. Ayrıca, Türk İngilizce Hazırlık Öğretim Elemanlarının sınıflarında TPACK uygulamak için karşılaştıkları engelleri ve deneyimlerini de araştırmaktadır. Araştırmanın Nedeni: □ Bilimsel araştırma ☑ Tez çalışması
d. Araştırmanın Öngörülen Süresi:18 ay
e. Araştırmaya Katılması Beklenen Katılımcı/Gönüllü Sayısı:100
f. Araştırmanın Yapılacağı Yer(ler): 1. Dokuz Eylül Üniversitesi Yabancı Diller Yüksekokulu
2. Ege Üniversitesi Yabancı Diller Yüksekokulu

Çalışmaya Katılım Onayı:

"Yukarıda yer alan ve araştırmadan önce gönüllüye / katılımcıya verilmesi gereken bilgileri gösteren Aydınlatılmış Onam Formu adlı metni kendi anadilimde okudum ya da bana okunmasını sağladım. Bu bilgilerin içeriği ve anlamı, yazılı ve sözlü olarak açıklandı. Aklıma gelen bütün soruları sorma olanağı tanındı ve sorularıma doyurucu cevaplar aldım. Çalışmaya katılmadığım ya da katıldıktan sonra çekildiğim durumda, hiçbir yasal hakkımdan vazgeçmiş olmayacağım. Bu koşullarla, söz konusu araştırmaya hiçbir baskı ve zorlama olmaksızın gönüllü olarak katılmayı kabul ediyorum. Bu araştırma sırasında yapılacak yüzyüze görüşmelerin **sesli kaydının yapılmasına izin veriyorum.** Bu metnin imzalı bir kopyasını aldım."

Katılımcının (Kendi el yazısı ile)

Adı-Soyadı:

.....

İmzası:

Araştırmacılar:

Prof.Dr. Yeşim Bektaş Çetinkaya Doktora Öğrencisi Hasan Aksoy

Not: *Bu form, iki nüsha halinde düzenlenir. Bu nüshalardan biri imza karşılığında gönüllü kişiye verilir, diğeri araştırmacı tarafından saklanır.*

EGE ÜNİVERSİTESİ
BİLİMSEL ARAŞTIRMA ve YAYIN ETİĞİ KURULLARI (EGEBAYEK)

BİLGİLENDİRİLMİŞ ONAM FORMU

LÜTFEN BU DÖKÜMANI DİKKATLİCE OKUMAK İÇİN ZAMAN AYIRINIZ

Sizi Prof.Dr.Yeşim BEKTAŞ ÇETİNKAYA tarafından yürütülen "A Study on Prep School EFL Instructors' Technological Pedagogical Content Knowledge (TPACK) and Self-efficacy. İngilizce Hazırlık Öğretim Elemanlarının Teknolojik Pedagojik Alan Bilgisi (TPAB) ve Öz- Yeterlikleri Üzerine Bir Çalışma." başlıklı **araştırmaya** davet ediyoruz. Bu araştırmaya katılıp katılmama kararını vermeden önce, araştırmanın neden ve nasıl yapılacağını bilmeniz gerekmektedir. Bu nedenle bu formun okunup anlaşılması büyük önem taşımaktadır. Eğer anlayamadığınız ve sizin için açık olmayan şeyler varsa, ya da daha fazla bilgi isterseniz bize sorunuz.

Bu çalışmaya katılmak tamamen **gönüllülük** esasına dayanmaktadır. Çalışmaya **katılmama** veya katıldıktan sonra herhangi bir anda çalışmadan **çıkma** hakkında sahipsiniz. **Çalışmayı yanıtlamanız, araştırmaya katılım için onam verdiğiniz** biçiminde yorumlanacaktır. Size verilen **formlardaki** soruları yanıtlarken kimsenin baskısı veya telkini altında olmayın. Bu formlardan elde edilecek kişisel bilgiler tamamen gizli tutulacak ve yalnızca araştırma amacı ile kullanılacaktır.

1. **Araştırmayla İlgili Bilgiler:**
   a. Araştırmanın Amacı:Bu çalışma, İzmir'deki iki devlet üniversitesinde yabancı dil yüksekokullarında çalışan Türk İngilizce Hazırlık Öğretim Elemanlarının öz-yeterlik inançları ile Teknolojik Pedagojik Alan Bilgisi (TPACK) arasındaki ilişkiyi araştırmayı amaçlamaktadır. Ayrıca, Türk İngilizce Hazırlık Öğretim Elemanlarının sınıflarında TPACK uygulamak için karşılaştıkları engelleri ve deneyimlerini de araştırmaktadır.
   b. Araştırmanın İçeriği:Öz-yeterlik inançları ile Teknolojik Pedagojik Alan Bilgisini temel alan bu karma metodolojiye sahip çalışma Türk İngilizce Hazırlık Öğretim Elemanlarının içermektedir.
   c. Araştırmanın Nedeni: ☐ Özgün araştırma ☑ Tez çalışması
   d. Araştırmanın Öngörülen Süresi (*Araştırma takviminde öngörülen süredir*):12 ay (1 Yıl)
   e. Araştırmaya Katılması Beklenen Katılımcı/Gönüllü Sayısı:100 (Toplam 2 Araştırma alanında)
   f. Araştırmanın Yapılacağı Yer(ler):Ege Üniversitesi Yabancı Diller Yüksek Okulu ve Dokuz Eylül Üniversitesi Yabancı Diller Yüksek Okulu

2. **Çalışmaya Katılım Onayı:**

Yukarıda yer alan ve araştırmadan önce katılımcıya/gönüllüye verilmesi gereken bilgileri okudum ve katılmam istenen çalışmanın kapsamını ve amacını, gönüllü olarak üzerime düşen sorumlulukları tamamen anladım. **Çalışma hakkında yazılı ve sözlü açıklama aşağıda adı belirtilen araştırmacı tarafından yapıldı, soru sorma ve tartışma imkanı buldum ve tatmin edici yanıtlar aldım. Bana, çalışmanın muhtemel riskleri ve faydaları sözlü olarak da anlatıldı.** Bu çalışmayı istediğim zaman ve herhangi bir neden belirtmek zorunda kalmadan bırakabileceğimi ve bıraktığım takdirde herhangi bir olumsuzluk ile karşılaşmayacağımı anladım.

Bu koşullarda söz konusu araştırmaya kendi isteğimle, hiçbir baskı ve zorlama olmaksızın katılmayı kabul ediyorum.

Katılımcının (Kendi el yazısı ile)
Adı-Soyadı:.....

Yürütücünün;	(Varsa) Danışmanın;	(Varsa) Diğer araştırmacıların;
Prof.Dr. Yeşim BEKTAŞ ÇETİNKAYA	Adı Soyadı ve İmzası	Hasan AKSOY

** Bilgilendirilmiş onam formu, bütün araştırmacılar tarafından imzalanmalıdır.*

EGEBAYEK Form 2
Y.T. / REV. : 2013/ 01

İmzası:

(Varsa) Velayet veya Vesayet Altında Bulunanlar İçin;
Veli veya Vasisinin (kendi el yazısı ile)
Adı-Soyadı:.....
İmzası:

Not: *Bu form, iki nüsha halinde düzenlenir. Bu nüshalardan biri imza karşılığında gönüllü kişiye verilir, diğeri araştırmacı tarafından saklanır.*

Yürütücünün;	(Varsa) Danışmanın;	(Varsa) Diğer araştırmacıların;
Prof.Dr. Yeşim BEKTAŞ ÇETİNKAYA	Adı Soyadı ve İmzası	Hasan AKSOY

** Bilgilendirilmiş onam formu, bütün araştırmacılar tarafından imzalanmalıdır.*

APPENDIX 5. QUANTITATIVE SCALES

A. ELTEI- EFL TPACK Scale

The ELT Teacher Efficacy Instrument (ELTEI)

Dear Teacher,

The purpose of this instrument is to measure English language teachers' beliefs about their efficacy in different teaching contexts. The information will be kept confidential and will be used just for research purposes. Thank you very much in advance for your time and cooperation.

Name:
Age: _____

Gender: male ☐ female☐
Years of teaching experience: _____

Degree: *Major*:

Which teaching *context* have you ever taught *before:*	□school ☐		□institute
Which age *group/s* have you ever taught *before:*	□young	□adult	□adolescent
Which *student level/s* have you ever taught *before*:	□elementary	□intermediate	□advanced

How do you perceive your own level of English based on specific skills according to CEFR (Common European Framework of Reference):

General Knowledge: *A1*☐*A2*☐*B1*☐*B2*☐*C1*☐*C2*

Listening Skills: *A1*☐*A2*☐*B1*☐*B2*☐*C1*☐*C2*

Reading Skills: *A1*☐*A2*☐*B1*☐*B2*☐*C1*☐*C2*

Writing Skills: *A1*☐*A2*☐*B1*☐*B2*☐*C1*☐*C2*

Speaking Skills: *A1*☐*A2*☐*B1*☐*B2*☐*C1*☐*C2*

Please read each item carefully and indicate the extent to which each one applies to you.

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
1-As an English teacher, Betty avoids classes that require teaching speaking as she thinks she is not good at teaching this skill to intermediate adult learners. Lately, she has been offered to teach speaking to a class of adults at the intermediate level. Betty feels a bit worried about her ability to handle this situation and thinks she might fail. *To what extent does Betty's feeling describe that ofyours with respect to teaching speaking to adults at the intermediate level*?	1	2	3	4	5
2- David is told by his supervisor to give final grades to his students based on their classroom performance. David, however, is not happy with this situation as he thinks he is not competent enough to assess his students' classroom performance and he might inaccurately assign either high or low points to his students. *To what extent does David's feeling describe that of yours with respect to assessing classroom performance*?	1	2	3	4	5
3-One of the reasons Robert thinks he is an efficient teacher is his ability to formulate good questions for his students while he teaches something. He is happy about this because he thinks by formulating good questions from the content of the materials he teaches and asking them from his students, he can make sure which student has learned what and which	1	2	3	4	5

student has missed what. *To what extent does Robert's feeling describe that ofyours with respect to formulating good questions for your students while you teach something*?					
4-Sara is uncomfortable with teaching reading as she thinks she lacks the competency to teach this skill. This term, she has an offer to teach reading to an elementary level class of kids. Sara wants to accept this offer as she thinks in spite of her problem, she can handle teaching reading to kids at an elementary level. *To what extent does Sara's feeling describe that ofyours with respect to teaching reading to kids at an elementary level*?	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
5-James has a few problematic students in his class with disruptive behavior. They make noises, laugh at other students, and make fun of the course content. James is very unhappy about this situation since he thinks he cannot manage them. *To what extent does James's feeling describe that of yours with respect to managing students' disruptive behavior*?	1	2	3	4	5
6-Among the language components, grammar is what Fatima thinks she is good at teaching. Recently, her supervisor has asked her to teach grammar to a group of adult learners who plan to sit for IELTS. However, Fatima is a little uncomfortable, as she has never taught grammar to a group of advanced adult learners sitting for an important proficiency test. *To what extent does Fatima's feeling describe that of yours with respect to teaching grammar to adult advanced learners sitting for an important test*?	1	2	3	4	5
7-Jack considers himself better at teaching English to elementary students	1	2	3	4	5

than to other proficiency level learners. He now has an offer to teach pronunciation to an elementary class. Jack is happy about this as he thinks he is very competent in handling such a proficiency level learners, no matter what component or skill he is assigned to teach. *To what extent does Jack's feeling describe that ofyours with respect to teaching at the elementary level*?

8-Karl is not satisfied with the way he elicits self-correction from his students and he thinks he needs improvements in using better techniques to make his students correct their own errors. *To what extent does Karl's feeling describe that ofyours with respect to eliciting self-correction from your students*?	1	2	3	4	5
9-Ali avoids classes that require him focusing on teaching writing since he thinks he is not good at teaching this skill. A teaching position with good payment is now available that focuses on teaching writing to elementary adult learners; however, Ali is hesitating since he thinks he might fail. *To what extent does Ali's feeling describe that of yours with respect to teaching writing to adult learners at the elementary level*?	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
10-As an English teacher, Kate is very happy as there are just a small number of errors in her students' speaking and writing. She feels good as she thinks this is mainly because of her use of particular techniques in correcting their previous errors. *To what extent does Kate's feeling describe that ofyours with respect to correcting errors in speaking and writing*?	1	2	3	4	5
11-John is an English teacher who is very competent at teaching vocabulary. Knowing this, his supervisor has asked him to teach vocabulary to a class of adolescents at the intermediate level. John is happy and he wants to accept this class as he thinks he is good at teaching this component. *To what extent does John's feeling describe that ofyours with respect to teaching vocabulary to adolescents at the intermediate level*?	1	2	3	4	5
12-As a successful English teacher, Jill was recently invited to the materials development section of the institute she teaches in. In spite of being an efficient teacher, she is worried about her ability to work as a materials developer since she thinks she lacks the required competency. *To what extent does Jill's feeling describe that ofyours with respect to developing materials*?	1	2	3	4	5

13-Amir is not happy teaching advanced classes as he thinks he is not very proficient in teaching at that level. His friend, however, has had an operation and has asked Amir to teach reading to a group of his students who plan to sit for TOEFL iBT. Amir is very worried about his competency to do so and thinks he might fail. *To what extent does Amir's feeling describe that of yours with respect to teaching at the advanced level*?	1	2	3	4	5
14-Sue feels responsible in making her students aware of some of the apparent problems in the society, especially the issue of poverty and social justice. She is satisfied as she thinks she is able to make her students see the problems associated with poverty and think of some of the ways to solve them. *To what extent does Sue's feeling describe that of yours with respect to raising the issue of poverty and social justice in your classes*?	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
15- Renee considers herself a very efficient teacher since the way she teaches and the techniques she uses are the main reasons for her students' good performance by the end of each term. She is satisfied as she thinks the good outcome of her classes is due to her great ability to teach well. *To what extent does Renee's feeling describe that of yours with respect to affecting your students' learning outcome*?	1	2	3	4	5
16- Mike, a successful English teacher, is offered to select textbooks for his own classes. Mike is very satisfied with this offer as he thinks he is familiar with the newest trends in textbook selection as well as knowing his students' needs better than anyone else. *To what extent does Mike's feeling describe that ofyours with respect to selecting textbooks for your students*?	1	2	3	4	5
17- Alice does not feel experienced enough to select and use extra-curricular materials, such as CDs and movies, in her English classes. In spite of this, recently, her supervisor has asked her to use as many extra-curricular materials as she can to expose her students more to English in order to improve their language ability. Alice is worried as she thinks she might fail to make the best use of this situation. *To what extent does Alice's feeling describe that of yours with respect to using extra-curricular materials in your classes*?	1	2	3	4	5

18- Antonio regards himself a good English teacher when it comes to error correction since he uses efficient techniques in dealing with errors. No matter whether it is an error in grammar, vocabulary, or pronunciation, Antonio is comfortable with it as he thinks he can handle it well in such a way that it does not happen in his students' production any more. *To what extent does Antonio's feeling describe that of yours with respect to correcting errors in language components*?	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
19-Joe, a well-known English teacher, has been asked to teach pronunciation to an intermediate level class of kids. Further, Joe is informed that the students in this class have serious problems in their pronunciation due to L1 interference. Joe thinks he is capable to handle this class well because he knows how to teach pronunciation well. *To what extent does Joe's feeling describe that ofyours with respect to teaching pronunciation to intermediate level kids*?	1	2	3	4	5
20- Tom thinks being a good responsible English teacher does not just mean teaching English to his students; rather, to be an effective teacher, he should help his students to relate what they learn in the classroom to the outside real world. He is happy as he thinks he is capable of helping his students to deal with real life social and economic problems. *To what extent does Tom's feeling describe that ofyours with respect to relating the words to the world*?	1	2	3	4	5
21-Mark feels comfortable teaching all the four language skills. Last week,	1	2	3	4	5

his supervisor asked him to teach writing to a class of kids. Even though Mark has no problems in teaching writing, he hesitates to accept this class because he is afraid he might fail dealing with this specific age group of learners. *To what extent does Mark's feeling describe that ofyours with respect to teaching writing to a class ofkids*?

22-Sam is very uncomfortable with the way his students make similar mistakes when listening or reading in English. In spite of his efforts to correct his students' errors, most of the errors still exist. Sam is worried as he thinks he is not competent enough in correcting errors in these two skills. *To what extent does Sam's feeling describe that ofyours with respect to correcting errors in listening and reading*?

1 2 3 4 5

23-Stephen has serious problems with time management for his classes and can rarely finish his teaching on time. He thinks he lacks the time management skill and is worried this might lower his success in his classes. *To what extent does Stephen's feeling describe that ofyours with respect to managing the time in your classes*?

1 2 3 4 5

---

very little (1) little (2) so so (3) much (4) very much (5)

24- Clara thinks she is a capable English teacher; however, she does not like teaching adolescents due to some of the problems they cause in class. This term, she has an offer to teach speaking, which is her specialty, to a class of adolescent girls. She accepts it but is worried about her ability to handle the class. *To what extent does Clara's feeling describe that ofyours with respect to teaching English to a class ofadolescents*?

1 2 3 4 5

25- Dan is not comfortable with the way a few of his students do not

	1	2	3	4	5
follow classroom rules this term. He has talked to them to obey the rules such as attending the class on time, doing the homework, not talking to each other while he teaches, etc., but they do not pay attention. Dan is frustrated and thinks he cannot do much to change the situation. *To what extent does Dan's feeling describe that ofyours with respect to making your students follow classroom rules*?					
26-Mary regards herself as a competent English teacher; however, she is not happy with the way some errors still persist in her students' language after her corrections. She feels she is not good at correcting errors. *To what extent does Mary's feeling describe that of yours with respect to correcting your students' errors*?	1	2	3	4	5
27-As a teacher, Maggie thinks she is capable enough to plan for her classes. Recently, her supervisor has asked her to plan for all intermediate level classes. Maggie is happy about this as she thinks she can do the job before the beginning of the term. *To what extent does Maggie's feeling describe that ofyours with respect to planning for your classes before the beginning ofa term*?	1	2	3	4	5

28-George, a competent teacher in teaching English, has recently been asked to teach listening to a class of adolescents at the advanced level. In spite of his self-confidence, George is not sure of his ability to teach listening well in this situation and he is worried he might fail. *To what extent does George's feeling describe that of yours with respect to teaching listening to a class of adolescents at the advanced level*?	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
29- As a teacher, Liza is uncomfortable with the students who think they cannot dowell at school. Unfortunately, this term she has a few such students in her class who do not try hard because they think they cannot progress, which is contrary to reality. Liza thinks the remedy to this problem is outside the class (in the family, for example) and there is not much she can do to help these students overcome their wrong belief. *To what extent does Liza's feeling describe that of yours with respect to helping students who think they cannot do well at school*?	1	2	3	4	5
30-Jane is offered to develop a new test for her students this term. In spite of being a good teacher, Jane feels uncomfortable with this situation as she thinks she does not know how to develop a good test. *To what extent does Jane's feeling describe that ofyours with respect to developing tests*?	1	2	3	4	5
31- Sophie does not feel comfortable teaching at the intermediate level. Right now, there is a teaching position with good payment that focuses on teaching speaking to an intermediate level class. Sophie is hesitant as she is afraid she might not be able to handle this proficiency level well. *To what extent does Sophie's feeling describe that ofyours with respect to teaching at the intermediate level*?	1	2	3	4	5

32- Among different age groups, Rebecca prefers to teach English to a class of adults. This term, she has an option to select between teaching reading to a class of adolescents and teaching listening to a class of adults. Even though Rebecca is more comfortable to teach reading, she chooses the second class because she thinks she can handle adults better. *To what extent does Rebecca's feeling describe that of yours with respect to teaching English to a class of adults*?	1	2	3	4	5

EFL-TPACK Scale: Technological Pedagogical Content Knowledge for English as a Foreign Language

Dear Teacher,

The purpose of this instrument is to measure TPACK(Technological Pedagogical Content Knowledge) levels of EFL teachers. The information will be kept confidential and will be used just for research purposes. Thank you very much in advance for your time and cooperation.

Please read each item carefully and indicate **the extent to** which each one applies to you circling the numbers from 1(very little)to 5 (very much).

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
1- I know how to use computer mediated communication (CMC).	1	2	3	4	5
2- I know about basic computer hardware(i.e.CD-ROM,mother-board,RAM)and their functions.	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
3- I know how to save data into/from a digital device(i.e. flashdisk ,USB stick,CD).	1	2	3	4	5
4- I know how to use generic office applications(i.e.Word, PowerPoint, and Excel).	1	2	3	4	5
5- I know how to play audio and video files on my computer.	1	2	3	4	5
6- I know how to record videos(i.e.using a video camera).	1	2	3	4	5

7-I can react supportively to learners' interaction.	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
8-I can assess student learning in multiple ways.	1	2	3	4	5
9 I can keep students on task.	1	2	3	4	5
10- I can facilitate learning through creating opportunities for individual, partner, group, and whole class work.	1	2	3	4	5
11- I can comprehend English texts accurately.	1	2	3	4	5

12- I can comprehend English speech accurately.	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
13- I can monitor my own writing for accuracy.	1	2	3	4	5
14- I can monitor my own speech for accuracy.	1	2	3	4	5
15- Iam familiar with the culture(s) of target language communities.	1	2	3	4	5
16- I know about technologies that I can use to teach listening in English.	1	2	3	4	5
17- I know about technologies that I can use to teach reading in English.	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
18- I know about technologies that I can use to teach writing in English.	1	2	3	4	5
19- I know about technologies that I can use to teach English language grammar.	1	2	3	4	5
20- I know about technologies that I can use to teach English vocabulary.	1	2	3	4	5
21- I can choose an appropriate approach to teach learners (i.e. communicative approach, direct method).	1	2	3	4	5
22- I know about technologies that I can use to teach speaking in English	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
23- I can plan when and how to use the target language, including meta-language I may need in the classroom.	1	2	3	4	5
24- I can identify linguistic problems experienced by learners (i.e. phonological, lexical or grammatical problems).	1	2	3	4	5
25- I can choose technologies that enhance the teaching approaches for a lesson.	1	2	3	4	5
26- I can choose technologies that enhance students' learning for classroom.	1	2	3	4	5
27- I can adapt the use of the technologies that I am learning to different teaching activities.	1	2	3	4	5

28 I can design relevant learning experiences to promote student learning, using technology.	1	2	3	4	5

	very little (1)	little (2)	so so (3)	much (4)	very much (5)
29- I can choose technologies to be used in assessment.	1	2	3	4	5
30- I can engage students in solving authentic problems using digital technologies and resources.	1	2	3	4	5
31-I can select technologies to use in my classroom that enhance what I teach, how I teach, and what students learn.	1	2	3	4	5
32- I can use technology effectively to communicate relevant information to students and peers.	1	2	3	4	5
33- I can use a range of technologies to help students pursue their individual curiosities.	1	2	3	4	5
34- I can use a range of technologies that enable students to become active participants.	1	2	3	4	5
35-I can provide equitable access to digital language learning tools and resources.	1	2	3	4	5
36-I can facilitate intercultural understanding by using technology.	1	2	3	4	5

APPENDIX 6. Interview Protocol

Interview Protocol

The purpose of this interview is to gather in-depth data about your experiences as a Turkish EFL (English as a Foreign Language) prep school teacher working at a state university and your application of Technological Pedagogical Content Knowledge (TPACK).

A. First Question for all interview participants

1. Do you use technological tools in your classrooms? If yes, what do you use? How do you use them? If no, Why don't you use technological tools in your teaching?

B. Questions to teachers with high TPACK levels

Since your TPACK levels are high, I would like to ask a few questions about that.Why do you think that you know more on technology and technology use in the language classroom compared to other EFL teachers?

a) How did you acquire this knowledge of technology and how to use it to teach English?

b) What kinds of tools or resources did you employ to achieve this knowledge?

C. Questions for teachers with low TPACK Levels

Why do you think some Turkish EFL in-service teachers do not have much knowledge on technology and technology use in the language classroom?

a) In your opinion, what factors contribute to low levels of knowledge on technology

and technology use in the language classroom among Turkish EFL prep school teachers?

b) Are there any challenges or barriers that prevent Turkish EFL prep school teachers from developing knowledge on technology and technology use in the language classroom?

D. Questions for all interview participants

How has your personal belief in your own abilities influenced your motivation and willingness to explore and incorporate new technologies in your EFL teaching practices?

a) Could you provide an example of a specific instance where your personal belief in your own abilities played a significant role in your motivation to engage with technology? How did it impact your teaching approach?

b) On the other hand, can you recall a time when your your personal belief in your own abilities posed a challenge to your motivation to use technology? What factors contributed to this reluctance?

Within the context of a state university, based on your experiences, what institutional support or policies do you believe would be most effective in enhancing Turkish EFL prep school teachers' personal belief in his/her own abilities and knowledge on technology and technology use in the language classroom?

a) Can you provide specific recommendations for resources, training programs, or mentorship opportunities that would help teachers develop personal belief in theirown abilities and knowledge on technology and technology use in the language

classroom?

b) From your perspective, what changes, if any, should be implemented at the institutional level to create an environment that encourages and supports technology integration in EFL education?

