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Research Article

Investigating the Association between Technological Pedagogical Content Knowledge (TPACK) and Self-Efficacy among Turkish EFL Prep School Teachers

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Abstract: The intent of this research was to examine the link between self-efficacy beliefs and knowledge domains of TPACK for 86 Turkish EFL (English as Foreign Language) preparatory school teachers at two state-owned universities in Türkiye. It also aimed to uncover whether there was any substantial variation in their self-efficacy beliefs and knowledge domains of TPACK according to gender, teaching experience, and perceived language proficiency. The study employs descriptive statistics on self-efficacy beliefs and knowledge domains of TPACK, as well as Spearman Correlation analysis and Mann Whitney U test for data analysis. The research disclosed a positive connection between self-efficacy and TPACK of EFL teachers, finding that Technological Pedagogical Knowledge positively correlates with Efficacy in Social Adaptation (ESA) and Core Efficacy (CE). Efficacy in Teaching and Correcting Language Concepts (ETCLC) showed a moderate link with Content Knowledge (CK), while a positive association existed between ESA and Teaching Content Knowledge (TCK). Efficacy in Classroom Managements and Remedial Actions (ECMRA) had negative associations with Content Knowledge (CK) and Technological Knowledge (TK) as well as Technological Pedagogical Knowledge (TPK), and Pedagogical Knowledge (PK). The high average scores for each TPACK dimension indicated the teachers' moderate to high self-efficacy. There was a significant disparity between gender categories in TK and PCK, with females typically outperforming males. No major distinctions were found associated with teachers' degree of experience regarding TPACK components. Regarding proficiency, there were notable differences between teachers at C1 and C2 level in all TPACK levels except for TK.

Keywords: EFL, Prep School Teaching, Self-Efficacy, TPACK.

1. Introduction

Within the contemporary digital era, technology has become essential in instruction. To show competency, educators need a wide range of technological integration skills (EAQUALS, 2016). Proficiency in this area demands knowledge of many software packages and devices (Almuhammadi, 2024). The current technologically sophisticated environment has prompted the Ministry of Education to create a new framework aiming to enhance students' digital literacy (MEB, 2024), therefore, it is critical for educators to have a full grasp of technology to maximize even young students' learning experience (Özer & Kuloğlu, 2023). Education is seeing an increase in the use of ICT. Nonetheless, Andrei (2017) emphasizes that language instructors should increase their awareness of the potential of technology, because of the dwindling numbers of teachers currently considering using it in their educational practices. One problem is that, beyond content presentation and motivation development, the way English as a Foreign Language educators utilized ICT remains ambiguous (Tai, 2015). It is commonly accepted that, to be hugely beneficial, technology's characteristics and capabilities should be consistent with the content and relevant ideas of education and instruction (Golonka et al., 2014; Mishra & Koehler, 2006; Valanides & Angeli, 2005). The framework of TPACK was established by Mishra and Koehler in 2006 and offers an intellectual framework for the integration of technology into the curriculum. Bandura's (1997) theory regarding educators' convictions about self-efficacy provides a framework for effectively integrating technology into pedagogical practices. However, while this theoretical background exists, there is little expertise concerning its utilization for foreign language training. Furthermore, as well as knowledge about technology, it is crucial to investigate whether English as a Foreign Language (EFL) instructors have the self-efficacy to properly incorporate this technology within their teaching.

Despite the key publications regarding TPACK in general education, as seen above, there was a lack of notable work in EFL settings until Abbitt's (2011) study. Abbitt's (2011) landmark study probed the relation between perceptions of their sense of self-efficacy concerning TPACK with the performance of pre-service teachers. Nonetheless, little follow-up study has been conducted in this area regarding EFL teachers in Turkish prep schools. The outbreak of COVID-19 pointed out the urgency of matters. TPACK and self-efficacy have been widely studied in education, the outbreak of COVID 19 proved to be a watershed (Chen & Hsu, 2021; Mourlam et al., 2022). Considering TPACK and self-efficacy in the Turkish higher education context the purpose of this research is to examine the relationship between self-efficacy beliefs and TPACK aspects among Prep School EFL teachers at two state colleges in western Türkiye.

1.1. Literature Review

1.1.1. Self-efficacy

Self-efficacy, as articulated in Bandura's Social Cognitive Theory (1977) and Rotter's Locus of Control (1966), denotes the instructor's belief within his/her ability to accomplish specific educational tasks to a defined standard in each context (Dellinger et al., 2008). During the early phases of teacher effectiveness research, an important theoretical approach was constructed around Rotter's Locus of Control (Rotter, 1966). This approach stressed the influence of self-efficacy on effectiveness. Rotter's psychological theory proposes that an individual's perception of control over life events has a substantial influence on their behavior and well-being. This theory categorizes control into two distinct categories: internal locus of control and external locus of control; those possessing the former see themselves as the major drivers of their actions and outcomes.

External locus of control, on the other hand, refers to an individual's belief that external factors such as luck, fortune, or the actions of others have a substantial impact on their conduct. Expanding this idea, Bandura's Social Cognitive Theory (1977) reveals that efficacy is a vital component, i.e., the concept of human agency is fundamental in theoretical frameworks. Personal

agency refers to an individual's capacity to influence and control events and circumstances in their lives. This concept points out that individuals may exert control over their behaviors, activity level, and resilience in the face of setbacks.

The terms 'self-efficacy, teacher efficacy, and effectiveness have been interchangeably used to describe this phenomenon. Teachers form their self-efficacy beliefs by evaluating their teaching practices, which are impacted by environmental elements such as teaching materials, collegiality, and pupils (Phan & Locke, 2015; Tschannen-Moran et al. 1998). Instructors build opinions on self-efficacy through active mastery experiences, vicarious experiences, verbal persuasion as well as physiological and emotional states (Bandura, 1997).

Regarding self-efficacy, individual attributes, including gender, educational level, and professional experience, all influence teacher effectiveness. In addition to this, teacher diversity has been proven to be an essential factor in educational equality. Continued professional growth is required for instructors to keep current with the latest research and instructional practices. (Guskey, 1988). Different researchers have different emphases regarding self-efficacy: Moafian and Ghanizadeh (2009) saw emotional intelligence as a crucial factor in language learning (Rastegar & Memarpeur, 2009), while perceived proficiency in language was concentrated by Chacon (2005) along with other scholars in later years (Choi & Lee, 2016; Eslami & Fatahi, 2008; Yilmaz, 2011) Approaches taken are also different: Eslami and Fatahi (2008) and Nishino (2012) focus on the role of communicative-based procedures of education, whereas Babaei and Abednia (2016) emphasize the need for a reflective approach to teaching. Besides, Külekçi and Ata (2019) underpin that the culture involvement in language teaching which is aligned with other skills and teaching methodologies should be taken into consideration. Goker (2006) promotes peer collaboration, while Liaw (2009) and Wyatt (2010) highlight the value of group discussion. Cabaroğlu (2014) explores engagement in action research, whereas Brannan and Bleistein (2012) emphasize the importance of support, particularly from colleagues. Faez and Valeo (2012) stress the importance of teacher training in promoting efficacy development, while Hoy and Woolfolk (1993) look more generally at the educational environment and school culture. Veisi et al. (2015) believe that teachers' self-empowerment is critical, however Zonoubi et al. (2017) and Karimi (2011) underline the necessity of institutionally provided professional development programs. Khezerlou (2013) and Klassen and Chiu (2010) investigated the significance of job happiness on self-efficacy. As for Turkish EFL context, Ortaçtepe (2006), Mede (2009), Tırfarlıoğlu and Ulusoy (2012) conducted studies in self-efficacy of EFL instructors. Examining Turkish EFL instructors to establish the correlation between personal factors, perceived self-efficacy, social support and burnout, Mede (2009) found that self-efficacy within social networks is a dependable predictor of burnout components. Inadequate support from peers may result in increased emotional fatigue and a feeling of alienation among educators. Conversely, when educators seek further support from their administrators, they are more likely to feel a connection with their students and a reduced sense of accomplishment in their professional duties. From a communicative lens, Ortaçtepe (2006), examining the relationship between effectiveness perceptions of Turkish EFL instructors and their implementation of Communicative Language Teaching (CLT), demonstrated a significant link between teacher efficacy and the application of Communicative Language Teaching. Moreover, Tilfarlioğlu and Ulusoy (2012) found that no notable disparity was noted for the degree of self-efficacy about classroom management in English as a Foreign Language (EFL) communication between secondary and high school English teachers.

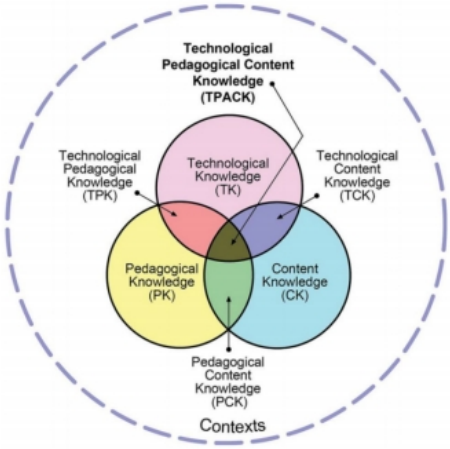
1.1.2. TPACK

Shulman established the TPACK framework in 1986, which blends content, pedagogical, and technological expertise to produce a complete approach to teaching. This encompasses pedagogical content knowledge (PCK), technical content knowledge (TCK), and technological pedagogical knowledge (TPK). The introduction of technology has transformed education, resulting in the development of Technological Pedagogical Content Knowledge (TPCK). Koehler

and Mishra (2006) created a linked framework that emphasizes teachers' competencies in this area (Fig 1.), which seeks to amalgamate technology with pedagogical and discipline-specific proficiency.

Figure 1

Technological Pedagogical Content Knowledge framework. Adapted with the publisher's consent, © 2012 by tpack.org.



TPACK has been frequently employed as a tool to assess instructors' skill in technology integration, to emphasize the utilization of technology in the classroom, to understand how instructors perceive technology, and to comprehend teachers' rationales for using specific instructional techniques (Chai et al., 2013). Teaching experience was found influential on TPACK development in a study that self-report measures were employed with such qualitative instruments as open-ended questionnaires, performance evaluations, interviews, and observations (Wang et al., 2018). Specifically, more experienced teachers typically express less confidence in their overall TPACK, especially in domains encompassing game-based TPACK (Hsu et al., 2017), online knowledge for educational applications (Lee & Tsai, 2010), or constructivist-based TPACK (Koh et al., 2014). To elaborate, there is a negative correlation between a teacher's level of experience and Components of TPACK including Technological Knowledge (TK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), and Pedagogical Content Knowledge (TPCK) according to the study of Roig-Vila et al. (2015). Freshmen instructors frequently lack confidence in their knowing of the topic matter (content knowledge) and the capacity to use effective teaching methods (Jang & Chang, 2016; Jang & Tsai, 2012), but confidence in their pedagogical content knowledge (PCK) grows with expertise. Surprisingly, Saudelli & Ciampa (2016) found that seasoned educators may be less confident in their technological knowledge (TK) than their younger, less experienced counterparts; even so, they show a greater willingness to use technology in their instruction.

Regarding gender, Koh et al. (2014) and Roig-Villa et al. (2015) found that males have better problem-solving abilities, whereas females have better language skills. Furthermore, research has shown that female educators are more confident in their educational abilities than male educators (Lin et al., 2013). Certain studies indicated an absence of significant gender disparities in technological pedagogical content knowledge (TPACK), while other research revealed that male educators exhibit greater confidence in their content knowledge (CK), although demonstrate less assurance in pedagogical representation and methodologies (PK). These differences are supported by two investigations, one by Jang and Chang (2016) and the other by Liu, Zhang, and Wang

(2015), which suggest that variations in gender gaps in TPACK may relate to specific areas of knowledge and instructional methodologies.

Regarding age, the younger teachers often regarded their technological skills (TK) more favorably, whereas their perceptions of teaching methods (PK) and subject matter expertise (CK) were less favorable (Liu, et al., 2015). Another result is that that older teachers tend to feel less confident in TK (Kazu & Erten, 2014), corroborated by Hsu et al. (2017), but regarding PCK, Kazu and Erten (2014) discovered that more experienced teachers exhibit greater confidence.

The link between technology integration self-efficacy (TISE) and technological pedagogical content knowledge (TPACK) has been extensively researched over the past few years. Zeng, Wang, and Li (2022) analyzed 28 trials and found a substantial correlation ($r = 0.607$, $p < 0.001$) between TISE and TPACK. It also demonstrates that those more assured in their abilities to accept technology are more likely to have an extensive awareness of the intricate interconnections among technology, education, and content. In his study of 197 future teachers, Nathan (2009) observed a slight the association between technology integration self-efficacy beliefs (TISE) and technology integration competency levels (TPACK)), while a decade later, Birisci and Kul (2019) discovered a much stronger positive relationship.

The following research questions are to be answered in the current investigation:

1) What are the TPACK levels of Turkish EFL prep school teachers at state universities?
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 preparatory school teachers and their knowledge domains of TPACK?
4) Do Turkish EFL preparatory school teachers' TPACK skills differ significantly according to gender, teaching experience and perceived language proficiency?
5) Does Turkish EFL prep school teachers' self-efficacy differ significantly according to gender, teaching experience and perceived language proficiency?

2. Method

2.1. Research Design

The current research reports on the quantitative component of an explanatory sequential mixed methods design (Creswell, 2012) in the first author's Ph.D. dissertation. Initially, quantitative data was obtained via the EFL-TPACK and ELTEI scales, followed by the collection of qualitative data through semi-structured interviews (Greene, Caracelli, & Graham, 1989) to examine the correlation between TPACK competencies and self-efficacy levels among Turkish EFL instructors at two state universities in Türkiye.

2.2. Research Context

The current study was conducted in two prestigious public university English preparatory schools located in Türkiye, referred to as university A and B for confidentiality. University A has a greater capacity, accommodating around 2,500 students and one hundred twenty-five EFL instructors. The classrooms, which measure forty square meters, are equipped with technology and seating configurations conducive to learning. The institution offers teachers numerous opportunities for professional growth, such as seminars, training sessions, and conference attendance. University B has a smaller capacity, approximately one thousand and two hundred students and eighty EFL instructors. The campus setting is equally well-equipped and conducive to study. The institution also offers opportunities for professional growth and encourages staff collaboration.

Both institutions are in Western Türkiye. In both research environments, the campus buildings were modern and recently installed. The classrooms are well-lit and equipped with technological tools for instructors' use, including smartboards and head-on projectors. On campus, students and instructors enjoy free access to the internet. Furthermore, both campuses provide natural environments, which may be regarded as a beneficial factor in increasing psychological well-being. At both, the participants have special rooms accommodating 3 or 4 teachers for lesson preparation and conversation with their colleagues on schoolwork. They frequently use these for collaborative projects and joint meetings on lesson planning. While their routine meetings are held in these places, there are other venues for specialized workshops and training sessions to enhance their professional development. Moreover, conferences and seminars are provided to introduce them to new material or improve their pedagogical and content knowledge. In terms of support systems, academically qualified colleagues serve as an excellent resource for teachers, providing advice and assistance as needed. At one of the settings, the university provides extensive counseling services aimed at helping educators navigate issues in both their personal and professional lives. However, on one campus, participants encountered a demanding schedule due to a shortage of teaching staff, which led to an overwhelming workload and long class hours.

2.3. Participants

The current research involves eighty-six instructors of English as a Foreign Language employed at two state-owned universities' English preparatory schools. Convenience sampling was used for its ease and accessibility in recruiting (Miles & Huberman, 1994). In terms of the size of the sample, according to Fraenkel et al. (2012), at least fifty participants are required to test a relationship between two variables for correlation studies. The participants' ages range from 26 to 62 years old, with a mean age of 46 years. Regarding their gender, sixty-three were female, and twenty, male. Concerning their educational qualifications, fifty-six percent of the participants possessed a BA, twenty-nine percent held a Master of Arts, and fifteen percent attained a Ph.D. There were four-degree types: English Language Teaching (ELT), Teaching English to Speakers of Other Languages (TESOL), Translation, and Literature. As for the prior teaching backgrounds, forty-five percent worked at tertiary institutions, and thirty-one percent at schools, with twenty-four percent working at both.

2.4. Data Collection

The researcher applied to the university's Ethical Committee for approval and after that, to both universities for permission to collect data. Upon getting approvals, the quantitative data was collected using ELTEI and EFL-TPACK scales with eighty-six participants via face-to-face meetings. All the participants voluntarily agreed to participate. The scales were applied to fall term of 2023-2024 academic year.

2.5. Instruments

This study employed the EFL-TPACK scale (Bostancioğlu & Handley, 2018) to assess EFL instructors' TPACK levels and the ELTEI scale (Akbari & Tavassoli, 2014) to assess their self-efficacy.

2.5.1. EFL-TPACK Scale

Bostancıoğlu and Handley (2018) created a scale to assess the TPACK levels of EFL instructors. It consists of thirty-six items in total with seven sections: Technological Knowledge (TK, α=.86) with 6 items (e.g., I know how to use generic office applications (i.e. Word, PowerPoint, and Excel), Pedagogical Knowledge (PK, α=.89) with 4 items (e.g. I can assess student learning in multiple ways), Content Knowledge (CK, α=.90) with 5 items (e.g. I am familiar with the culture(s) of target language communities), Technological Content Knowledge (TCK, α=.87 with 6 items (e.g. I know about technologies that I can use to teach listening in English), Pedagogical

Content Knowledge (PCK, α=.89) with 3 items (e.g. I can identify linguistic problems experienced by learners (e.g. phonological, lexical or grammatical problems), Technological Pedagogical Knowledge (TPK, α=.89) with 6 items (e.g. I can engage students in solving authentic problems using digital technologies and resources) and Technological Pedagogical Content Knowledge (TPCK, α=.89) with 6 items (e.g. I can facilitate intercultural understanding by using technology).

2.5.2. ELTEI Scale

Akbari and Tavassoli (2014) constructed a scale based on Bandura's Socio-Cognitive Theory (1977); after interviewing 18 ELT instructors, they created scale categories which they used to assess the efficacy of 206 ELT teachers. The scale includes thirty-two items with seven components. The gist of components are as follows Efficacy in Classroom Management and Remedial Needs (ECMRA) includes8 items on effectively managing time, enforcing classroom rules, effectively addressing self-doubt, facilitating self-correction, and judiciously correcting inaccuracies in auditory and textual comprehension are crucial skills. Efficacy in Classroom Assessment and Materials (ECAMS) consists of five items on evaluating classroom performance, creating tests, creating materials, selecting textbooks, and utilizing extracurricular resources. Efficacy in Skill and Proficiency Adjustment (ESPA) includes seven items on assessing the level of teaching various skills such as speaking, reading, writing, listening, elementary, advanced, and intermediate levels. Efficacy in Teaching and Correcting Language Concepts (ETCLC)contains five items on teaching grammar, vocabulary, pronunciation, correcting language components, and correcting errors in speaking and writing. Efficacy in Age Adjustment (EAA) encompasses three items on teaching kids, adolescents, and adults. Efficacy in Social Adaptation (ESA) includes two items on discussing poverty and connecting instructional situations to real-world contexts. and Core Efficacy (CE) contains two items on influencing students' academic performance and planning. The Cronbach's alpha value of .83 indicates that the scale has good internal consistency and reliability.

2.6. Data Analysis

This section encompasses the inspection of missing data, the descriptive statistics of the study, procedures of normality check, and statistical tests used. First, missing data can be "a serious problem" (Ary et al., 2009, p. 380), therefore, a diagnostic test was run on IBM SPSS 22, and only one value was excluded. Thus, the final number of participants in the study remained eighty-six.

It is important to decide on the normality of the data, therefore the researchers conducted several tests. Normality tests were done to determine the distribution of normality of errors (Fraenkel et al., 2012). Skewness and kurtosis values, to determine the normality of errors, were used along with the Kolmogorov-Smirnov test results. Büyüköztürk (2018) advises that the ratio of skewness and kurtosis values to their corresponding standard errors should equal ±1.96. After the calculations for the skewness of the components, the following results were found: the quotients of TK (-4.24), PK (-2.70), CK (-3.58), TCK (2.15), PCK (-3.17), TPK (-1.17), and TPCK (-1.67), as well as the scores for Effectiveness in Classroom Management and Remedial Action (4.25), Assessment and Material Selection (2.69), Skill and Proficiency Adjustment (2.69), and Social Adaptation (2.69) The Kolmogorov-Smirnov test did not seem to range between ±1.96, indicating that the data was not normally distributed. Thus, nonparametric tests were used to answer the research questions. Following the descriptive statistics, Spearman rho was run to explore the possible relationships between TPACK and Self-efficacy, The Mann-Whitney U test was utilized for examination of the possible effects of gender, teaching experience and perceived language proficiency on TPACK skills and self-efficacy.

3. Results

3.1. RQ1: What are the TPACK Levels of Turkish EFL Prep School Teachers at State Universities Related to Components of Their TPACK?

To address research question 1, Descriptive statistical techniques were employed to characterize the number of participants, range, minimum and maximum numbers of TPACK components, mean standard deviation, and standard errors. Table 1 represents that the means of TK, PK, CK, TCK, PCK, TPK, and TPCK components are respectively 4.12, 4.38, 4.53, 4.19, 4.36, 3.93, and 3.87. The standard deviations of each dimension reveal a uniformity in the participants' evaluations, reflected in the ratings for each dimension, which range from 2 to 3.

Table 1

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	.08	.75
PK	86	2.00	3.00	5.00	4.38	.05	.52
CK	86	2.00	3.00	5.00	4.53	.05	.47
TCK	86	2.67	2.33	5.00	4.19	.07	.68
PCK	86	2.67	2.33	5.00	4.36	.05	.55
TPK	86	3.00	2.00	5.00	3.93	.08	.74
TPCK	86	3.00	2.00	5.00	3.87	.08	.82

Notes: Technological Knowledge is abbreviated to describe TK; Technological Pedagogical Knowledge is abbreviated for TPK; Pedagogical Content Knowledge is abbreviated as PCK; Pedagogical Knowledge is abbreviated as PK; Content Knowledge is abbreviated as CK; Technological Content Knowledge is abbreviated as TCK; and Technological Pedagogical Content Knowledge is abbreviated as TPCK.

Table 1 further shows minimal standard deviations for each dimension, suggesting only a small range of differences among participants. The score range for each category is between 2 and 3, demonstrating a confined distribution. While the lowest scores illustrate an inferior level of knowledge, the maximum scores of five across all dimensions reveal that certain individuals achieved high TPACK proficiency in every domain. The table data demonstrates that subjects exhibited remarkable competency in content knowledge (CK) within the Technological Pedagogical Content Knowledge (TPACK) paradigm, reaching a mean score of 4.53.

3.2. RQ2: What are The Self-Efficacy Levels of Turkish EFL Prep School Teachers at State Universities?

To address the second research question, Table 2 shows descriptive statistics representing number of participants, range, and minimum and maximum scores for self-efficacy.

Table 2

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	.05	.54
ECAMS	86	3.00	1.20	4.20	2.37	.06	.57
ESPA	86	3.00	1.20	4.20	2.37	.06	.57
ETCLC	86	3.20	1.60	4.80	3.50	.06	.57
EAA	86	3.33	1.00	4.33	2.55	.08	.79
ESA	86	4.00	1.00	5.00	3.75	.09	.90
Core Efficacy	86	2.50	2.50	5.00	3.79	.08	.79

Notes: ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA stands for Efficacy in Skill and Proficiency Adjustment; ETCLC stands for 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 2 demonstrates the range, minimum and maximum numbers, means, standard deviations, and standard errors of means of self-efficacy components across eighty-six participants. The mean scores of self-efficacy components are as follows: ECMRA and ECAMS had lower mean scores, 2.26 and 2.37, respectively, with higher scores for efficacy in teaching and correcting language components, efficacy in social adaptation, and core efficacy, with means of 3.50, 3.75, and 3.79, respectively. The mean findings across all criteria varied from 2.26 to 3.79, indicating a moderate to high degree of self-efficacy overall. The range of standard deviations, from 0.55 to 0.90, indicated a small degree of variability in self-efficacy across many factors. The majority reported moderate to high self-efficacy in classroom management, assessment, skill adaptation, and language teaching, while exhibiting lower self-efficacy in age adaptation and social engagement.

3.3. RQ3: What is the Relationship Between Self-Efficacy Beliefs of Turkish EFL Prep School Teachers and Their Knowledge Domains of TPACK?

To address the third research question, the researchers calculated the correlation between EFL instructors' self-efficacy components and TPACK knowledge domains. A non-parametric statistical test was used; Spearman's rank correlation, calculated through IBM SPSS 22.

Table 3

Spearman Correlation Coefficients (Rho)

	TK	PK	CK	TCK	PCK	TPK	TPCK	ECMRA	ECAMS	ESPA	ETLC	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	1.00	1				
ETLC	.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 stands for Efficacy in Skill and Proficiency Adjustment; ETCLC stands for Efficacy in Teaching and Correcting Language Concepts; EAA means Efficacy in Age Adjustment; ESA means Efficacy in Social Adaptation; and CE means Core Efficacy. Technological Knowledge is abbreviated to describe TK; Technological Pedagogical Knowledge is abbreviated for TPK; Pedagogical Content Knowledge is abbreviated as PCK; Pedagogical Knowledge is abbreviated as PK; Content Knowledge is abbreviated as CK; Technological Content Knowledge is abbreviated as TCK; and Technological Pedagogical Content Knowledge is abbreviated as TPCK.

According to Table 3, there was a significant correlation between Pedagogical Content Knowledge (PCK) and core Efficacy (0.53), indicating that enhanced Pedagogical Content Knowledge is associated with greater Core Efficacy. A correlation of 0.46 between Content Knowledge and Core Efficacy points out that subject matter expertise helps instructors develop a better core efficacy in the classroom. The same positive correlation was apparent in Pedagogical Knowledge and Core Efficacy, suggesting a link between having topic knowledge and knowing how to successfully transmit it to students. Teachers with good pedagogical abilities and a feeling of core efficacy are more likely to engage students, provide meaningful learning experiences, and build a healthy classroom atmosphere. In addition, Efficacy in Teaching and Correcting Language Concepts displayed a moderate connection (.33) with Technological Pedagogical Content

Knowledge. Technological Pedagogical Knowledge, on the other hand, had a favorable relationship with Efficacy in Social Adaptation (.25) and core efficacy (.49). Furthermore, a favorable link was found between Content Knowledge and other dimensions of self-efficacy; efficacy in Teaching and Correcting Language Concepts revealed a positive moderate link with Content Knowledge (.31 score) highlighting the relationship between subject matter competence and a teacher's confidence in certain areas.

Additionally, a 0.24 value indicated a low positive correlation between Efficacy in Social Adaptation and Technological Content Knowledge. This may indicate that teachers' TPACK may assist them in social adaptation. Furthermore, the same positive correlation was apparent between Technological Content Knowledge and Efficacy in Teaching and Correcting Language Concepts with 0.27, which may suggest that EFL instructors' Technological Content Knowledge increases along with their efficacy in correcting language concepts. There was a positive association between Technological Pedagogical Knowledge and Efficacy in Teaching and Correcting Language Concepts, with 0.28, indicating that Technological Pedagogical Knowledge may have a role in promoting instruction of the language; however, it does not show the same role in enhancing self-efficacy. In addition, Content Knowledge suggested a minimal relationship (.13) with Efficacy in Social Adaptation, leading to the inference that EFL instructors may feel more comfortable when able to tailor their methodologies to diverse cultural and social demands that may occur in the class.

Table 3 also reveals a negative association between TPACK components and self-efficacy among EFL prep school teachers, with Pedagogical Content Knowledge and Efficacy in Classroom Management and Remedial Action at -0.36. Efficacy in Classroom Management and Remedial Action had comparably negative associations with Technological Pedagogical Knowledge (-0.28), TK (-0.26), PK (-0.48), and CK (-0.39). Thus, teachers who focus very strongly on technology topic knowledge may feel less self-efficacious in classroom management, as shown by a significant negative connection (−0.31) between efficacy and remedial needs.

3.4. RQ4: Do Turkish EFL Prep School Teachers' TPACK Skills Differ Significantly According to Gender, Teaching Experience and Perceived Language Proficiency?

To address the fourth research question, Mann Whitney U test was used. Gender category is classified as female and male, and teaching experience into two categories: 25 years or less, and more than 25 years. According to the CEFR, perceived language competence is divided into three levels: B2, C1, and C2.

Table 4 shows descriptive statistics on gender, teaching experience and PLP. As can be seen, most (73.3%) are women. Additionally, the majority of the EFL teachers (62.8%) have more than 25 years of teaching experience. In terms of self-reported language competence, a considerable number claim C2 level, indicating a high degree of linguistic ability. The Mann Whitney U test was used to compare the means of TPACK components since the data is not normally distributed.

Among the seven TPACK skills, two differed according to gender. There was a statistically significant difference between genders in terms of their Technological Knowledge and Pedagogical Content Knowledge. Table 5 indicates that the p value (.007) is below the 0.05 significance level, meaning that the distribution of Technological Knowledge differs by gender category. The U value of 370.50 indicates a difference in the distribution of rankings between female and male lecturers. The Z-value of -2.70 indicates a significant impact magnitude. On the other hand, a r value of -0.30 implies a significant negative impact size. Similarly, the p-value (.03) is below 0.05 for Pedagogical Content Knowledge, indicating a significant gender difference. The U value of 427.500 indicates a discrepancy in the ranking distribution between females and males. The Z value of -2.13 indicates a modest impact size. The r value of -0.23 indicates a moderately negative impact size. No gender differences were found in PK, CK, TCK, TPK, and TPCK, but male teachers were found to outperform female teachers in Technological Knowledge and Pedagogical Content Knowledge.

Table 4

Descriptive Statistics on Turkish EFL Prep School Teachers

Category	Missing Data	n	%
Gender	3		
Male		20	23.3
Female		63	73.3
Teaching Experience	5		
≤25		54	62.8
>25		27	31.4
Perceived Language Proficiency	6		
B2		1	1.2
C1		16	18.6
C2		63	73.3

The second part of this question encompasses the teaching experience of EFL instructors. A nonparametric Mann-Whitney U test was used to compare those with 25 years of experience or less, and those with more than 25 years in terms of the distribution of means for TK, PK, CK, TCK, PCK, TPK, and TPCK.

Table 5

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

	N	U	Z	p	R	SE
TK	82	370.50	-2.70	.00	-0.30	92.08
PK	82	498.50	-1.33	.18	-0.15	91.30
CK	82	513.50	-1.18	.23	-0.13	90.16
TCK	82	455.50	-1.79	.07	-0.20	91.75
PCK	82	427.50	-2.13	.03	-0.23	90.34
TPK	82	454.50	-1.79	.07	-0.20	92.10
TPCK	82	482.00	-1.49	.13	-0.17	92.22

Notes: Technological Knowledge is abbreviated to describe TK; Technological Pedagogical Knowledge is abbreviated for TPK; Pedagogical Content Knowledge is abbreviated as PCK; Pedagogical Knowledge is abbreviated as PK; Content Knowledge is abbreviated as CK; Technological Content Knowledge is abbreviated as TCK; and Technological Pedagogical Content Knowledge is abbreviated as TPCK.

The second part of this question encompasses the teaching experience of EFL instructors. A nonparametric Mann-Whitney U test was used to compare those with 25 years of experience or less, and those with more than 25 years in terms of the distribution of means for TK, PK, CK, TCK, PCK, TPK, and TPCK.

Table 6

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

TPACK Components	N	U	Z	p	r	SE
TK	81	525.00	-2.05	.04	-.24	99.22
PK	81	709.00	-.20	.83	-.02	98.35
CK	81	752.00	.23	.81	.02	97.08
TCK	81	642.00	-.88	.37	-.10	98.86
PCK	81	768.00	-.40	.68	-.04	97.27
TPK	81	699.00	-.30	.76	-.03	99.26
TPCK	81	615.50	-1.14	.25	-.13	99.41

Notes: The significance level is .05. The abbreviations are as follows: Technological Knowledge is abbreviated to describe TK; Technological Pedagogical Knowledge is abbreviated for TPK; Pedagogical Content Knowledge is abbreviated as PCK; Pedagogical Knowledge is abbreviated as PK; Content Knowledge is abbreviated as CK; Technological Content Knowledge is abbreviated as TCK; and Technological Pedagogical Content Knowledge is abbreviated as TPCK.

As can be seen in Table 6, among seven TPACK skills, only one was significantly impacted by teaching experience; the statistical significance level for Technological Knowledge is .040, under the threshold of.05. This indicated that teachers' Technological Knowledge changed according to experience. Technological Knowledge (TK) diminishes with greater experience. In other words, the more experienced exhibited lower levels of knowledge than the less experienced. The third part of RQ4 is on the perceived language competency of EFL prep school instructors. The Common European Framework of Reference for Language classification of language levels was used by participants to self-assess proficiency.

Table 7

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

		Frequency	Percent
Valid	CEFR Level B2 on Perceived General English Level	1	1.2
	CEFR Level C1 on Perceived General English Level	16	18.6
	CEFR Level C2 on Perceived General Language Level	63	73.3
	Total	80	93.0
Missing		6	7.0
Total		86	100

Notes: CEFR means Common European Framework for Reference

Table 7 shows that there is 1 EFL instructor at B2 level, 16 at C1 level, and 63 at C2 level. Based on their perceived general language ability, they were divided into two groups: C1 and C2.

Table 8

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

Notes: Technological Knowledge is abbreviated to describe TK; Technological Pedagogical Knowledge is abbreviated for TPK; Pedagogical Content Knowledge is abbreviated as PCK; Pedagogical Knowledge is abbreviated as PK; Content Knowledge is abbreviated as CK; Technological Content Knowledge is abbreviated as TCK; and Technological Pedagogical Content Knowledge is abbreviated as TPCK.

The Mann-Whitney U test was employed to compare the means of TK, PK, CK, TCK, PCK, TPK, and TPCK in relation to EFL instructors' perceived language competency. Table 8 demonstrated substantial disparities between the two groups in 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 characteristics, those who reported C2 language competence had significantly higher mean scores, i.e., higher levels of language skill are associated with a deeper understanding and absorption of the different TPACK components. However, there was no statistically significant difference between the two groups' perceived levels of technical knowledge (TK, p=.239). This shows that technical knowledge, an important TPACK component, may be less impacted by language skills than the other components.

3.5. RQ5: Does Turkish EFL Prep School Teachers' Self-Efficacy Differ Significantly According to Gender, Teaching Experience and Perceived Language Proficiency?

To answer this question, the Mann-Whitney U test was employed. Gender is categorized as male or female, teaching experience as those with 25 years or less experience, or those with more than 25 years, and EFL instructors' perceptions of language proficiency at the C1 or C2 levels.

As shown in Table 9, there is no distinction across gender regarding the components of self-efficacy these instructors according to 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 (0.18), Efficacy in Age Adjustment (0.12), Efficacy in Social Adaptation (0.22), and Core Efficacy (0.38). To address the second part of this question, the Mann Whitney U test was used to compare means of self-efficacy levels for the two length of experience categories.

Table 10 shows no variation in the components of self-efficacy of EFL prep school instructors across teaching experience, according to the p values of Efficacy in Classroom Management and Remedial Action (0.37), Efficacy in Classroom Assessment and Materials (0.55), Efficacy in Skill and Proficiency Adjustment (0.55), Efficacy in Teaching and Correcting Language Components (0.082), Efficacy in Age Adjustment (0.29), and Efficacy in Social Adaptation (0.07) and Core Efficacy (0.09). The Mann Whitney U test was utilized to compare the two language proficiency groups on the means of self-efficacy levels.

Table 9

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 stands for Efficacy in Skill and Proficiency Adjustment; ETCLC stands for 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 10

Comparing Means of Self-efficacy Components on Teaching Experience

Self-efficacy	N	U	Z	p	r	SE
ECMRA	81	641.00	-.86	0.37	.09	99.43
ECAM	81	670.00	-.59	0.55	.06	99.00
ESPA	81	670.00	-.59	0.55	.06	99.00
ETCLC	81	901.00	1.73	0.08	.19	98.90
EAA	81	833.00	1.05	0.29	0.11	98.90
ESA	81	906.50	1.81	0.07	.20	98.07
Core Efficacy	81	891.50	1.66	0.09	.18	97.85

Notes: ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA stands for Efficacy in Skill and Proficiency Adjustment; ETCLC stands for 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 10 shows no variation in the components of self-efficacy of EFL prep school instructors across teaching experience, according to the p values of Efficacy in Classroom Management and Remedial Action (0.37), Efficacy in Classroom Assessment and Materials (0.55), Efficacy in Skill and Proficiency Adjustment (0.55), Efficacy in Teaching and Correcting Language Components (0.082), Efficacy in Age Adjustment (0.29), and Efficacy in Social Adaptation (0.07) and Core Efficacy (0.09). The Mann Whitney U test was utilized to compare the two language proficiency groups on the means of self-efficacy levels.

Table 11

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: ECMRA stands for Efficacy in Classroom Management and Remedial Needs; ECAMS stands for Efficacy in Classroom Assessment and Materials; ESPA stands for Efficacy in Skill and Proficiency Adjustment; ETCLC stands for 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 11 shows the results of Mann-Whitney U tests comparing the self -reported C1 level and C2 level groups in terms of the means of different self-efficacy components. The research results demonstrated a substantial and significant difference in the two groups only on perceived self-efficacy in classroom management and remedial action (ECMRA). The C1 level group has significantly higher mean scores in this dimension compared to the C2 level group.

4. Discussion

The current study presents the quantitative data results taken from the researcher's PhD dissertation, which followed a mixed method design. The study's descriptive results indicate notably high (4.12 to 4.53) average scores for each TPACK dimension—Technological Knowledge, Pedagogical Knowledge, Content Knowledge, and TPACK. The average of all self-efficacy components varied from 2.26 to 3.79, signifying a moderate to elevated level of self-efficacy overall. There is a significant disparity between gender categories regarding Technological Knowledge and Pedagogical Content Knowledge, with males typically outperforming females, but no such disparity was found for the domains of PK, CK, TCK, TPK, or TPCK, no major distinctions were identified between the experienced and less experienced groups regarding TPACK components such as PK, CK, TCK, PCK, TPK, and TPCK. C1 and C2 level teachers exhibited significant differences in all areas except for Technological Knowledge. Gender and length of teaching experience had no significant impact on self-efficacy levels. However, there was difference between perceived C1 and C2 level teachers in Efficacy in Classroom Management and Remedial Actions. No significant differences were found between the two language level groups in any other of the self-efficacy components.

The gender aspect concerning Content Knowledge conflicted with Jang and Chang (2016)'s findings, that male teachers are often more confident in their subject matter knowledge (CK), but less confident in instructional representation and techniques (PK). The study by Liu, Zhang, and Wang (2015) additionally found that male teachers rated themselves lower on PCK. Our finding that TK and Pedagogical Content Knowledge differed significantly according to gender was not observed in Wang's (2022) study, which found no significant differences for any TPACK component. Like the results in our study that Technological Knowledge was affected by gender, Koh et al. (2010) found significant gender differences in this area, as confirmed by Solak and Çakır (2014).

Teaching experience did not provide meaningful differentiation on any type of knowledge except for Technical Knowledge. This corroborates Roig-Vila et al.'s study (2015) that increased teaching experience may cause a decline in confidence when it comes to employing technology in teaching approaches (Technological Knowledge). However, Roig-Vila et al. contradict our other findings regarding the results on Technological Pedagogical Knowledge, Technological Content Knowledge and TPACK. Regarding overall TPACK skill, Lee, and Tsai (2010), Koh et al. (2014) and Hsu et al. (2017) found results contradictory to current study, namely, that teachers with substantial teaching experience may exhibit lower self-efficacy in their total Technological Pedagogical Content Knowledge (TPCK). Even if it might be expected that inexperienced instructors have generally lower levels of confidence than experienced teachers in subject matter understanding (content knowledge) and effective use of teaching methods (pedagogical knowledge) (Jang & Chang, 2016; Jang & Tsai, 2012), our study in fact found no such relationship. Again, in contrast to results of current study, Cheng (2017) and Wang (2022) found that TPACK scores increase with teachers' experience increases. Regarding perceived language proficiency, the current study showed a meaningful difference across perceived language proficiency in all components of TPACK except Technological Knowledge. Some studies (e.g., Veisi et al., 2015) pointed out that there is a statically difference between self-efficacy and gender, but this difference was not found in other studies, (e.g., Sarfo et al, 2017), including the current one. Specifically, regarding ICT-self-efficacy, Šabić et al. found that the impact of gender is limited.

The current study found that there is no difference between the more (25+ year) and less experienced groups. This conflicts with Guskey (1984, 1988) and Pajares (1992), who found that experienced instructors are more inclined to believe in their own efficacy as educators. Chacon's (2005) study corroborated this hypothesis, discovering that years of teaching was connected to perceived efficacy for engagement, instructional tactics, and management. This shows that the longer the profession, the more competent teachers are in engaging pupils, implementing successful instructional practices, and regulating classroom conduct. Tschannen-Moran and Hoy (2007) found

a significant difference between novice and career teachers regarding Efficacy of Instructional Strategies and Efficacy of Classroom Management, but no difference at Efficacy of Student Engagement. Ghasembolat and Hashim (2013) found that as educators gain experience, they become more adept at engaging students than newcomers. Although Soodak and Podell's (1997) study found no significant shifts in instructors' judgments over time, it is usually assumed that experienced teachers tend to have stable beliefs about their talents.

We found no statistical difference between Core Efficacies of instructors who perceived themselves C1 and the ones with C2, contrasting with Eslami and Fatahi (2008)'s suggestion of a positive link between teachers' perceived self-efficacy and self-reported English proficiency (Chacon, 2002, 2005; Ghasembolat & Hashim, 2013; Marashi & Azizi-Nassab, 2018; Shim, 2001, Yılmaz, 2011). Concerning classroom management skills, our study suggested that the two groups (C1-C2) differed significantly in terms of Efficacy in Classroom Management and Remedial Actions, however, neither Marashi and Azizi-Nassab (2018) nor Abdollahzadeh and Rezeaian (2011) found such difference. On the other hand, Yang and Yang (2025) conducted a qualitative study on unveiling the factors of six EFL teachers at higher education. One of the six themes extracted through thematic analysis was personal literacy which was described to entail self-efficacy of teachers and language proficiency. Drawing on the participants' comment that recognized their deficiency in proficiency of English, e.g., speaking as a barrier against integrating innovative technology into their instruction. More elaborately, Cambridge English Teaching Framework (UCLES, 2019) included five important categories for EFL teachers at four stages, (foundation, developing, proficient and expert) language ability and teaching, learning and assessment are the main categories. In the language ability, being proficient at the classroom language was described as exhibiting the practical proficiency to fluently and precisely employ classroom language (including introducing lesson topics, providing activity instructions, managing the classroom, elucidating language concepts, assisting students with learning difficulties, and discussing learners' progress) and to utilize this language effectively across various classroom events and contexts. Moreover, being proficient was recognized as Language models referring to the practical capacity to furnish precise examples of the language concepts being instructed (such as model sentences) to elucidate the form, meaning, usage, and pronunciation of the target language. And being proficient requires you to recognize learner errors. Based on those remarks and our study's significant differences between C1 and C2 level teachers across Efficacy in Classroom Management and Remedial Actions, it can be concluded that there was a difference between perceived C1 level and C2 level in their belief of efficacy in Classroom Management and Remedial Actions. Although C1 had a superior mean rank than C2 level, this could be attributed to such diverse academic background as other than ELT-specific programs accounting for 39.5 percent of all participants. Besides, this categorization was based on their perceived language levels.

The present research examined the association between EFL instructors' self-efficacy and TPACK competencies, particularly whether there is meaningful difference in self-efficacy components and TPACK components across gender, teaching experience and perceived language proficiency. The findings point to a positive relationship between self-efficacy and TPACK in EFL, with Technological Pedagogical Knowledge having a favorable relationship with Efficacy in Social Adaptation and Core Efficacy. Efficacy in Teaching and Correcting Language Components had a positive moderate link with Content Knowledge, indicating that content knowledge increased a teacher's confidence in certain aspects of efficacy. Content Knowledge has a minimal relationship with Efficacy in Social Adaptation, suggesting EFL instructors in general may feel comfortable tailoring their methodologies to cultural and social demands, regardless of content knowledge. Expertise in subject matter helps develop better core efficacy in the classroom, as does PK, indicating the importance of not only having topic knowledge, but also of knowing how to successfully transmit that information. Teachers with good pedagogical abilities and a feeling of core efficacy are more likely to engage students, provide meaningful learning experiences, and build a healthy classroom atmosphere. Moreover, the study reveals a significant correlation between Pedagogical Content Knowledge (PCK) and core efficacy and between Efficacy in Social

Adaptation and Technological Content Knowledge (moderate), between Technological Content Knowledge and Efficacy in Teaching and Correcting Language Components, and between Technological Pedagogical Knowledge and Efficacy in Teaching and Correcting Language Components. The study also identified a -0.36 association between TPACK components and self-efficacy in EFL Prep school educators. Efficacy in Classroom Management and Remedial Actions also showed negative associations with Technological Pedagogical Knowledge, Technological Knowledge, Pedagogical Knowledge, and Content Knowledge. This highlights the risk that, if instructors focus too much on utilizing technology, it may undermine their self-efficacy in classroom management. The school environment, encompassing issues including resource scarcity, administrative assistance, and culture at the institution, might affect participants' beliefs and practices during data gathering. Participants might prioritize classroom management to secure order and safety at the expense of implementing more innovative and student-centered approaches that require a deeper understanding of TPK, TK, PK and CK. Participants might have also perceived technology as potential distraction, somehow explaining, requiring a further study, indicating a lack of TK and likely a lack of understanding how to integrate technology into instruction (TPK). They might have also relied on teacher-centered instruction, suggesting a limited understanding of student-centered and differentiated instruction which are key to PK. Or they may have neglected individual needs and learner styles of their students, thus hindering the ability to effectively implement strategies that cater to diverse learners (PK).

5. Conclusion

This study presented the quantitative findings of the researcher's PhD dissertation. The objective was to examine the correlation between the self-efficacy of EFL prep school teachers and TPACK components, while also detailing how their self-efficacy and TPACK components are associated with the factors of gender, teaching experience, and perceived language proficiency. This study's findings underscored the potential connections between EFL-TPACK components and ELT self-efficacy, offering policymakers, teacher trainers, and institutional leaders in Türkiye insights into underexplored aspects of EFL, including classroom management, subject expertise, technology integration, assessment, and language correction. Subsequent research may concentrate on an experimental examination of the many elements of self-efficacy and TPACK. Additionally, due to the small sample size (86 participants), the generalizability of these findings is limited. Future research should replicate this study with a larger sample size to confirm and extend these results across a broader population of Turkish EFL teachers. Additionally, this study needs a more detailed qualitative analysis due to the negative correlations. For this reason, qualitative studies can be made to detail the relationships between classroom management and the dimensions of technological pedagogical domain knowledge.

Ethics Committee Approval

The authors of the study confirm that the ethical permission was provided by Dokuz Eylul University, Ethical Committee (date of confirmation: July 25, 2023). Permission for the study was given by University A (23.08.2023) and B (18.08.2023). Participants were provided with written informed consent. Participants completed consent papers voluntarily and willingly.

References

Abbitt, J. T. (2011). The influence of teacher self-efficacy on technology integration. *Journal of Research on Technology in Education, 43*(4), 341-366.

Abdollahzadeh, E., & Rezaeian, S. (2011). An investigation of collective teacher efficacy and teacher self-efficacy subscales in the EFL context of Iran. *Journal of Research in Applied Linguistics, 2*(1), 14-28.

Akbari, R., & Tavassoli, K. (2014). Developing an ELT context-specific teacher efficacy instrument. *RELC journal, 45*(1), 27-50.

Almuhammadi, A. (2024). Examining the Integration of 21st century skills in efl instruction: A case study of selected Saudi universities. *English Language Teaching*, *17*(6), 45-54. https://doi.org/10.5539/elt.v17n6p45

Ary, D., Jacobs, LC., Sorensen, C. & Razavieh, A. (2009*). Introduction to research in education* (8th Ed). Cengage Learning.

Babaei, M., & Abednia, A. (2016). Reflective teaching and self-efficacy beliefs: Exploring relationships in the context of teaching EFL in Iran. *Australian Journal of Teacher Education, 41,* 1–26.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* W. H. Freeman

Birisci, S., & Kul, E. (2019). Predictors of technology integration self-efficacy beliefs of preservice teachers. *Contemporary Educational Technology, 10*(1), 75-93.

Bostancıoğlu, A., & Handley, Z. (2018). Developing and validating a questionnaire for evaluating the EFL 'Total PACKage': Technological Pedagogical Content Knowledge (TPACK) for English as a Foreign Language (EFL). *Computer Assisted Language Learning, 31*(5-6), 572-598.

Brannan, D., & Bleistein, T. (2012). Novice ESOL teachers' perceptions of social support networks. *Tesol Quarterly*, *46*(3), 519-541.

Büyüköztürk, Ş. (2018*). Sosyal bilimler için veri analizi el kitabı.* Pegem Atıf İndeksi, 001-214.

Cabaroğlu, N. (2014). Professional development through action research: Impact on self-efficacy. *System, 44*, 79-88.

Chacón, C. T. (2002). *Teachers' sense of efficacy and selected characteristics of selected English as a foreign language Venezuelan middle school teachers* [Unpublished doctoral dissertation]. The Ohio State University.

Chacón, C. T. (2005). Teachers' perceived efficacy among English as a foreign language teachers in middle schools in Venezuela. *Teaching and Teacher Education, 21*, 257-272

Chai, C. S., Koh, J. H. L., & Tsai, C. C. (2010). Facilitating preservice teachers' development of technological, pedagogical, and content knowledge (TPACK*). Journal of Educational Technology & Society, 13*(4), 63-73.

Chen, Y. J., & Hsu, R. L. W. (2021). Understanding the difference of teachers' TLPACK before and during the COVID-19 pandemic: Evidence from two groups of teachers. *Sustainability, 13*(16), 8827.

Cheng, K. H. (2017). A survey of native language teachers' technological pedagogical and content knowledge (TPACK) in Taiwan. *Computer Assisted Language Learning, 30*(7), 692-708.

Choi, E., & Lee, J. (2016). Investigating the relationship of target language proficiency and self-efficacy among nonnative EFL teachers. *System, 58*, 49-63

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research.* Pearson Education, Incorporated.

Dellinger, A. M. B. (2001). A study of the measurement and sources of teachers' self and collective efficacy beliefs in professional learning environments. Louisiana State University and Agricultural & Mechanical College.

Eaquals. (2024). *The eaquals framework for language teacher training & development*. EAQUALS. https://www.eaquals.org/our-expertise/teacher-development/the-eaquals-framework-for-teacher-training-and-development/

Eslami, Z. R., & Fatahi, A. (2008). Teachers' Sense of Self-Efficacy, English Proficiency, and Instructional Strategies: A Study of Nonnative EFL Teachers in Iran. *Tesl-Ej, 11*(4), 1-19.

Faez, F., & Valeo, A. (2012). TESOL teacher education: Novice teachers' perceptions of their preparedness and efficacy in the classroom. *Tesol Quarterly, 46*(3), 450-471.

Fraenkel, J., Wallen, N., & Hyun, H. (2012). *How to design and evaluate research in education* (8th ed.). McGraw-Hill Education.

Ghasemboland, F., & Hashim, F. B. (2013). Teachers' self-efficacy beliefs and their English language proficiency: A study of nonnative EFL teachers in selected language centers. *Procedia-Social and Behavioral Sciences, 103,* 890-899.

Goker, S. D. (2006). Impact of peer coaching on self-efficacy and instructional skills in TEFL teacher education. *System, 34*(2), 239-254.

Golonka, E. M., Bowles, A. R., Richardson, D. L., & Freynik, S. (2014). Technologies for foreign language learning: A review of technology types and their effectiveness. *Computer Assisted Language Learning, 27*(1), 70-105.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis,* 11(3), 255-274.

Guskey, T. R. (1984). The influence of change in instructional effectiveness upon the affective characteristics of teachers. *American Educational Research Journal, 21*(2), 245-259.

Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. *Teaching and Teacher Education, 4*(1), 63-69.

Hoy, W. K., & Woolfolk, A. E. (1993). Teachers' sense of efficacy and the organizational health of schools. The elementary school journal, *93*(4), 355-372.

Hsu, C. Y., Tsai, M. J., Chang, Y. H., & Liang, J. C. (2017). Surveying in-service teachers' beliefs about game-based learning and perceptions of technological pedagogical and content knowledge of games. *Journal of Educational Technology & Society, 20*(1), 134-143.

Jang, S. J., & Chang, Y. (2016). Exploring the technical pedagogical and content knowledge (TPACK) of Taiwanese university physics instructors. *Australasian Journal of Educational Technology, 32*(1).

Jang, S. J., & Tsai, M. F. (2012). Exploring the TPACK of Taiwanese elementary mathematics and science teachers with respect to use of interactive whiteboards. *Computers & education, 59*(2), 327-338.

Kazu, I. Y., & Erten, P. (2014). Teachers' technological pedagogical content knowledge self-efficacies. *Journal of Education and Training Studies, 2*(2), 126-144.

Khezerlou, E. (2013). Teacher self-efficacy as a predictor of job burnout among Iranian and Turkish EFL teachers. *Procedia-Social and Behavioral Sciences, 70*, 1186-1194.

Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of educational Psychology, 102*(3), 741.

Koh, J. H. L., Chai, C. S., & Tsai, C. C. (2014). Demographic factors, TPACK constructs, and teachers' perceptions of constructivist-oriented TPACK. *Journal of educational technology & society, 17*(1), 185-196.

Külekçi, G., & Ata, M. (2019). An analysis of Turkish prospective efl teachers' views on the integration of target culture into the language classroom. *Journal of International Social Research, 12*(63), 832-845

Lee, M. H., & Tsai, C. C. (2010). Exploring teachers' perceived self-efficacy and technological pedagogical content knowledge with respect to educational use of the World wide web. *Instructional Science, 38*, 1-21.

Liaw, S. S. (2002). Understanding user perceptions of World- wide web environments. *Journal of Computer Assisted Learning, 18*(2), 137-148.

Lin, T.-C., Tsai, C.-C., Chai, C. S., & Lee, M.-H. (2013). Identifying science teachers' perceptions of technological pedagogical and content knowledge (TPACK). *Journal of Science Education and Technology, 22*, 325-336.

Liu, Q., Zhang, S., & Wang, Q. (2015). Surveying Chinese in-service K12 teachers' technology, pedagogy, and content knowledge. *Journal of Educational Computing Research, 53*(1), 55-74.

Marashi, H., & Azizi-Nassab, F. (2018). EFL teachers' language proficiency, classroom management, and self-efficacy. *International Journal of Foreign Language Teaching and Research, 6*(22), 89-102.

Mede, E. (2009). An analysis of relations among personal variables perceived self-efficacy and social support on burnout among Turkish EFL teachers. *İnönü Üniversitesi Eğitim Fakültesi Dergisi, 10*(2),39-52.

Miles, M., & Huberman, A. (1994). *Qualitative Data Analysis.* Sage.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017-1054.

Moafian, F., & Ghanizadeh, A. (2009). The relationship between Iranian EFL teachers' emotional intelligence and their self-efficacy in Language Institutes. *System, 37*(4), 708-718.

Mourlam, D. J., DeCino, D. A., Chesnut, S. R., Strouse, G. A., Los, R., & Newland, L. A. (2023). It's all relative: Changes in teachers' knowledge and instruction during COVID-19. *Journal of Digital Learning in Teacher Education, 39*(1), 41-56.

Nathan, E. J. (2009). *An examination of the relationship between preservice teachers' level of technology integration self-efficacy (TISE) and level of technological pedagogical content knowledge (TPACK)* [Unpublished doctoral dissertation]. University of Houston.

Ortaçtepe, D. (2006). *The relationship between teacher efficacy and professional development within the scope of an in-service teacher education program* [Master's thesis]. Boğaziçi University.

Özer, M., & Kuloğlu, A. (2023). The relationship between primary school teachers' perceptions of 21st century skills and digital literacy level. *Malaysian Online Journal of Educational Technology*, *11*(3), 173-183.

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of educational research, 62*(3), 307-332.

Phan, N. T. T., & Locke, T. (2015). Sources of self-efficacy of Vietnamese EFL teachers: A qualitative study. *Teaching and Teacher Education, 52*, 73-82.

Rastegar, M., & Memarpour, S. (2009). The relationship between emotional intelligence and self-efficacy among Iranian EFL teachers. *System, 37*(4), 700-707.

Roig-Vila, R., Mengual-Andrés, P., & Quinto-Medrano, P. (2015). Conocimientos tecnológicos, pedagógicos y disciplinares del profesorado de Primaria [Technological, pedagogical and disciplinary knowledge of primary school teachers]. *Comunicar, 23*(45), 151-159. https://doi.org/10.3916/C45-2015-16

Rotter, J. B. (1966). Generalized expectancies internal versus external control of reinforcement. *Psychological Monographs, 80*, 1-28.

Šabić, J., Baranović, B., & Rogošić, S. (2022). Teachers' self-efficacy for using information and communication technology: The interaction effect of gender and age. *Informatics in education, 21*(2), 353-373

Sarfo, F. K., Amankwah, F., & Konin, D. (2017). Computer self-efficacy among senior high school teachers in Ghana and the functionality of demographic variables on their computer self-efficacy. *Turkish Online Journal of Educational Technology-TOJET, 16*(1), 19-31.

Shim, J.W. (2001). *The efficacy beliefs of Korean teachers of English as a foreign language*. [Unpublished doctoral dissertation]. The Ohio State University.

Solak, E., & Çakır, R. (2014). Examining preservice efl teachers' TPACK competencies in Turkey. *Journal of educators online, 11*(2), 1-22.

Tai, S. J. D. (2015). From TPACK-in-action workshops to classrooms: CALL competency developed and integrated. *Language Learning & Technology, 19*(1), 139-164.

Tılfarlıoğlu, F. Y., & Ulusoy, S. (2012). Teachers' self-efficacy and classroom management in EFL classrooms. *Electronin Journal of Education Sciences, 1*(1), 37-57

Tschannen-Moran, M., Hoy, A. W., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of educational research, 68*(2), 202-248.

Tschannen-Moran, M., & Hoy, A. W. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and teacher Education, 23*(6), 944-956.

Türkiye Milli Eğitim Bakanlığı (MEB) (2024). Okuryazarlık Becerileri - Türkiye Yüzyılı Maarif Modeli [Digital Literacy Skills - Turkey Century Maarif Model]. *https://tymm.meb.gov.tr/beceriler/okuryazarlik-becerileri*

UCLES. (2019). Cambridge English Teaching Framework. *https://www.cambridgeenglish.org/teaching-english/professional-development/cambridge-english-teaching-framework/*

Valanides, N., & Angel, C. (2005). Learning by design as an approach for developing science teachers' ICT-related pedagogical content knowing. In R. Susan (Ed.), *International perspectives on teacher professional development: Changes influenced by politics, pedagogy and innovation* (pp. 79-101). Nova

Veisi, S., Azizifar, A., Gowhary, H., & Jamalinesari, A. (2015). The relationship between Iranian EFL teachers' empowerment and teachers' self-efficacy. *Procedia-Social and Behavioral Sciences, 185*, 437-445.

Wang, W., Schmidt-Crawford, D., & Jin, Y. (2018). Preservice teachers' TPACK development: A review of literature. *Journal of digital learning in teacher education, 34*(4*),* 234-258.

Wyatt, M. (2010). An English teacher's developing self-efficacy beliefs in using groupwork. *System, 38*(4), 603-613.

Yilmaz, C. (2011). Teachers' perceptions of self-efficacy, English proficiency, and instructional strategies. *Social Behavior and Personality: An International Journal, 39*(1), 91-100.

Zeng, Y., Wang, Y., & Li, S. (2022). The relationship between teachers' information technology integration self-efficacy and TPACK: A meta-analysis. *Frontiers in Psychology, 13*, 1091017.

Zonoubi, R., Rasekh, A. E., & Tavakoli, M. (2017). EFL teacher self-efficacy development in professional learning communities. *System, 66*, 1-12.