Melting the Content, Pedagogy and Technology in the Same Pot: Insights into EFL Instructors' TPACK Perceptions in Digital Era

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ARTICLE INFO	ABSTRACT
Keywords: *EFL instructors, technology in language teaching, TPACK* *DOI:* http://dx.doi.org/10.21093/ijeltal.v6i2.1096	*Digital era necessitates not only knowledge of content and teaching methods but also integration of technology in language instruction. Covid-19 pandemic has constituted one of the critical reasons that accelerated the inclusion of digital tools into the teaching practice. Using the technological pedagogical and content knowledge framework, the present study dwelled upon the EFL instructors' perceived TPACK levels and the probable changes that they experienced in their technological skills and knowledge after pandemic. The EFL instructors working at both state and private universities formed the participants of the study. Based on the mixed research method, the study gathered the data were both quantitatively and qualitatively. The quantitative data were collected through TPACK-Deep Scale and, open-ended question form was administrated for the qualitative data. The results indicated that EFL instructors had higher perceptions of TPACK, and they had differing levels for each factor level depending on gender, workplace, years of experience and educational status. They also mainly experienced positive changes after pandemic and had favorable attitudes towards technology use in language teaching. Finally, the study suggested pedagogical implications to benefit from technology for instructional purposes.*

1. Introduction

The 21st Century has witnessed greater use of technology in various spheres of life, and one of them is undoubtedly educational environments. As a matter of fact, educational transformations and developments require the integration of technology into the learning and teaching; as Garba, et al. (2015) assert ICT integration in education constitutes an essential step in building a 21st century learning climate to train students for technology

driven knowledge-based societies. Given the globalization, the need for communication as one of the 21st Century skills gains greater importance; therefore, language education as a communicative tool needs to be supported with technology more to meet the expectations of the era. The use of modern technology serves as a notable improvement in contemporary English language teaching (Alqahtani, 2019), and technology integration triggers effective language teaching (Başar & Şahin, 2022), facilitates the English language learning process (Ahmadi, 2018; Aydın, 2018; Ürün, 2016) and presents useful strategies, empowering the language learning process (Altun, 2015). However, the function of technology in language learning classes has experienced a dramatic change; thus, the question is no longer whether technology should be utilized in language learning, but rather to what degree it will be integrated into the process (dos Santos, Becker, Muhammad, Hegelheimer & Kochem, 2019). Likewise, currently, it is not adequate for teachers only to have a satisfactory level of pedagogical and subject knowledge (Luik, Taimalu & Suviste, 2018); on the other hand, how to adopt technology in teaching is a crucial matter in this era (Prasojo, Habibi, Mukminin & Yaakob, 2020). Therefore, expanding technological knowledge for instructional purposes needs to one of the priorities of the EFL instructors. Infusing technology into teaching practices is influenced by teachers' knowledge and skills (Ertmer and Ottenbreit-Leftwich, 2010; Gong &Lain, 2018; Hew & Brush, 2007), and teachers' professional success depends on their improvement in pedagogy, subject field and technology (Şahin, 2011).

There are three basic components in the center of technology integration: content, pedagogy, technology, and these constitute the core of the technology, pedagogy, and content knowledge (TPACK) framework (Koehler & Mishra, 2009). TPACK was proposed by Mishra and Koehler (2006), building on the Schulman's pedagogical content knowledge and expanding into the notion of teachers' incorporating technology into their pedagogy. As referred by Kohler and Mishra (2009), there are three fundamental knowledge components in TPACK as pedagogical knowledge (PK), content knowledge (CK), and technological knowledge (TK). The combination of these components gives way to other knowledge types as presented in the model below: pedagogical content knowledge (PCK), technological pedagogical knowledge (TPK), technological content knowledge (TC,K) and technological pedagogical content knowledge (TPACK).
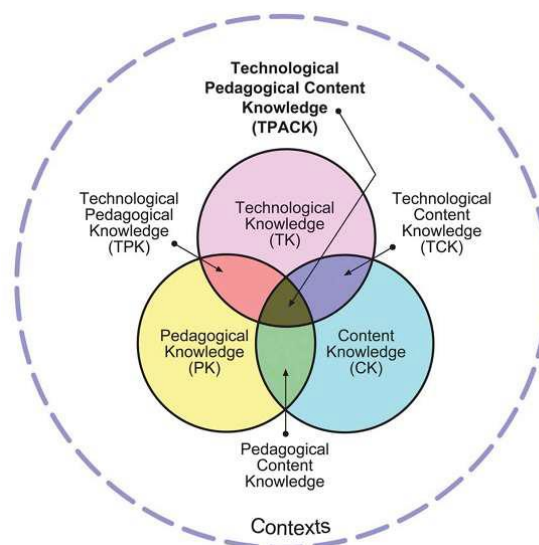

Figure 1. TPACK Model developed by Kohler and Mishra (2009)

Regulating technological opportunities with pedagogical methods could promote pivotal knowledge and skills required for practical and essential integration of technologies, especially in professional education settings (Smith, Kahlke & Judd, 2020). Hence, grasping TPACK constructs could raise teachers' awareness of how technology might be blended benefitting from pedagogy and help them to view this process from different perspectives. The following table compiles primary constructs of TPACK (Redmond & Peled, 2019):the

Table 1. Summary of TPACK Constructs

TPACK Constructs	Definition
Content knowledge (CK)	Knowledge about the actual subject matter that is to be learned or taught
Pedagogical knowledge (PK)	Deep knowledge about methods of teaching and learning
Pedagogical content knowledge (PCK)	The blending of content and pedagogy into an understanding of how particular topics are presented for instruction
Technology knowledge (TK)	Knowledge of how to use technological tools such as hardware, software and the web
Technological content knowledge (TCK)	Knowledge about the manner in which technology and content are reciprocally related
Technological pedagogical knowledge (TPK)	Knowledge of technologies that may be used for learning and teaching and how teaching might change as the result of using technologies
Technological pedagogical and content knowledge (TPACK)	Knowledge required to teach effectively with technology.

TPACK is an effective frame for reflecting upon what knowledge teachers need to integrate and blend into the instruction process and how they could upgrade this knowledge, and utilizing TPACK as a framework for gauging teaching knowledge could have a potential influence on training and professional development experiences for both preservice and in-service teachers (Schmidt, Baran, Thompson, Mishra, Koehler & Shin, 2009). TPACK framework dwells upon how the teachers' perceptions of content, pedagogy and technology interact with each other to build a fruitful teaching climate (Kohler, Mishra, Kereluik, Shin & Graham, 2014). Additionally, the TPACK encircles the knowledge of how to render concepts comprehensible by using technology, knowledge of how to utilize technology with pedagogical knowledge so as to fulfil students' needs, knowledge what makes concepts difficult or easy to learn and how to use to prevent possible difficulties, knowledge of students' epistemological beliefs and how to utilize technology to promote their epistemological beliefs (Koehler & Mishra, 2008). Referring to ISTE (International Society for Technology in Education, 2007) Standards, Atun and Usta (2019) note the significance of "Digital Citizenship" competency, students' positive attitudes towards technology and their proper use of technology, and add that these could be achieved through a lesson plan based on TPACK framework.

Technological Pedagogical Content Knowledge (TPACK) hints at the strength of the delivery of the lesson with technology integration, and it constitutes an optimal application in all facets of learning (Santos & Castro, 2021). Therefore, different studies are available in the related literature dealing with TPACK from various aspects in both global and Turkish contexts. Yıldız (2020) studied the relationship between EFL instructors' informal use of technology and TPACK. Likewise, Dinçer (2020) investigated EFL instructors' self-efficacy

beliefs towards technology integration and TPACK. Cam (2020) aimed to observe in-service English teachers' preferred teaching methods and their competencies in techno-pedagogical education. Another study (Turgut, 2017) examined TPACK perceptions of teacher-candidates, pre-service and in-service EFL teachers. Similarly, Nazari, Nafissi, Estaji and Marandi (2019) conducted a study to look into the novice and experienced EFL teachers' differences in their perceived TPACK and its impact upon professional development. In 2021, Surayya, Asrobi and Farizi carried out a study to identify the EFL teachers' willingness to understand and utilize TPACK. In addition, another study (Alnajjar & Al-Jamal, 2019) explored in-service EFL teachers' perceptions of TPACK in the instruction of listening and speaking. Zhang and Chen (2022) conducted a study to detect the interaction among TPACK, affective and evaluative attitudes towards technology. In addition, Shiyao (2021) explored the effects of in-service EFL teachers' multicultural teaching experiences on their TPACK in Chinese content and found that diverse teaching experience had a mediating role in their TPACK. Different from the present study, some other studies conducted among EFL teachers explored the seven domains of TPACK. To illustrate, the case study carried out through semi-structured interviews revealed that EFL teachers had higher self-perceptions about content knowledge (CK), pedagogical knowledge (PK) and pedagogical content knowledge (PCK) rather than technology-related domains as technology knowledge (TK), Technological content knowledge (TCK), Technological pedagogical knowledge (TPK) and Technological pedagogical and content knowledge (TPACK) (Aniq & Drajati, 2019). Likewise, another study (Tseng, 2014) explored the EFL teachers' TPACK levels through the lenses of students and found that teachers were viewed to be more competent in the domains of core knowledge than in the intersections between them. Similar to the present study, another study was conducted among EFL teachers and investigated their TPACK perceptions and applications during Covid-19. It uncovered the gap between knowledge and practice, and showed that lack of knowledge in digital tools hindered effective teaching while knowledge in relevant tools enabled better technology incorporation, higher student engagement and better classroom management (Meirovitz, Russak & Zur, 2022). Also, TPACK knowledge enabled instructors to conduct an efficient teaching with technology in English Blended Learning Course during Covid-19 (Yatun, Minur & Retnaningdyah, 2021). Therefore, higher awareness of new technologies and their integration into the instruction presented itself as a need in the new digital era.

Onset of pandemics impelled the digital transformation in higher education institutions (Kaputa, Loučanová, &Tejerina-Gaite, 2022). Given that teachers' beliefs and approaches to technology-mediated instruction occupy a central position in effective application of information technologies at tertiary level (Englund, Olofsson & Price, 2017), the present study dwells upon the EFL instructors' self-perceptions of technological pedagogical and content knowledge. The study also explores the probable influence of online teaching during pandemic on their technological knowledge and skills. More specifically, the effects of their technological knowledge on their English language teaching were investigated within the frame of the study. Using the TPACK model as a conceptual framework, this study aims to provide insights into technology-enhanced instruction at tertiary level through the lenses of EFL instructors. Considering that there is a lack of studies on the levels of TPACK perceptions of in-service teachers (Baş & Şentürk, 2018), it also sets out to a fill a gap in the related literature. Bearing all these aims in mind, the study addresses the following questions:

1. What are the techno-pedagogical competence levels of EFL instructors at tertiary level?
2. What are the probable changes that online teaching during pandemic has posed on EFL instructors' technological knowledge and skills?
3. What are the probable effects of technological knowledge on English language teaching?

2. Research Methodology

2.1 Research Design and Participants

Including both quantitative and qualitative analysis methods, the present study utilized mixed research design. The main rationales for conducting mixed methods research are triangulation, completeness, compensating weaknesses and presenting stronger inferences and providing answers for different research questions (Doyle, Brady & Bryne, 2009). EFL instructors at both state and private universities in Turkey constituted the participants of the study. Using random sampling, the study involved 63 EFL instructors. The demographic information of the participants is as follows:

Table 2. Demographic Information of the Participants

Variables		f	%
Gender	Female	48	76.2
	Male	15	23.8
Workplace	State university	51	81.0
	Private university	12	19.0
Years of Experience	1-5 years	10	15.9
	6-10 years	12	19.0
	11-15 year	18	28.6
	More than 16 years	23	36.5
Major	English language teaching	45	71.4
	English literature	11	17.5
	Linguistics	3	4.8
	Translation and Interpreting	3	4.8
Education	Bachelor's degree	11	17.5
	Master's degree	29	46.0
	Doctorate degree	23	36.5

Majority of the participants were female instructors and working at state universities in Turkey. However, the unbalanced number of participants in terms of gender and workplace presented themselves; thus, the possible problems were stated in the analysis part. As for the experience, their numbers did not show great difference; however, most of them had more than 16 years of experience. More than half of the instructors had the English teaching major (only one instructor was German language teaching graduate; thus s/he was integrated to teaching category). Lastly, most of the instructors had master's and doctorate degrees respectively.

2.2 Data Collection Tools

The data were gathered through both quantitative and qualitative tools. Quantitative data were collected with Techno-pedagogical Education Competency Scale developed by Kabakçı Yurdakul, Odabaşı, Kılıçer, Çoklar, Birinci ve Kurt (2012). TPACK-Deep Scale consists of 33

items and 4 factors as design (10 items), exertion (12 items), ethics (6 items) and proficiency (5 items). Design factor involves arranging and developing instruction processes utilizing ICTs to promote learning; exertion factor refers to the ability to implement the plans about the use of appropriate technologies ranging from evaluating to planning; ethics factor covers the exhibition of legal and ethical behaviour related to the use of ICTs in the teaching–learning process; proficiency factor pertains to leadership skills during integration of technological sources into the teaching process (Kabakçı et al., 2012).

It was a 5-point Likert scale, and the lowest score obtained from scale is 33 while the highest score is 165. Therefore, if the participants have the scores lower than 95, their techno-pedagogical competency is considered to be at low level; if between 96 and 130, at a moderate level; and if more than 131, at an advanced level. As for the mean scores gathered from the scale, scores between 1 and 2.22 are accepted to be low, 2.34 and 3.67 to be moderate, 3.68 and 5 to be advanced. Lastly, the Cronbach's Alpha coefficient of the scale is 0.974.

As a qualitative tool, open-ended question form was administered to the participants. It consisted of two questions:

a) During online teaching, what kind of difference did you experience in your technological knowledge and skill that you use in teaching English?

b) My technological knowledge affects my English language teaching skills this way: .... *(complete the sentence)*

2.3. Data Analysis

The quantitative data were analyzed via SPSS program, using different analysis methods. The descriptive data were presented through means and percentages. Additionally, relations of TPACK score and each factor (design, exertion, ethics, proficiency) with different variables such as gender, workplace years of experience and education were analyzed through non-parametric tests such as Mann Whitney-U and Kruskal Wallis because each dimension and the scale in general could not pass the normality tests.

The qualitative data were analyzed with content analysis. All responses to the open-ended questions were subjected to the content analysis. However, the open-ended questions were presented to the participants as optional; therefore, 58 participants answered the first question, and 56 participants the second one. In sum, 114 responses were analyzed qualitatively.

3. Findings

Finding of the study were presented in two parts as quantitative and qualitative results

3.1 Findings of the Quantitative Data (TPACK Scale)

Table 3. EFL Instructors' level of TPACK

Sub-dimensions	X	SD
Ethics	4.46	0.52
Exertion	4.32	0.56
Design	4.25	0.61
Proficiency	3.76	0.80
General	4.24	0.55

EFL instructors were found to have advanced level of techno-pedagogical competence in all dimensions since mean scores were higher than 3.68. General score of TPACK also indicated high level of competence.

Table 4. Mann Whitney-U Test Results for Gender

	Gender	N	Mean Rank	Sum of Ranks	U	p
Design	Female	48	32,64	1566,50	329,5	,620
	Male	15	29,97	449,50		
Exertion	Female	48	33,58	1612,00	284,0	,219
	Male	15	26,93	404,00		
Ethics	Female	48	34,33	1648,00	248,0	,065
	Male	15	24,53	368,00		
Proficiency	Female	48	31,64	1518,50	342,5	,776
	Male	15	33,17	497,50		

Mann Whitney-U test results showed that female instructors had more advanced techno-pedagogical competence in all dimensions of TPACK except for proficiency. However, statistically significant difference was not found between female and male teachers (p > .05). However, the distribution of the number of participants in terms of gender was not found to be balanced, which could prevent reaching more generalized results.

Table 5. Mann Whitney-U Test Results for Workplace

	Workplace	N	Mean Rank	Sum of Ranks	U	p
Design	State University	51	29,80	1520,00	194,0	,048
	Private University	12	41,33	496,00		
Exertion	State University	51	29,66	1512,50	186,5	,036
	Private University	12	41,96	503,50		
Ethics	State University	51	30,67	1564,00	238,0	,224
	Private University	12	37,67	452,00		
Proficiency	State University	51	29,47	1503,00	177,0	,023
	Private University	12	42,75	513,00		

As for the workplace, EFL instructors working at private universities seemed to have higher level of techno-pedagogical competence. In addition, there is a statistically significant difference between state and private universities in terms of design, exertion and proficiency (p < .05). Only ethics dimension did not have statistically significant difference. However, as in gender variable, the number of the teachers working in state and private universities was not similar; therefore, it could influence the generalization of the results negatively.

Table 6. Kruskal Wallis Test Results for Years of Experience

	Experience	N	Mean Rank	df	X²	p
Design	1-5 years	10	41,80	3	5,435	,143
	6-10 years	12	24,25			
	11-15 years	18	33,78			

	16 years and more	23	30,39			
Exertion	1-5 years	10	41,70	3	4,677	,197
	6-10 years	12	24,88			
	11-15 years	18	31,22			
	16 years and more	23	32,11			
Ethics	1-5 years	10	37,10	3	5,961	,114
	6-10 years	12	21,04			
	11-15 years	18	35,36			
	16 years and more	23	32,87			
Proficiency	1-5 years	10	47,10	3	9,914	,019
	6-10 years	12	23,54			
	11-15 years	18	32,39			
	16 years and more	23	29,54			

EFL instructors with less, that is, 1-5 years of experience were found to have higher level of competence; however, this difference was statistically significant only for the dimension of proficiency (p<.05).

Table 7. Kruskal Wallis Test Results for Education

	Education	N	Mean Rank	df	X^2	p
Design	Bachelor's degree	11	39,86	2	2,729	,255
	Master's degree	29	29,24			
	Doctorate degree	23	31,72			
Exertion	Bachelor's degree	11	39,23	2	2,086	,352
	Master's degree	29	30,41			
	Doctorate degree	23	30,54			
Ethics	Bachelor's degree	11	36,59	2	1,708	,426
	Master's degree	29	29,00			
	Doctorate degree	23	33,59			
Proficiency	Bachelor's degree	11	38,18	2	1,753	,416
	Master's degree	29	29,66			
	Doctorate degree	23	32,00			

Although educational status did not cause statistically significant difference among EFL instructors (p>.05), those only with Bachelor's degree had higher level of techno-pedagogical competence.

3.2 Findings of the Qualitative Data

In the open-ended questions section of the study, the participants were asked how their technological knowledge and skills went through changes while they were teaching in the distance education process. The participants' responses were as follows.

Table 8: Changes in teachers' technological knowledge and skills in the distance learning process

Question	Effects	f
Changes in my knowledge and skills with online education during the pandemic	I experienced improvements in my skills	31
	Using what I know has become compulsory	11
	I have begun to use technology more	9
	I have begun to use technology more specifically for teaching purposes	7
	My skills were the same but I used them more often	4
	I learned about new platform designed for online education	2
	We had less interaction with students	4

Most of the responses of the instructors centered around improvements in technological skills and greater use of technology after the compulsory transition to online teaching during pandemics. Although majority of the experiences were cited as positive, the only negative change was stated to be the less interaction with the students. The following excerpts were recruited from the participants' responses:

"Distance education required the use of education technologies for real purposes. We began to have to use what we knew for teaching purposes this time" P1

"I realized that, when necessary, you begin to use the things you think you do not know." P13

"I always been interested in technology and used it in my classes. However, I began to use platforms that I did not use before such as Zoom, Microsoft Teams, Google Classroom, etc. more often" P8

"I really felt like I need to learn to many things to catch up. This effect could be considered positive" P29

"This process has taught me so many new skills. I have learned so many things." P53

The participants were also asked to complete the statement of "Technological knowledge I have has .... effects on my teaching skills"

Table 9: Effects of technological knowledge and skills on teaching skills

Question	Effects	f
Effects of the technological skills I have	I have experienced positive effects	24
	My teaching has become more effective	11
	The process is motivating	4
	I feel I am catching up with the contemporary developments	3
	It improves problem solving skills and creative thinking	3
	I have learned time management skills	3
	Students are more interested	2

When asked the probable effects of their technological knowledge on English teaching, the instructors mentioned mostly positive influences such as more effective and motivating classes, following contemporary developments, better problem solving and time management. The following excerpts were extracted from the participants' responses:

"This process has enhanced creativity. It also supports problems solving skills and creative thinking" P3

"It enables to make my lessons more fun and effective." P10

"This process was more like a learning process than a teaching process for me, but it makes lessons more effective, flexible, and highly interactive" P26

"I was positive, constructive, and improving" P56

"Assessment has become more enjoyable for me. I can help students notice their mistakes more rapidly and without using traditional methods" P9

4. Discussion

The present study attempted to explore EFL instructors' perceived techno-pedagogical competence levels, using TPACK framework. The probable changes that they experienced in their technological skills and knowledge during pandemic and the probable influence of technology on their teaching practice were also the focus of the study. Therefore, instructors' technology use for instructional purposes was dealt with both quantitatively and qualitatively within EFL context.

Technology use in teaching especially in language teaching is gaining greater importance and interest. Considering the 21st century skills, it is obvious to realize that communication and digital literacy constitute the indispensable elements of this era. To enable students to get more conscious of these skills, firstly teachers need to get more equipped with technological and communicative knowledge and competencies. The changes in the learning habits of the students have paved the way for different expectations in foreign language teaching; hence, teachers need to catch up with the technological developments to make meaningful contributions to the students' learning (Kozikoğlu & Babacan, 2019). Additionally, because the need for technological integration and innovation could also be triggered by digital natives as Prensky (2001) named, it is of great importance for teachers to have adequate levels of TPACK and to improve it continuously throughout their professional life (Kaya & Yılayaz, 2013). Within this frame, intervention programs could be a key to help teachers to follow alternative ways of integrating technology with the lessons. It is a fact that there is a growing need of Professional Development for English teachers to handle the challenges to reinforce student performance (Nazari, Nafissi, Estaji & Marandi, 2019). A programme focusing on not only theory but also practice could promote teachers' TPACK level (Liu, Liu, Yu, Li & Wen, 2014; Tyarakanita, Nurkamto & Drajati, 2021). An online training designed by Huang (2021) and Nazari, Nafissi and Estaji (2020) for EFL instructors resulted in teachers' better performance in term of TPACK on a large scale. Najjari, Abbasian and Yazdanimoghaddam (2021) detected an increase in TPACK literacy after 6-session TPACK workshops among Iranian EFL teachers. Another suggestion by Van Loi (2021) was to enable both pre-service and in-service EFL teachers to develop TPACK as an integrated skill, not the knowledge of technology in its own.

In this study, EFL instructors were found to have high level of techno-pedagogical competence in general. Similar results were obtained in other several studies with EFL in-service teachers (Destiani & Purnawarman, 2020; Van Loi, 2021). Similar study was carried out among EFL teachers to unpack their TPACK levels during distance education in Indonesian context, and they were found to have decent level of TPACK (Imania, Anugerahwati & Tresnadewi, 2022). When each factor was examined individually, it was seen that instructors had also advanced level of ethics, exertion, design and proficiency respectively. The study by Tanrısevdi (2021) also reached the similar results. Therefore, it can be said that the instructors perceive themselves as competent in using technology to design their instruction, to conduct and evaluate their teaching, to consider ethical issues and to solve the problems. However, the study with EFL instructors at different universities revealed that the participants felt most competent in teaching the English language although they had lower sense of competence in integrating technology to the content based on an effective pedagogy (Köse, 2016). Therefore, it is better for teachers to identify the extent they can benefit from technology in their classes and find ways to strengthen the points in need of improvement. Continuous reflection on the effective integration of technology could both increase their awareness and help gain the habit of focusing not only content and pedagogy but also on technology.

As for the gender, female instructors had higher scores than male instructors in each factor except for proficiency. In fact, gender does not have a decisive role in the technology integration since there are contradictory results in the related literature. Although some studies found that female teachers feel less confident about the use of information technologies for teaching less than male counterparts in both global and Turkish contexts (Castéra, Marre, Yok, Sherab, Impedovo, Sarapuu, Delserieys-Pedregosa, Malik & Cheneval-Armand, 2020; Gómez-Trigueros & Yáñez de Aldecoa, 2021; Markauskaite, 2006; Şen & Yıldız Durak, 2022), some other studies showed that females had higher perceptions of TPACK than males (Beri & Sharma, 2019; Prasojo et al., 2020). Different findings regarding the gender issue imply the differences of sample groups, number of participants and the like. When it comes to type of workplace, instructors working at private universities had higher scores in all factors than those working at state universities in Turkey. This finding is supported by other studies (Aydın, Gürol & Vanderlinde, 2016; Basargekar & Singhavi, 2017; Erdin & Uzun, 2022), referring that the teachers working at a private institution are more competent users of technology than those working at a state institution.

Another result was related to the experience, and instructors with 1-5 years of experience had higher level of competence than those with more years of experience. Likewise, instructors with only Bachelor's degree had more tendencies for techno-pedagogical competence than those with Master's or PhD degrees, which is more likely to be associated with experience, as well. Beginning instructors are possibly more enthusiastic about the technology use. Other studies (Soydal, Alır & Ünal, 2011; Yaghi, 2001) also found that teachers with more years of teaching are less self-confident in computing. Similarly, older and more experienced teachers were seen to have lower levels of self-efficacy in integrating Web technology in their pedagogical practice (Lee & Tsai, 2010). From a domain specific perspective, Nazari, Nafissi, Estalji and Marandi (2019) found that experienced EFL teachers had higher scores in PK and PCK while novice EFL teachers in TK, TCK, TPK and TPACK. This could be supported by the claim that technology integration is more difficult for old teachers because of the need for

learning and shifting perspectives for new knowledge of technology; thus, it is more natural for novice teachers (Taopan, Drajati & Sumardi, 2020).

As in quantitative findings, qualitative data indicated instructors' positive attitude and stance towards technology integration with their teaching practice. In fact, with the advent of pandemics, they started to use technology more, especially for instructional purposes. They experienced improvements in their technological skills and knowledge. In other contexts, teachers' use of technology increased as an impact of Covid-19, as well. (Karakaya, Adigüzel, Üçüncü, Çimen, & Yilmaz, 2021; Winter, Costello, O'Brien, & Hickey, 2021). Similar to the present study, another one (Lamminpää, 2021) conducted to examine perceived TPACK levels of EFL teachers following emergency remote teaching (ERT) indicated that EFL teachers had high levels of TPACK and most of them experienced an improvement in their ICT skills after ERT. Given the current transition period due to Covid-19, it is obvious that instructors need more competencies in using online classrooms and TPACK. The rapid change in the 21st century causes teachers to continuously revise their abilities in mastering information technologies, and the success of 21st century learning involves not only understating content and teaching methods but also integration of technology with them (Agustini, Santyasa, & Ratminingsih, 2019). The inclination to benefit from technology more is also coherent with their positive self-perception about technology integration with their pedagogical practice as found in the quantitative analyses. The only negative reflection of online teaching due to pandemics was stressed as the lack of interaction with students. As found in other studies (Abu Talib, Bettayeb & Omer, 2021; Evans, O'Connor, Graves, Kemp, Kennedy, Allen, Bonnar, Reza & Aya, 2020; Kusuma, 2022), teaching under lockdown impacted student engagement negatively. In fact, interaction constitutes one of the key elements in language classes, and it is influenced by classroom climate; thus, abrupt transition to remote teaching having a totally different classroom atmosphere caused uncertainty and lack of involvement among EFL learners. Since it was first appeared as emergency remote teaching, this abrupt transition to digital learning platforms could have made students confused; therefore, as Díaz-Noguera, Hervás-Gómez, la Calle-Cabrera, María and López-Meneses (2022) note, students' adaptation capacity to digital transformation at tertiary context hold significance and such factors as students' perceptions, digital competence levels, motivations and tendencies towards autonomous learning need considering while identifying their adaptation capacity. Similarly, EFL instructors believe that their technological knowledge and skills have positive effects on their language teaching. The instructors think that technology renders teaching process more motivating, thus promoting student interest. Recent literature also demonstrates that technology facilitates language learning process, presenting students different alternatives (Altun & Khurshid Ahmad, 2021; Nawaila, Kanbul & Alhamroni, 2020) and furthers student motivation to learn (Al-Habsi, Al-Busaidi & Al-Issa, 2022; Bahari, 2022). Hence, encouraging teachers to infuse technology into their teaching holds great importance in attracting more students into the class. Moreover, according to instructors, technological competence boosts problem solving skills. Information technologies also help teachers to deal with the learning problems of the students (Hussain & Safdar, 2008). As a matter fact, not only technology knowledge itself but also teacher autonomy in application of the educational technology could empower teachers more. Concerning the issue, Kohler, Mishra and Yahya (2007) suggest the learning technology by design approach, highlighting "how to learn" about technology and "how to think" about educational technology to enable them to take active roles in designing and

using technology pedagogically instead of assuming the role of passive consumers of technology, and this could help them to solve educational problems better. Furthermore, technological knowledge and skills facilitates following contemporary developments, apart from time management skills. This also indicates that use of technology could support teachers not only during teaching process but also pre- and post-instruction in both planning, preparing and evaluating. Such an integration of technology could also improve teachers' reflective practices.

All in all, EFL instructors had higher positive perceptions of TPACK and experienced positive changes in their technological habits after the Covid-19 pandemic; thus, they started to utilize technology more. They also viewed themselves to be competent in blending technology into their teaching practice for different reasons ranging from planning, performing and evaluating the instruction to solving the problems. The instructors believed the affordances of technological knowledge and skills in English language teaching. Given that Covid-19 pandemic forms a turning point for more digitalized education (Sousa, Marôco, Gonçalves & Machado, 2022), it is possible to think that education will witness and require higher integration of technology; hence, promoting and preserving the instructors' positive attitudes and beliefs towards technology holds greater importance than before.

5. Conclusion

Since technological pedagogical and content knowledge demands melting the content, pedagogy and technology in the same pot, it occupies an undeniable role in building technology-mediated learning environments. To achieve pedagogical instructional practice blended with technology, the instructors firstly need to be ready to adopt digitalized teaching habits. That is why, studies exploring the readiness of the instructors might present a broad picture for researchers and policy makers. However, technology integration into the teaching practice should be regarded as a skill of this era; thus, not only appropriate training should be provided for in-service teachers but also relevant arrangements should be planned and performed for the curriculum of the initial teacher education. This training should also highlight the importance of digital literacy of the teachers. It is essential to expand the evaluation of teachers' digital competencies and, within this frame, produce a more practical and personalized training programs which could respond to the needs of teachers in this period (Basilotta-Gómez-Pablos, Matarranz, Casado-Aranda & Otto, 2022; Cheng, Molina, Lin, Liu & Chang, 2022). İşler and Yıldırım (2018) also suggested giving pre-service teachers the chance to design technologically mediated materials. Furthermore, considering the impacts of pandemic on technology use of the instructors, it is better to aim at smooth transitions for more senior instructors. At this point, more practices should be provided for the teachers to enhance their digital literacy levels, as well. Last but not the least, since teacher beliefs have a mediating role in shaping the language learning and teaching process (Xu, 2012), feeding their positive attitudes and stance towards technology use for instructional purposes could promote the levels of TPACK. Researching teacher beliefs with more participants is more likely to obtain more generalized results and open new windows for the TPACK issue.

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