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Experiences of In-service Teachers on Online In-Service Training during Pandemic Period

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Abstract

With the pandemic, all teachers' professional development programs suddenly moved to online platforms. Thus, this research aimed to determine how teachers' online in-service training practices during the pandemic Covid-19 affected their technology integration indicators and technology integration self-efficacy. We conducted the study as a correlational design with the participation of 303 in-service teachers. As a result, male teachers have lower perceptions than female ones, while there is no significant difference between branches about online in-service training. Teachers working for over ten years and married ones are more willing to attend online in-service training activities.

Keywords: Professional development, online training, teacher education, technology integration, technology self-efficacy

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Introduction

In-service teachers are expected to improve themselves in the digital age. Therefore, numerous trainings are given in various venues. In-service training aims to provide a high level of joint efficiency and job satisfaction to its participants by integrating labor as an essential input of the production process (Pehlivan, 2019). In-service teacher trainings aim to update the knowledge and skills of in-service teachers and creating positive attitudes enabling improvement in the teaching-learning process (Cooper, 2008). It is accepted as a tool to increase teaching quality and the efficiency of education systems in the light of science, technology, and innovations (Gökyer, 2012). Professional development of teachers is for updating their professional skills to apply more efficient classroom activities and effective evaluation (Ekpoh, Edet, & Nkama, 2013). For Bilgin (2007), teacher professional development is a process covering their career, enabling them to gain the knowledge and skills required by the services and to have an opportunity to develop them and get a higher position in the school. The professional development of teachers, who have to follow up-to-date information for their students every day, has become mandatory.

As time progressed, the programs for the professional development of teachers have also been diversified. Teachers' professional development programs can be commonly grouped as one-off programs, superficial, fragmented, quick fix, disconnected, episodic, and missing in follow-up programs (Lim, Abas, & Mansor, 2010). They are mostly criticized for being non-flexibility on time and resources, not meeting teachers' needs, not providing further support after the program, causing loss of time, and not involving continuous cooperation efforts. Harwell (2003) stated that long-term and systematic professional development programs are more effective than one-shot workshops and seminars. Besides, Garet et al. (2001) emphasize the consistency of the training with various interrelated activities, which is more likely to maintain its long-term effect than short-term programs. It is important to ensure continuity in the development of trainings according to changing needs.

With the Covid-19 pandemic, the rapid change in education as moving the classrooms from face-to-face to online platforms, has displayed the importance of in-service training activities, which wave the adaptation of teaching, learning, and assessment in online education. Online learning environments, referred to frequently in importance during the Covid-19 pandemic, are strengthened by developing information and communication technologies (ICT). Online education provides opportunities for learners to develop new learning experiences by enabling the management of self-controlled learning and sharing ideas and information in collaborative environments (Trentin & Scimeca, 1999). Online inservice traning (OIT) activities for teachers have an essential role in developing teachers' skills (Khan, Khan, & Khan, 2020) which are carried out at all levels in educational practices in the world with the support of flexible, open, and distance learning systems (Jung, 2001). The general objectives of online education are to increase people's access to education all over the world, eliminate time and space barriers, and develop cost-effective approaches by providing interactive learning opportunities for adults (Khan, 1997; Khan, Khan, & Khan, 2020). Online education continues to be an indispensable part of time, both with its economy and with its transportation network.

Online teaching is preferred since it provides learners easy and fast access to teaching materials, the ability to communicate and interact with other learners and the instructor regardless of time and place, self-controlled learning experiences, and opportunities to structure their learning individually (Ally, 2004; Khan, Ayaz, & Faheem, 2016). Accordingly, revised professional development programs were implemented around the world. Jung (2001) lists the benefits of OIT for teachers as:

(1) "teachers have access to in-service training without having to switch to other environments,
(2) teachers may progress in their computer literacy,
(3) teachers can better interact with educators and other teachers online,
(4) after developing a database of online courses, teachers can access courses that meet their individual needs" (p. 2).

Getting common web-based courses and the increasing demand for quality professional development and technology training to support teachers' online learning were also needed for

effective practices (Signer, 2008). OIT activities are associated with professional development success, a high level of reflective thinking by the teacher, and self-monitoring (Lloyd & McRobbie, 2005). Teachers become part of the social learning community, classroom practices and empathetic expression provide teachers with cognitive and emotional support for each other in online training applications (Signer, 2008). OIT requires activities to provide permanent learning, focus on context and content, and link new knowledge to the application (Lloyd & McRobbie, 2005). In addition, as with teacher training, technology-focused professional development needs to be collaborative, incorporated into daily activities, and focused on student learning (Jacobsen, 2001). It is of great importance that the outcomes of teacher training are reflected in their classrooms.

Technology integration and in-service teacher training programs in Turkey

The effectiveness of in-service training programs sustained with technology support may be related to the technological skills of the teachers. The increasing importance of technology integration in schools puts the development of the teachers' technological skills at the forefront. Çakır and Yıldırım (2009) highlight the importance of teachers' technology skills as "to train individuals who can reach and use information, teachers should first have these skills and use technological tools (computer, internet, Etc.) effectively"(p. 953). 21st-century students demand technology-integrated learning processes. Because of the sudden transition process in the pandemic, teachers' competencies on technology and self-efficacy perceptions of technology integration have become more important. Thus, in Turkey, The Ministry of National Education (MoNE) has offered more in-service training to teachers to contribute to their adaptation and technology usage skills. Although the semester starts in September, they need to be in school to join professional development activities in August. Moreover, these activities are carried out during the periods specified in the annual work program (Official Gazette, 2014, article 38). In these activities; contents related to the computer, foreign language, research methods, program development and evaluation, educational management, special education, etc. are covered (Yazıcı & Gündüz, 2011). The contents are diversified over time according to the views and needs of the teachers.

With the transition to distance education during the Covid-19 pandemic period, it has become prominent to develop teachers' technological skills and support their professional development. Efforts were made to support teachers' professional development through Zoom and Google Meet platforms. Then, in 2022, the MoNE launched the Teacher Information Network (TIN) platform to support the teachers' professional and personal development and to ensure the continuity of in-service training activities. On this platform, teachers can participate in many asynchronous trainings, where they can participate independent of time and place and get participation certificate at the end of the trainings. These trainings are in a wide range, such as the education of disadvantaged children, training to support the development of teachers' digital skills, activity-based training, foreign language training, and first aid training. With the decision taken in the Teaching Profession Law adopted in 2022, it was aimed that new teachers would benefit from special vocational training for a maximum of two years. In this way, it aims to increase the experience and practice of teachers in the first years of their profession. This law aims to increase teachers' motivation for professional development by providing specialist and head teacher titles and additional payments to teachers with ten years or more of professional experience and teachers with graduate degrees. The professional development of teachers, who are subjected to different in-service trainings both in the first years of the profession and in the 10-year periods, has an important place in the country's education policies.

Turkey has been one of the European Union (EU) candidate countries since 1999. Being a member of the EU is one of Turkey's most important strategic goals (Directorate for EU Affairs, 2019). The European Commission has proposed European principles for the teaching profession criteria, the most important of which are lifelong learning and higher education for all the member countries (Sielatycki, 2008, as cited in Domiter & Marciszewska, 2017). Therefore, Turkey has been trying to catch the requirements on the education of the European Commission. For a country candidate to the European Union, their teachers receive in-service trainings for developing their digital competencies. In the post-pandemic period, international organizations related to European education policy have given importance to in-service training of teachers by the following European Union's suggestions. The OECD and European institutions consider that the pandemic has highlighted the need

to update in-service teacher education in many countries and acquire new teaching skills, including digital skills (Zancajo, Verger, & Bolea, 2022). Teachers have opportunities to develop them. One of them is eTwinning projects supported by EU, in which Turkey can participate and EU-supported teachers can collaborate with other European countries on the online platform. These projects support teachers to develop educational materials with Web 2.0 tools (Demirci & Yılmaz, 2021). In the European Commission report in 2019, it was stated that digital competencies were included in teacher education in 43 education systems. However, there was no regulations, legislations, or recommendations for digital competence in Turkey (European Commission/EACEA/Eurydice, 2019). However, teachers with digital competencies, including preparing online courses, are needed during the pandemic period. Thus, there was a need to work hard to develop the teachers' digital competencies that they needed during rapid remote teaching in Turkey.

Pandemic has shifted education sharply. For example, as a part of teacher development, teaching practicum in preservice education, which is critical for teacher preparation as the first real teaching experiement, had implemented as online teaching practicum in most of the countries, Turkey, US, England, Greece, Portugal, Hong Kong (Tekel, Öztekin-Bayır, & Dulay, 2022). Similar with preservice education, all in-service trainings were carried out on online platforms because of the pandemic in Turkey. They were needed to support teachers with limited experience in online teaching. Literature indicates that teachers have positive attitude toward in-service training are thought to have had a successful teaching process (Karasolak, Tanrıseven, & Yavuz Konokman, 2013), and they believe in the benefit of in-service training (Gültekin & Çubukçu, 2008). The literature indicates that the teachers could benefit from it.

The increased digital literacy level of teachers and pedagogical needs of teachers in pandemic reshaped inservice teacher trainings (Gokdas & Cam, 2022). Regarding participation in online in-service professional development programs, some features of teachers may affect their perceptions of in-service training (Baştürk, 2012). And the efficiency of in-service training is related to its planning, implementation, and assessment (Karasolak, Tanrıseven, & Yavuz Konokman, 2013). According to Akkaya and Kapıdere (2021), their teaching self-efficacy levels increase as teachers' seniority years decrease. Besides, senior teachers ask for continuing in-service training related to technology usage in education according to their needs (Metin, 2018). Backfisch, Lachner, Stürmer, and Scheiter (2021) state that teachers need to be aware of the impact of contextual aspects such as motivation, quality, and quantity of technology integrations in teacher education. Teachers from different branches had similar negative attitudes towards professional development courses because of excessive workload, lack of time, financial difficulties, and inadequate performance evaluation (Eroğlu & Donmuş Kaya, 2021). According to Islahi (2019), single teachers have a more positive attitude towards information technologies than married teachers. Although teachers attended ICT in-service training courses, they were insufficient to use ICT tools, and their self-efficacy in using computers was low (Esfijani & Zamani, 2020). Since there is limited study on the attitude of teachers toward online training and teachers' gender, expertise, and attitudes towards in-service training may determine the effectiveness of in-service training.

Purpose of the Study

Among the precautions during the pandemic, formal and informal education practices were transferred from face-to-face to online environments. As in all changes, various compliance problems had experienced in the adaptation process. Notably, the responsibility of teachers had increased because of the management of both their own and students' adaptation processes. The need for in-service training has also increased for teachers to keep up with changing conditions, follow current educational developments, and improve the quality of online teaching activities. These needs lead to active participation as crucial in developing teachers' qualifications in using technology and adaptation skills in OIT.

Teachers' approaches and qualifications to educational technologies contribute to the efficiency of OIT. There are studies on teacher and student views on the distance education process (Hebebci, Bertiz, & Alan, 2020), online education, and pre-service teacher education (Ramot & Schmidt, 2020; Kalloo, Mitchell, & Kamalodeen, 2020; Kidd & Murray, 2020; Moyo, 2020), and online teacher training (Flores & Gago, 2020; Mutton, 2020) after the pandemic. In general, teacher attitudes towards OIT may direct the effectiveness of these training activities. However, it has been

observed that the number of studies investigating teacher attitudes towards OIT for teachers during the pandemic is limited.

Overall, OIT for teacher is becoming common because of its advantages, but teachers were not ready for online teaching and online professional development before the pandemic. Herein, the current study examines teachers 'attitudes towards OIT in which they participated during this change and adaptation process. This study aims to determine teachers' attitudes toward OIT, technology integration indicators, and perceptions of self-efficacy towards technology integration. It is expected to make contributions to the in-service training research, guide developers of OIT programs, and give suggestions to review the evaluation and development processes of these training programs. Moreover, it can be made to reveal the adaptation levels of teachers to technological developments and increase the efficiency of OIT activities.

This research aims to examine teachers' views and reveal the relationships between teachers' technological competence perceptions and technology integration indicators and their attitudes towards OIT. The research questions are;

(1) What are the teachers' attitudes towards the OIT activities implemented during the Covid-19 pandemic?

a. Do teachers' attitudes towards the OIT activities applied during the Covid-19 pandemic differ significantly in gender, professional seniority, branch, age, and marital status?

b. Is there a significant relationship between teachers' attitudes towards the OIT activities applied during the Covid-19 pandemic and their perceptions of technological competence?

c. Is there a significant relationship between teachers' attitudes towards the OIT activities implemented during the Covid-19 pandemic and their technological integration indicators?

Method

This study is designed as a correlation study to explain teachers' opinions in Turkey about the OIT during the pandemic. Correlational research helps researchers determine the change of two or more variables' current levels (Fraenkel & Wallen, 2009). Thus, the study focuses on assessing the relations between the variables and understanding the phenomena.

Participants

The participants of the study (n=303) were the teachers participated in OIT. Their age ranges from 22 to 65, with an average of 32.59 (Sd=8.59). Most of the participants joined at least one OIT(n=199). 67.3% of them are women, and 32.7% of them are men. While 56.8% of the participants (n=172) were married, they have been working at different school levels as kindergarten (n=13), primary school (n=100), secondary school (n=109), and high school (n=81). They have different roles in their school as teachers (n=207), school psychological counselors (n=74), assistant principals (n=14), and principals (n=8). Their teaching experience differs as 0-5 years (n=128), 6-10 years (n=79), 11-15 years (n=37), 16-20 years (n=32), and more than 20 years (n=27). 16.2% have master's degrees and 1.3% have doctorate degrees. The participants may work at the city centre (n=134), county (n=139), and village (n=30).

Data Collection Tools and Process

The data collected through three scales: technology integration indicators scale (Çakıroğlu, Gökoğlu, & Çebi, 2015), self-efficacy perceptions for technology integration (Ünal & Teker, 2018), and opinion scale regarding in-service training (Limon, 2014). Firstly, the technology integration indicators scale (Çakıroğlu, Gökoğlu, & Çebi, 2015) has five sub-dimensions with 28 items. "Technology Literacy"(α=.841), "Teaching with Technology"(α=.831), "Professional Development"(α=.873), "Ethics and Policies"(α=.860) and "Organization and Management"(α=.841) are the sub-dimensions. According to reliability analysis, the Cronbach alpha coefficient was found to be .931. The internal consistency coefficient for the overall scale was found as .70. Secondly, the self-

efficacy perception scale for technology integration was developed by Wang, Ertmer, and Newby (2004) and adapted into Turkish by Ünal and Teker (2018). Its translated version consists of two sub-dimensions with 19 items. The Cronbach alpha coefficient for the whole scale was .936, the Cronbach alpha for using computer technologies sub-dimension was .875, and the Cronbach alpha for making students use computer technologies sub-dimension was .915. Item-total correlations of the scale vary between .60 and .707. Thirdly, the opinion scale regarding in-service training (Limon, 2014) comprises 24 items with three factors: "Perception of Willingness to Participate"(α=.883), "Perception of function"(α=.948), and "Perception of Practice"(α=.836). For data collection, the survey was digitized via Google Forms. The link to the survey was spread through teachers' groups on different platforms from 25.12.2020 to 01.03.2021. The volunteers filled out the survey.

Data Analysis

For data analysis, the normality tests were performed for all sub-factors of the scales. There was no missing data, and one outlier was removed from the data set. The subfactors in which the skewness and kurtosis values were between +3 and -3 (Groeneveld & Meeden, 1984) represent the normal distributions (see Table 1).

Table 1. Skewness and kurtosis results of the subfactors for each scale

	Skewness	*Kurtosis*
Opinion Scale for Alignment Training		
Perception of participation prompt	-.26	-.63
Perception of the function	.12	-.49
Application perception	-.55	.04
Technology Integration Indicators Scale		
Technology literacy	-1.01	2.40
Teaching with technology	- .64	.99
Professional development	-.36	.91
Ethics and policies	-.89	2.39
Organization and management	-.83	2.18
The measure of Self-Proficiency for Technology Integration		
Using computer technologies	-.51	1.33
Making students use Computer Technologies	-.88	3.40

Teachers' attitudes towards the OIT activities applied during the Covid-19 pandemic were tested. Thus, descriptive statistics, t-test, correlation, and ANOVA analyses were done. There was no homogeneous distribution within the scope of the branch. Accordingly, the Games Howell test, designed for unequal samples and unequal variances, was performed for the branch. For the task, the data were distributed homogeneously. The Scheffe test was performed to compare groups because it does not require equality between groups and can keep the α error margin under control when operating between multiple groups. For gender and marital status, Levene's Test for the perception of participation, function, and practice indicated no significance. Thus, the homogeneity of variance assumption is met. In terms of professional identity and branch of teachers, the Levene's Test for the perception of participation ($F(4,298)=.30$, $p=.88$); for the perception of function ($F(4,298)=1.07$, $p=0.37$) indicate no significance, referring that the assumption of homogeneity of variances is met. For the perception of practice, Levene's Test, ($F(4,298)=3.42$, $p=.0$) indicates significance, and the assumption of homogeneity of variance is violated. For the teachers' branch, the Levene's Test for the perception of participation, ($F(12,290)= 1.51$, $p=.12$); and function ($F(12,290)=.78$, $p= .67$) reveal no significance, indicating that the assumption of homogeneity of variance is met. For the perception of practice, Levene's Test, ($F(12,290)=3.04$, $p=.00$) indicates significance. The assumption of homogeneity of variance is not met. Normality tests were performed to examine the relationships

between teachers' views on in-service training and technology integration indicators and their perceptions of self-efficacy towards technology integration. It was observed that the values in all data, except the making students to use computer technologies dimension, varied between +2 and -2 (George & Mallery, 2012).

Results

Teachers' attitudes towards online professional development training according to their demographics

When the descriptive statistics results from the participants' in-service training scale were examined (See Table 2), it was determined that the perception of function was the lowest among others. The averages of perception of function and perception for willingness to participate were very close.

Table 2. Descriptive statistics of the subscales(n=303)

	M	*SE*	*Sd*
Perception of participation prompt	3.42	.05	.95
Perception of the function	2.90	.04	.76
Perception of practice	3.52	.04	.76

Whether teachers' attitudes towards the OIT activities differed significantly in terms of gender, professional seniority, branch, age, marital status has been analyzed. For gender, male teachers' perceptions of willingness to participate (M=3.24, Sd=1.02), perception of function (M=2.74, Sd=.77), and perception of practice (M=3.45, Sd=.81) were lower than female teachers' perceptions of willingness to participate (M=3.51, Sd=.92), perception of function (M=2.98, Sd=.74) and perception of practice (M=3.56, Sd=.74)(See Table 3).

Table 3. Descriptive statistics of participants on online professional development by gender

		n	*M*	*Sd*	*SE*
Perception of Willingness to Participate	Women	204	3.51	.92	.06
	Men	99	3.24	1.02	.10
Perception of Function	Women	204	2.98	.74	.05
	Men	99	2.74	.77	.08
Perception of Practice	Women	204	3.56	.74	.05
	Men	99	3.45	.81	.08

An independent sample t-test was used to examine whether the teachers' attitudes towards OIT differed by gender (See Table 4). Female teachers (M=3.51, Sd=.92) were more willing to participate in OIT activities, and their perception of function (M=2.98, Sd=.74) was also higher than male teachers' perception of function. However, there was a non-significant difference on teachers attitudes in terms of gender (F(1,301)=1.48, p>.05).

Table 4. Independent sample t-test for gender

	F	*t*	*df*	*MD*	*SE*
Perception of willingness to participate	2.02	2.35*	301	.27	.11
		2.26*	176.71	.27	.12
Perception of function	.00	2.55*	301	.23	.09
		2.52*	188.20	.23	.09
Perception of practice	.81	1.22	301	.11	.09
		1.18	178.86	.11	.09

*p < .05

For professional seniority, teachers' perceptions of function were lower than their willingness to participate and perception of practice. Teachers working between 11-15 years (M=3.61, Sd=.15)

and 21 and above (M=3.60, Sd=.20) were more willing to participate in OIT activities.

Table 5. Descriptive test results according to the professional seniority of teachers

		N	*M*	*Sd*	*SE*
Perception of willingness to participate	0-5	128	3.20	.94	.08
	6-10	79	3.56	.95	.11
	11-15	37	3.61	.91	.15
	16-20	32	3.57	.90	.16
	21 and above	27	3.60	1.04	.20
Perception of function	0-5	128	2.77	.74	.07
	6-10	79	3.00	.71	.08
	11-15	37	2.93	.75	.12
	16-20	32	2.96	.81	.14
	21 and above	27	3.16	.88	.17
Perception of practice	0-5	128	3.42	.85	.08
	6-10	79	3.66	.64	.07
	11-15	37	3.64	.63	.10
	16-20	32	3.51	.74	.13
	21 and above	27	3.53	.80	.15

As seen in Table 6, teachers' willingness to participate ($F(4,298)=2.94$, $p<.05$) showed a significant difference according to seniority, but their perceptions of function ($F(4,298)=2.22$, $p> .05$) and their perceptions of practice ($F(4,298)=1.42$, $p > .05$) showed non-significant difference.

Table 6. One way ANOVA results according to the professional seniority

		SS	*Df*	*MS*	*F*
Perception of willingness to participate	Between Groups	10.55	4	2.64	2.94*
	Within Groups	267.72	298	.90	
Perception of function	Between Groups	5.06	4	1.27	2.22
	Within Groups	169.58	298	.57	
Perception of practice	Between Groups	3.26	4	.82	1.42
	Within Groups	171.40	298	.58	

*p < .05

Teachers' attitudes towards OIT in terms of branch were examined using ANOVA. Post hoc tests to determine the differentiation between groups within the scope of their branch. As ANOVA results represent that there was no significant relationship between teachers' branches and their perception of function ($F(12,290)=1.77$, $p>.05$) and perception of practice ($F(12,290)=1.50$, $p>.05$). At the same time, there was a significant relationship between perception of willingness to participate ($F(12,290)=1.98$, $p<.05$) and teachers' branches (See Table 7).

Table 7. One way ANOVA results according to the branch variable

		SS	*Df*	*MS*	*F*
Perception of willingness to participate	Between Groups	21.11	12	1.76	1.98*
	Within Groups	257.15	290	.89	
Perception of function	Between Groups	11.94	12	1.00	1.77
	Within Groups	162.71	290	.56	
Perception of practice	Between Groups	10.19	12	.85	1.50
	Within Groups	164.47	290	.57	

*p < .05

As a result of the violation of the homogeneity of variance assumption, Games-Howell, one of the Post Hoc tests, was used to determine the direction and level of differentiation between groups. Results in Table 8 represented the significant difference in perception towards practice between high school (M=3.70, Sd=.64) and primary school teachers (M=2.80, Sd=.78).

Table 8. Games Howell post hoc analysis on school level

School	*School*	*MD*	*Sd*	*p*
High School	Pre-school	.37	.18	.22
	Primary school	.34*	.11	.02*
	Secondary school	.12	.09	.56

*p < .05

For the correlation between age and teachers' perceptions, Pearson correlation coefficients were calculated. Teachers' perception of willingness on OIT (M=3.42, Sd=96) was weakly and positively correlated (r(303)=.132, p < .01) with and age (M=32.6, Sd=8.59). teachers' perception of function of OIT (M=2.90, Sd=.76) and age were found to be weakly and positively correlated r(303)=.124, p < .05. However, teachers' perception of practice of OIT and age was not correlated r(303)=.051, p > .01. Single teachers' perceptions of willingness to participate (M=3.26, Sd=.97), perception of function (M=2.73, Sd=.74), and perception of practice (M=3.40, Sd=.79) were lower than married teachers' perceptions of willingness to participate (M=3.54, Sd=.94), perception of function (M=3.03, Sd=.75), and perception of practice (M=3.63, Sd=.72)(See table 9).

Table 9. Descriptive test results according to the marital status variable of teachers

		N	*M*	*Sd*	*Se*
Perception of willingness to participate	Single	131	3.26	.97	.08
	Married	172	3.54	.94	.07
Perception of function	Single	131	2.73	.74	.06
	Married	172	3.03	.75	.06
Perception of practice	Single	131	3.40	.79	.07
	Married	172	3.63	.72	.06

The independent sample t-test was run to examine whether teachers' attitudes towards OIT differ from marital status. The teachers' perceptions of willingness to participate (F(1,301)=6.80, p<.05), perception of function (F(1,301)=11.96, p<.05), and perception of practice (F(1,301)=6.80, p<.05) showed a significant difference.

As a result of the ANOVA for the task variable, a significant difference was observed between groups in their perception of function (See Table 10). Scheffe to determine differences between groups resulted in a significant difference between the teachers' perception of function (M=3.00, Sd=.76) and psychological counsellors (M=.2.62, Sd=.66).

Table 10. One-way ANOVA analysis on tasks of teachers

		SS	*Df*	*MS*	*F*
Perception of willingness to participate	Between Groups	6.57	3	2.20	2.40
	Within Groups	271.70	299	.90	
Perception of function	Between Groups	8.20	3	2.80	4.90*
	Within Groups	166.50	299	.56	
Perception of practice	Between Groups	1.80	3	.60	1.06
	Within Groups	172.80	299	.58	

*p < .05

Via pearson correlation coefficients, the relationships between teachers' attitudes towards online in-service training and technology integration self-efficacy perceptions was tested. The results of the correlation analysis are given in Table 11. There were weak relationships between teachers' perceptions of willingness to participate and using computer technologies, between teachers' perceptions of function and using computer technologies, between teachers' perceptions towards practice and using computer technologies between teachers' perceptions of participation and making students use computer technologies, between teachers' perceptions of function and making students use computer technologies between teachers' perceptions towards practice and making students use computer technologies.

Table 11. The relationship between teachers' attitudes towards online in-service training and their perceptions of technological competence (n=303*)*

		Perception of willingness to participate	*Perception of function*	*Perception of practice*
Using computer technologies	Pearson Correlation	.28	.25	.22
	Sig. (2-tailed)	.00	.00	.00
Making students use Computer Technologies	Pearson Correlation	.31	.28	.29
	Sig. (2-tailed)	.00	.00	.00

Teachers' attitudes towards the OIT and technological integration indicators

The relationships between teachers' attitudes towards online in-service training and technology integration indicators were tested with pearson correlation coefficients. The results of the correlation analysis are given in Table 12. The teachers' attitudes towards online in-service training have significant positive correlations with technological integration indicators.

Table 12. The Correlation Analysis of Teachers' Attitudes Towards Online In-Service Training and Technological Integration Indicators (n=303)

		Perception of willingness to participate	*Perception of function*	*Perception of practice*
Technology literacy	Pearson Correlation	.27	.32	.28
	Sig. (2-tailed)	.00	.00	.00
Teaching with technology	Pearson Correlation	.23	.32	.25
	Sig. (2-tailed)	.00	.00	.00
Professional development	Pearson Correlation	.31	.33	.30
	Sig. (2-tailed)	.00	.00	.00
Etic and policies	Pearson Correlation	.17	.21	.20
	Sig. (2-tailed)	.00	.00	.00
Organization and management	Pearson Correlation	.24	.26	.26
	Sig. (2-tailed)	.00	.00	.00

Discussion, Conclusion, and Recommendations

Most of the teachers were expected to participate in in-service training via online platforms during the pandemic, and they had some perceptions of OIT. The study concentrated on how they experienced these OITs. The study results showed that the teachers have high perceptions of willingness to participate and perception of its usefulness is close to each other. Their low perception

indicates that OIT is required to be offered to meet the needs of the teachers during the pandemic period to increase its functionality. The reason can be that participants have problems applying the information that they have learned from the training. This result may be related to teachers' need for practical information rather than theoretical knowledge in in-service training. Ergin, Akseki, and Deniz (2012) revealed that teachers consider in-service training abstract and dysfunctional. On the other hand, the teachers were more willing to apply the information they had learned in the in-service training in practice. The teachers were volunteers attending OIT, which could relate to their readiness for development and innovativeness. This result could be related to the aspirations of participating teachers to share everything they know with students and apply the knowledge to change the way that they teach. Aslan (2022) suggested student-centered teaching-learning models that develop 21st-century skills in the teaching-learning environment in teacher training programs. Başkan (2001) found that teachers perceive in-service training as work to develop incomplete skills after preservice education. Similarly, Baştürk (2012) concluded that the common expectations of teachers were processed by practical examples of in-service education. It is important that teachers' expectations are met with easily accessible in-service trainings.

Gender of the teachers affected their perceptions on OIT. It is clear that female teachers were more willingness to participate, higher perception of function, and higher perception of practice. On the other hand, Eden, Heiman, and Olenik-Shemesh (2013) found out that males were spending more time developing their professional skills and extending their management/leadership skills while females were spending more time increasing their subject knowledge and improving their teaching skills. Yunkul and Gunes (2022) claimed that digital literacy levels of teacher candidates differ significantly according to gender, especially in favor of men. This contradiction could result from the context of this study, conducted during a pandemic period, and online training, which enabled its participants to join the training with time and space flexibility.

Teachers working between 11-15 years and 21 and above are more willing to participate in OIT activities. There is no significant relationship between teachers' professional seniority and their perception of function and practice; since there is a significant relationship between perception of willingness to participate and teachers' professional seniority. According to Gokdas and Cam (2022), the period of professional experience increases, and digital literacy levels decrease. Demirel and Budak (2003) have reported teachers with more than 10-year experience are more likely to participate in in-service training. So, it can be concluded that older generation teachers are eager to train to keep up with the present. According to Cömert (2018), it may be contended that the teachers, who were new in their teaching career, might consider the in-service training they obtained did not contribute to their professional advancement since their desires for in-service preparation may be high. It may as well be deciphered that the other instructors were not a substance with the preparation they got. On the other hand, teachers' attitudes towards OIT activities have been searched, including branches, and no significant difference between branches. As Demir (2013) mentioned, seniority cannot distinguish within the inclination of the classroom, and department instructors with low levels of status or high levels of position cannot influence teachers' in-service instruction discernments.

Teachers' perception of willingness and function on OIT correlated to their age, unlikely with teachers' perceptions of the practice. As Lessing and De Witt (2007) mentioned, there is no significant correlation between the teachers' age, highest academic qualification, or gender and their fulfillment with continuing professional development. Single teachers' perceptions of willingness to participate, function, and practice were lower than married teachers' perceptions. The reflection of married teachers' sense of responsibility brought by marriage to their professional lives. According to Odanga, Aloka, and Raburu (2015), male and married teachers put more effort into their work, persevere longer in their mission, put more effort into their work and recover fast if they fail to meet targets like increasing the school average. Conversely, Islahi and Nasreen (2013) found that marriage negatively impacts teachers' effectiveness. Hence, the results related to marriage and professional development may change according to the culture, like Turkish cultere in which marriage encumber the spouses.

The research findings revealed weak positive correlations between teachers' attitudes towards in-service training and their perceptions of technological self-efficacyTeachers with positive attitudes towards in-service education use computer teachnologies and make their students use computer technologies, too. . There were weak positive relationships between teachers' attitudes towards OIT

and technology integration indicators. The teachers indicated that their perceptions toward in-service training have a significant relationship with their technology integration indicators' such as "Technology literacy", "Technology Education", "Professional Development", "Ethics and Politics", and "Organization and management". The teachers' technology integration indicators and self-efficacy levels are high. A positive and effective relationship has been found between digital literacy levels and their perspective on distance education (Polat, 2021). The teachers' technology integration self-efficacy is generally high in Turkey (Turgut & Başarmak, 2019; Birişçi & Kul, 2018). In this study, male teachers' perception of OIT is higher than female teachers, which is not statistically significant. Birişçi and Kul's (2018) studies also support this result. On the other hand, Turgut and Başarmak (2019) found a superiority in favor of women in the variable of technology integration indicators. The pandemic process could have resulted in this change in the tendency of teachers to participate in OIT. Increasing demand of teachers indicates a need for more studies to reveal the effect of the pandemic period on teachers' perceptions of their technology integration self-efficacy and technology integration indicators.

Conclusion

In this study, teachers' perception of OIT was examined using quantitative research methods. Using qualitative research methods and addressing teacher opinions by increasing the number of participants can provide a more detailed understanding of the effectiveness of OIT. In practice, OIT activities should be more comprehensive and technology specific. Additionally, TPACK development training would help teachers improve their computer skills; thus, their technological self-efficacy can be increased. In-service training activities can be focused on how to apply in their classroom. It may be difficult for some teachers to be aware of new training activities, so OIT announcements may be sent to teachers' emails or mobile phones. Gamification elements like adding badges to their learning system database would increase their willingness to involve in OIT activities. For self-motivation, questionnaires to learn their needs would help design teacher training programs.

While planning OIT programs, teachers' ideas should be considered while designing the program to be given an OIT, and the school-level teachers should be taken into consideration. OIT programs should be prepared so that practitioners and participants can be active. Moreover, it is thought that training teachers in pre-service and online in-service teacher training with a lifelong learning culture could increase the efficiency of OIT activities. Furthermore pre-school, primary, and secondary school teachers should be encouraged to participate more in OIT. Teachers working between 11-15 years, 21 and above, and married teachers are willing to attend OIT activities. Teachers in the early stages of their careers can be encouraged to participate in online training with different practices. It is necessary to promote the participation of teachers from all branches and increase the number of participants, positively turn teachers' attitudes, and increase their self-efficacy and technology integration.

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