
Teacher Learning and Professional Development During the COVID-19 Pandemic: A Descriptive Study

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Abstract: *The present study aimed at revealing classroom teachers' perceptions and experiences of their learning and professional development (LPD) during the COVID-19 pandemic. A cross-sectional survey design was utilized. Three questionnaires and several open-ended questions were used to collect data from teachers. A total of 441 classroom teachers participated in the study from various provinces across Turkey. The results indicated that classroom teachers attempted to participate in LPD activities during the pandemic. A need-based perspective was adopted in teachers' endeavors to enhance their LPD. Despite some challenges including the lack of technological means, infrastructural inadequacies, and negative psychological effects, the process was fruitful for most of the participating teachers.*

Key Words: Professional development, professional learning, teachers, COVID-19 pandemic, survey

INTRODUCTION

The COVID-19 pandemic has profoundly affected social and organizational structures, norms, and practices. During the pandemic, the crisis management skills of the countries have been tested in the face of unexpected repercussions in various spheres that have required prompt and emergent actions and quick-fix solutions including the field of education. To keep control over the further spread of the pandemic, countries have installed measures that restrict physical proximity which has ultimately resulted in the closure of schools (OECD, 2020; World Bank, 2020). About 1.5 billion students and 63 million teachers have been affected by this situation around the world (International Task Force on Teachers for Education 2030, 2020). The school closures required the transition to and continuation of teaching and learning processes through online environments. According to UNESCO, UNICEF, and the World Bank's (2020) report, teachers used open-source online platforms provided by ministries of education to carry out their courses in online education and instant messaging applications to communicate with students and parents around the world.

The new online education process has affected teachers' expectations, needs, skills, and roles to a great extent (Darling-Hammond & Hyler, 2020). While teachers have worked to prevent learning losses in students and support their well-being during the online education process (TEDMEM, 2020), they have also had to cope with pandemic-related cognitive, subjective,

physical, and social challenges personally (Viac & Fraser, 2020). Teachers' access to digital tools, their readiness to integrate these tools in teaching, and their competencies to use them effectively are the most important needs to be dealt with for teachers to benefit from the online education process (Koyuncu & Düşkün, 2020). Reimers and Schleicher (2020) found that supporting teacher PD is the key point in sustaining online education. As the authors highlighted, despite some steps taken for providing sources and building a communication network for teachers, no funding was provided for teachers' participation in various courses, and teacher PD was not supported thereof. The most widely used resources were some online platforms, tools that enabled sharing information among teachers within the countries, virtual classrooms, printed and online texts, educational television channels, and tools for collaboration with teachers residing in different OECD countries.

In Turkey, the Ministry of National Education (MoNE) has launched several LPD studies peculiar to the conditions of the pandemic, as is done all over the world. One of these studies is the module "Education for Developing Teachers' Design and Management Skills in Online Education Processes Within the Context of Inclusive Education" prepared collaboratively by the MoNE and UNICEF. This module consists of topics like "developing teacher skills regarding student-student, student-teacher, and student-material interactions during online education" and "preparing interactive digital content". Over 150.000 teachers have completed this module so far, and it is expected to be completed by all teachers in 2021 (MoNE, 2020). By October 2020, an online PD program was initiated for 1.2 million teachers across Turkey, and 965.250 teachers have participated and completed this program (Koyuncu & Düşkün, 2020). Furthermore, there are some planned activities such as promoting the effective use of the PD module in the Educational Information Network (EBA), founding a digital bookshelf for teachers, establishing teacher support centers, and enhancing the collaboration among universities, civil society organizations, private sector organizations, and unions to support teacher learning (TL) professional development (PD) during the online education process.

CONCEPTUAL FRAMEWORK

The conceptual framework of the study was laid on in-service teacher training (IT), TL, and PD. IT refers to a collection of activities targeting to cultivate or improve teachers' knowledge, skills, attitudes, and behaviors to attain teaching purposes (Aslan et al., 2018). Sim (2011) posits that IT covers all of the processes that facilitate effective teaching practices in the classroom. PD refers to the processes and activities organized to develop teachers' professional knowledge, skills, and attitudes to enhance student learning (Guskey, 2002). Mitchell (2013) stresses the significance of developing one's knowledge, skills, and attitudes to improve professional practices as to PD. Supporting teacher PD leads to significant developments in teachers' knowledge, beliefs, attitudes, classroom practices, teaching skills, and student learning (Villegas-Reimers, 2003; Hill, 2009). In Turkey, teacher PD is attempted to be sustained through in-service training organized and provided by the MoNE, with a central orientation, and the local branches of the Ministry (Bellibaş & Gümüş, 2016). At the school level, IT seminars are held in September and June, and teachers are obliged to participate in these seminars (Erdem & Alcı, 2018). They can participate in IT organized throughout the year, too.

In recent years, there has been growing interest in the concept of TL. According to Mockler (2020), TL refers to an active process in which teachers both engage in and drive their learning. Opfer and Pedder (2011, p. 394) underline the importance of "the concatenation of practices, learning orientations, and individual and collective learning contexts that must occur for teacher

learning to take place”. Liu et al. (2016, p. 80) conceptualize TL under four dimensions: “collaboration, reflection, experimentation, and reaching out to the knowledge base”, which refer to a multi-source and multi-dimensional process in which teachers spend time and make efforts to develop and share knowledge and experiences both individually and collectively, try novel ideas and instructional methods, reflect on personal instructional practices, and make use of feedback to improve teaching quality (Polatcan, 2021). TL is fostered through the opportunities teachers face in their experiences and practices at school and classroom levels rather than formal professional development activities (Gümüş et al., 2018).

In this study, IT, TL and PD were attempted to be investigated, assuming that learning leads to development, and therefore LPD was adopted to refer to TL, PD and IT. The pandemic has brought about different needs for teacher LPD and made the existing needs more apparent. Thus, developing new mechanisms and models that support teacher LPD in different spheres in line with the online education process should be prioritized in educational policies of all countries. In line with this argument, Tabatadze and Chachkhiani (2021) stress the importance of adopting context- and need-based PD for teachers to help improve their skills and competencies. Therefore, it may be argued that new proposals for carrying out need-based and sustainable LPD activities are essential to support and strengthen teacher LPD. The current study deals with both in-service training organized by the MoNE and teachers’ personal initiatives for learning and development during the pandemic. The researchers attempted to investigate both centrally organized training activities by the MoNE and teacher-led learning and development activities. With this in mind, the purpose of the current study was to investigate teachers’ perceptions and experiences of LPD and determine teachers’ approaches to LPD during the pandemic. The research questions that guided the research were:

1. What are teachers’ perceptions and experiences of LPD activities during the pandemic?
2. How are teachers’ approaches to LPD during the pandemic?
3. What do teachers think of the LPD activities organized by the MoNE during the pandemic?

METHODOLOGY

RESEARCH DESIGN

The current study employed a cross-sectional survey design that requires the collection of data at one point in time (Fink, 2017). Survey research “involves the systematic collection of information from individuals using standardized procedures” (Stockemer, 2019, p. 23) and helps to use the collected information to describe some characteristics or aspects of a population from which the sample is recruited (Fraenkel et al., 2012). In survey research, researchers administer standardized questionnaires for the collection of the data in different modes varying from telephone to interviewing to postal pen-and-paper format to online forms (Muijs, 2004).

SAMPLE

A total of 441 classroom teachers participated in the research from various provinces (N=63) in the eastern, central, and western regions of Turkey. The sample was recruited through the convenience sampling technique. An online data collection form was developed and shared with classroom teachers via social media platforms (i.e., Facebook groups, Twitter, Instagram, and WhatsApp). Teachers were invited to take part in the research electronically. The demographic information regarding the participants is presented in Table 1.

Table 1
Demographic Information Regarding the Participants

Gender	n	%
<i>Male</i>	117	26.5
<i>Female</i>	324	73.5
Age	n	%
<i>20-25 years</i>	78	17.7
<i>26-30 years</i>	145	32.9
<i>31-40 years</i>	135	30.6
<i>41 years and ++</i>	83	18.8
School type	n	%
<i>State</i>	398	90.2
<i>Private</i>	43	9.8
Seniority	n	%
<i>1-5 years</i>	163	37.0
<i>6-10 years</i>	105	23.8
<i>11-15 years</i>	77	17.5
<i>16 years and ++</i>	96	21.8
The grade taught	n	%
<i>1st grade</i>	149	33.8
<i>2nd grade</i>	93	21.1
<i>3rd grade</i>	88	20.0
<i>4th grade</i>	94	21.3
<i>Multi-grade</i>	17	3.9
Education level	n	%
<i>Associate's degree (2-year)</i>	4	0.9
<i>Undergraduate degree (4-year)</i>	390	88.4
<i>Postgraduate degree (MA, PhD)</i>	47	10.7

As Table 1 demonstrates, most of the participants were female (73.5%). Teachers aged between 26-30 years (32.9%) and 31-40 years (30.6%) constituted more than half of the sample. A large number of teachers were working at public primary schools (90.2%). Teachers holding varying professional seniority (from 1-5 years to 16 years and ++) participated in the research. Teachers working in all primary-level education grades (from 1 to 4) took part in the study. Furthermore, a small group of classroom teachers (3.9%) were teaching in multi-grade classes. The participants mostly held a 4-year undergraduate degree (88.4%).

DATA COLLECTION INSTRUMENTS AND THE CONTENT VALIDITY

The researchers collected data through close-ended and open-ended questions. Firstly, three questionnaires including Likert-type items were developed by the researchers. The first questionnaire included 10 items with three-point Likert-type items (1=decreased, 2=did not change, 3=increased) measuring changes that occurred in teachers' LPD during the pandemic. The second questionnaire included 7 five-point Likert-type items (from 1=strongly disagree to 5=strongly agree) and was about teachers' efforts for LPD. Lastly, the third questionnaire was about teachers' perceptions of the Ministry of National Education's (MoNE) activities regarding LPD during the pandemic and involved 11 five-point Likert-type items (from 1=strongly disagree to 5=strongly agree).

The researchers followed several procedures for validating the content of the instruments. Firstly, the researchers worked collaboratively to write the items in the questionnaires. After the first draft forms were constructed, they were sent to two specialists in the field of education to examine item comprehension. It is suggested to seek experts' views to ensure content validity (Polit & Beck, 2006). After seeking their opinions, some modifications were made in the forms. For a second examination of the questionnaires, three in-service classroom teachers were invited, and they scrutinized the items in each questionnaire. After taking their opinions, the questionnaires were finalized.

Secondly, five open-ended questions were also written down to seek detailed information from a large group of classroom teachers about LPD during the pandemic. These questions were also presented to the abovementioned specialists and classroom teachers to examine them linguistically. After the opinions of the examining panel were sought, the open-ended questions were constructed. A sample open-ended question was: "Do you believe you have had opportunities/faced situations that contribute to your professional learning and development during the COVID-19 pandemic? If yes, how? If no, why?". It was deemed important to collect both quantitative and qualitative data to better understand teacher perceptions of LPD by learning to what degree they engaged in LPD activities and revealing what kind of LPD activities they participated in, besides the effects of the pandemic on LPD.

THE PROCEDURE AND DATA COLLECTION

The data were collected through online forms between 6 November 2020 and 30 November 2020. To ensure the collection of data voluntarily, an item requesting informed consent to participate in the study was also placed at the beginning of the online form. The researchers explained the purpose of the research and provided instructions on how to fill in the form in the beginning part of the online form. The form including the questionnaires and open-ended questions were shared on social media platforms.

DATA ANALYSIS

The data obtained from close-ended questions were analyzed using the IBM SPSS 20.0 package program. Descriptive statistics were used to analyze the data. After the analysis, the findings were provided in graphs produced using Microsoft Excel 2010 program. To ease the interpretation of the findings, the responses to questionnaires were presented using figures. The open-ended questions were content-analyzed. The content analysis is a qualitative analysis method that can be used to analyze open-ended questions through coding the survey responses (Fink, 2017). Thus, common views and aspects of LPD during the pandemic could be revealed.

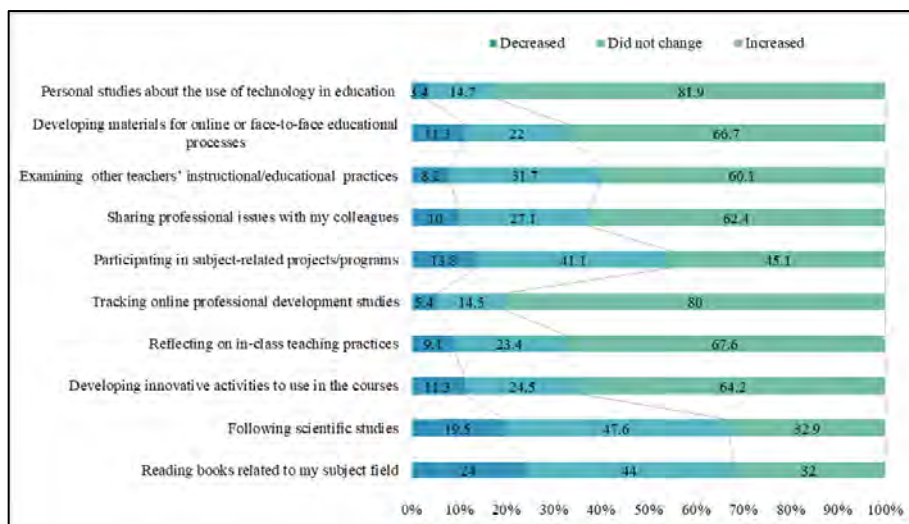
FINDINGS

The findings of the research were obtained based on the analysis of the quantitative and qualitative data. The findings are presented in two subsections as quantitative findings and qualitative findings to enhance readability.

QUANTITATIVE FINDINGS

The findings of the close-ended questions are presented using figures. The themes that developed via the content analysis of the responses to the open-ended questions are provided using tables. Figure 1 demonstrates teachers' views on changes in LPD during the pandemic.

Figure 1
Changes in Teacher LPD



According to Figure 1, a large percentage of teachers thought that they carried out personal studies about using technology in education (81.9%) and tracked online PD activities (80%). Furthermore, more than half of the teachers pointed to an increase in developing materials for teaching (66.7%), examining their colleagues' teaching practices (60.1%), sharing professional issues with their colleagues (62.4%), reflecting on their teaching practices (67.6%), and developing innovative activities to use in the courses (64.2%). These responses give the impression that teachers engaged in LPD activities during the pandemic more than the pre-pandemic process. However, teachers reported that their attitudes towards reading subject-related books did not change (24%) and even decreased during the pandemic (44%). Likewise, following scientific studies did not change (47.6%) during the pandemic and even decreased (19.5%) for some teachers. Another point that requires attention is the percentage of teachers who thought that their participation in subject-related projects increased (45.1%). This was higher than the percentage of the participants who believed that their participation in the said projects did not change (41.1%) and decreased (13.8%). Figure 2 shows teachers' initiatives regarding LPD during the pandemic.

As demonstrated in Figure 2, more than half of the teachers agreed that they took personal steps for their LPD and developed professionally during the pandemic. The most strongly agreed item was about participating in online PD programs (21.1%). Teachers agreed that they could explore new opportunities to develop professionally (*agree*: 53.1%; *strongly agree*: 13.8%) and responded that the online PD activities contributed to their PD (*agree*: 45.4%; *strongly agree*: 16.8%). Finding more opportunities to work harder to develop professional knowledge and competencies (45.6%) and collaborating with colleagues for PD (45.6%) were equally agreed upon. The most disagreed item was about doing studies that could not be previously done for PD (25.4%). Figure 3 shows teachers' views about the LPD activities organized by the MoNE during the pandemic.

Figure 2
Teachers' Initiatives Regarding LPD

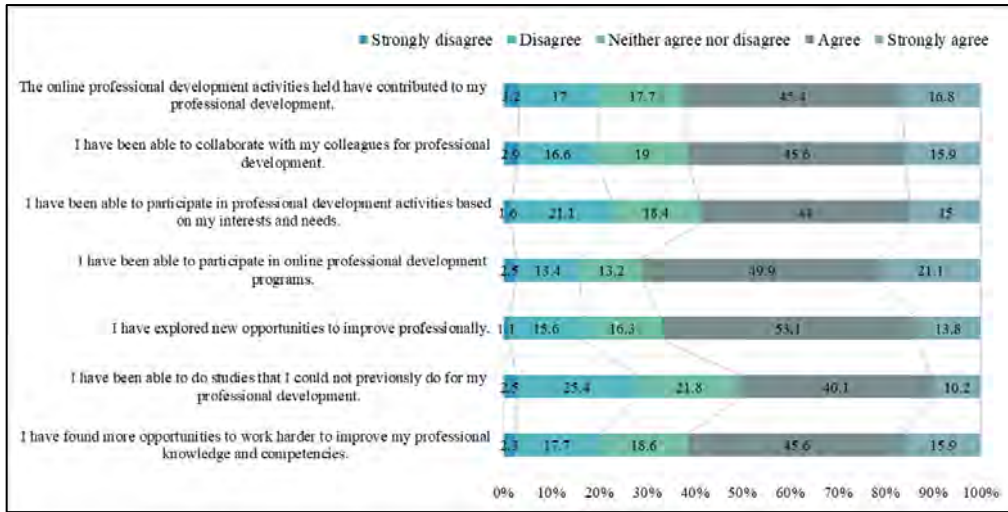


Figure 3
MoNE's Activities Organized for LPD

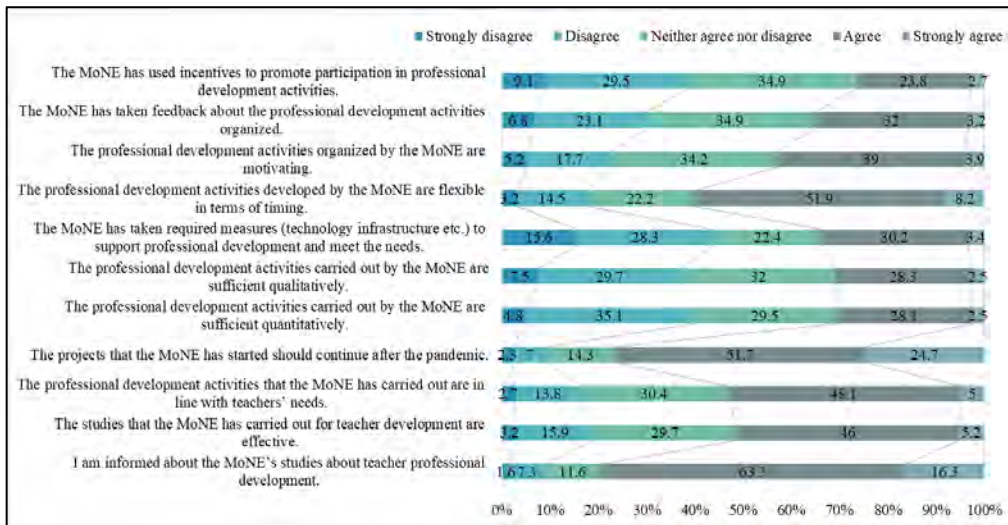


Figure 3 displays teachers' views on the LPD activities carried by the MoNE. Divergent opinions were revealed regarding the items provided. A majority of the teachers thought that they were informed about the LPD activities organized by the MoNE (63.3%), and more than half of them opined that the PD projects organized by the MoNE should continue after the pandemic (51.7%). Furthermore, the LPD activities of the MoNE were believed to be flexible in terms of timing (51.9%). 46% of the teachers found the LPD activities of the MoNE effective and believed them to be appropriate for teacher professional needs (48.1%). However, about one-third of the teachers held negative opinions about the MoNE's using incentives to promote the participation in LPD among teachers (29.5%), taking required measures to support LPD and to meet teachers' needs (*strongly disagree*: 15.6%; *disagree*: 28.3%), and the perceived sufficiency of the LPD

activities both quantitatively (*strongly disagree*: 4.8%; *disagree*: 35.1%) and qualitatively (*strongly disagree*: 7.5%; *disagree*: 29.7%). 3.2% of the participants strongly agreed and 32% of them agreed that the MoNE gathered feedback about the LPD activities carried out. Some teachers opined that the activities were motivating (*agree*: 39%; *strongly agree*: 3.9%).

QUALITATIVE FINDINGS

Teacher responses to the open-ended questions targeted to reveal detailed information about teacher LPD during the pandemic are presented in subsequent tables. Five tables were prepared to demonstrate different aspects of LPD. Table 2 demonstrates the codes regarding teachers’ perceptions of the LPD opportunities during the pandemic.

Teachers expressed their views regarding finding opportunities for LPD by stressing both positive and negative conditions and effects (Table 2). Given the codes developed, it can be seen that the positive conditions and effects are stressed more than the negative ones. Among the positive conditions and effects, teachers focused on the abundance of online training opportunities, flexibility in finding time, cultivating skills and knowledge about online teaching, getting to know about different technologies and using them, and doing research to teach online more effectively. Two teachers wrote:

As my working hours were heavy before, I could not spare time for professional development activities. I had an opportunity to develop myself as I stayed home during the pandemic. The number of online training activities has increased, and time was flexible at home. I, therefore, was able to participate in them more easily.

Some believed that they could easily access training opportunities, integrate technology into the learning process, and read about their subject fields. Apart from positive thoughts, some teachers emphasized the negative effects of the pandemic such as anxiety, low motivation, and feeling blocked. Two respondents stated:

I could not overcome the psychological effects of the pandemic, so I could not adapt to these opportunities.
I was always anxious during this process.

An interesting point underlined was teachers’ disbelief in the effectiveness of online training. Some argued that there was a lack of opportunities for LPD and infrastructure. The increase in workload was stressed along with time constraints accordingly. Taken together, most of the participating teachers opined that they could find opportunities for LPD and were able to take the global crisis as an opportunity to learn and develop. Table 3 presents teachers’ views on the factors affecting their LPD during the pandemic.

Table 2
Finding Opportunities for LPD during the Pandemic

Theme	Sub-theme	Code	N
Finding opportunities for LPD	Positive conditions and effects	The abundance of online training	65
		Flexibility in finding time	41
		Acquiring knowledge and skills for online teaching	27
		Recognizing and using different technologies	20

	Researching to continue teaching-learning activities	18
	Accessing professional training easily	17
	Integrating technology into learning environments	15
	Reading about the subject field	14
	Transformation of techno-pedagogical understanding	8
	Finding opportunities for personal development	4
	Communicating and sharing with colleagues	3
	Exploring personal incompetence in technology use	3
	Adapting to the situation	2
	Total	237
Negative conditions and effects	Negative psychological mood	18
	Disbelief in online education	7
	Constraints to find time	7
	Online training's being ineffective	7
	Increase of workload	6
	Insufficient infrastructure	4
	Lack of opportunities	4
	Feeling blocked	4
	Inability to evaluate this process as an opportunity	4
	Not informed about online training	1
	Desire not to be subjected to technological tools	1
	Total	45

Teachers were asked about the factors affecting their LPD during the pandemic. Two sub-themes emerged concerning barriers and facilitators in terms of LPD as demonstrated in Table 3. Most of the teachers answering the related open-ended question focused on the barriers to and complications of LPD. Being devoid of face-to-face activities, problems of infrastructure and means, inefficient online training, lack of motivation, the home environment's hindering online training, and increase of workload were the most underscored hindering factors. Three respondents stressed that:

It is hard to come together and communicate effectively in this process.
 ...The Internet problem, lack of online training, and limited announcement of training activities...
 Generally, there was not an effective activity. Some of them were just carried out, and some were about daily problems.

Table 3
Factors Affecting Teacher LPD during the Pandemic

Theme	Sub-theme	Code	N		
Factors affecting teacher LPD	Barriers	Being devoid of face-to-face activities	38		
		Problems of infrastructure and means	34		
		Online training's being inefficient	19		
		Lack of motivation	16		
		Home environment's hindering online training	13		
		Increase of workload	12		
		Having problems in finding time	7		
		Insufficiency about ICT use	6		
		Lack of training about adaptation to the process	5		
		Screen addiction	4		
		High cost of online training	3		
		The difficulty of the process	3		
		Lack of debriefing about online training	2		
				Total	162
			Facilitators	Holding online training	44
Ease of online training in timing, place, and costs	28				
Sufficient infrastructure and opportunities	6				
Collaborating with colleagues	5				
Improvement of technology usage skills	4				
Desire to adapt to the process	2				
		Total	89		

Not finding time to participate in LPD activities was regarded as an inhibitor by some teachers. On the other hand, a group of teachers stressed the facilitating factors for LPD during the pandemic: Holding online training, ease of online training in timing, place, and costs, sufficient infrastructure, and opportunities, collaborating with colleagues, improvement of technology usage skills, and desire to adapt to the process were the aspects considered to be facilitating factors. One teacher commented:

It was hard for me to ensure classroom management and keep students' interests and enthusiasm dynamic. These factors caused me to feel insufficient professionally. To close this gap, I participated in webinars and exchanged ideas with my colleagues. I participated in some activities carried out by the Ministry.

Table 4 shows teachers' views about effective activities organized by various organizations and the perceived benefits of participating in these activities.

Table 4
Teacher Views on Effective LPD Activities and Perceived Benefits

Theme	Code and Sub-code	N
	<i>MoNE's activities about online education</i>	52
	Enabling using online education more effectively	10
	Learning new things	1
	<i>PD seminars by other sources</i>	35
	Being provided by field experts	1
	Being flexible	2
	Up-to-date subject field education	1
	Being practice-oriented	1
	<i>Storytelling</i>	28
	Using for attracting students' interests	1
	<i>The activities about technology</i>	28
	Being current	1
	Usable in the pandemic process	1
	The training supporting technology use	2
	<i>Mind and intelligence games</i>	21
	Being informative	1
	Being interested in these games	1
	<i>Museum education</i>	17
	Changing standpoint (of view)	1
	<i>The activities regarding online education</i>	14
	Being informative	1
	Being practice-oriented	6
	<i>Natural disaster education</i>	9
	Raising awareness	1
Effective LPD activities and perceived benefits	<i>Child psychology</i>	7
	Understanding children and providing psychological support	3
	<i>Drama</i>	6
	<i>Material development</i>	5
	Being practice-oriented	1
	<i>Traffic and first aid</i>	5
	<i>Sign language</i>	4
	Promoting learning	1
	<i>Foundation of Teacher Academy</i>	4
	<i>eTwinning</i>	3
	<i>Inclusive education</i>	3
	<i>Teaching methods and techniques</i>	3
	<i>Contact-free games</i>	3
	<i>Benefitting from colleagues' experiences</i>	2
	<i>Coding education</i>	2
	Being interested	1
	<i>School administration's informing</i>	2
	<i>STEM</i>	2
	<i>Academics' providing new perspectives</i>	1
	<i>Dyslexia course</i>	1
	<i>Hybrid education seminar</i>	1
	<i>Education in IB Primary Years Program</i>	1
	<i>Online education organized by universities</i>	1
	Total	260
	Did not attend	28

Finding ineffective	25
Total	313

Teachers who answered the question about the activities they participated in and found effective expressed their views by referring to the perceived benefits (Table 4). Most of the teachers stated that they participated in various LPD activities provided by different organizations despite a small group who did not participate in any LPD activities. Some believed that the activities held during the pandemic were ineffective. The activities carried out by the MoNE, other sources such as unions and think-tanks, and Foundation of Teacher Academy, among others, were delineated to be effective. The activities that were found effective and mentioned more than others were related to online education, online teaching, storytelling, technology, mind and intelligence games, museum education, natural disaster education, child psychology, drama, material development, traffic and first aid, and sign language. One teacher responded:

School-based disaster education, museum education, distance education with Python, developing android mobile applications with Kotlin, and the seminar about using zoom. Enhancing my knowledge from home helped me save time. This also decreases the risk of being infected with COVID-19 or another disease. I believe that we have received a very safe education in terms of health.

Teachers underlined the reasons why they found the LPD activities useful by delineating some positive effects of these activities such as helping to use online education effectively, being informative, current, and practice-oriented, being flexible and provided by experts, raising awareness and understanding, and addressing teachers' interests. Some teachers underlined that:

I found the activities about distance (non-contact) games, the seminars about alternative applications, and activities about child psychology useful in terms of practicability. They were practice-oriented rather than verbal directives.
 Webinars and in-service training helped me refresh my content knowledge.
 I found the activities about distance education and digital material design effective because these were urgent during the pandemic.

The findings provided here evinced the various sources that teachers used to learn and develop professionally. Although teachers expressed the activities they benefitted from, most of them did not provide specific reasons for participating in and finding these activities useful. Table 5 demonstrates the organizations contributing to teacher LPD during the pandemic.

Teachers expressed different organizations regarding LPD during the pandemic (Table 5). Teacher responses reflected diversity in terms of organizations supporting LPD. Among the organizations, both public and private ones were emphasized. The MoNE and universities were the most stressed organizations. Besides these organizations, CSOs (Civil Society Organizations), social media platforms, private organizations and schools, school management, and colleagues were among the sources believed to have contributed to LPD. As for the ones provided by the MoNE, the ease to access these activities and need-based orientation were underscored as well as the diversity of the activities, being a personal work organization, and offering innovative activities, among other reasons. Two teachers wrote that:

I participated in online training activities of the MoNE. There were useful activities in terms of professional development.

I mostly watched live broadcasting by some experts on social media. As social media is more accessible, I was informed about new activities through social media.

I participated in eight in-service training activities by the MoNE. I have learned new things in terms of my profession.

I found the activities by other sources useful rather than the ones by the MoNE as they were more academic and need-based.

Few responding teachers stated that they did not find the activities effective, and some did not participate in the activities. Table 6 displays the findings regarding proposed changes to occur in teacher LPD in the post-pandemic process.

Table 5
Contributing Sources to Teacher LPD during the Pandemic and Reasons

Theme	Code and Sub-code	N
Contributing sources and perceived reasons	MoNE	197
	Being active	2
	Providing field-specific studies	2
	Being offered by field experts	1
	Being a personal work organization	6
	Being disciplined (planned)	2
	Providing diversity in terms of training	6
	Easy to reach/access	10
	Offering useful training	3
	Conducting required informing activities	2
	Being informed	4
	Being oriented to the topics needed	13
	Being institutional studies	3
	Organizing PD training	1
	Offering free training	3
	Innovative programs	4
	Being compulsory	1
	Universities	36
	Providing a wide range of training studies	2
	Being accessible	3
	Being oriented to the topics needed	3
	Being offered by field experts	3
	Innovative programs	1
	CSOs (Civil Society Organizations)	19
	Offering diversity in training	1
	Focusing on current topics	1
	Addressing the needs	1
	Being announced	1
	The activities held on the social media	9
	Being easily heard/informed	1
	Unlimited number of participant	1
	Private organizations	7
	Innovative programs	3
	Private schools	5
	School management	5
	Contributive in terms of technology	1
	Colleagues	3
	Benefitting from colleagues' studies	4

Village Schools Transformation Network (KODA)	1
Ministry of Health	1
TV	1
Activities of publishing houses	1
Brain academy	1
Helping to develop professionally	1
Total	286
Finding ineffective	12
Not being realistic	1
Did not participate	5
Total	303

Table 6
Proposed Changes in Teachers' Approaches to LPD in the Post-Pandemic Process

Theme	Sub-theme	Code	N
Proposed changes in teacher LPD	Positive change	Improvement of knowledge and skills about technology	36
		Development in using online education	27
		Integrating ICT into education	20
		Teachers' openness to development	18
		Increase in using technology	16
		Transformation in standpoint towards technology	15
		Transformation in standpoint towards education	13
		Transformation in standpoint towards online education	12
		Development in the sustainability of education	6
		Contributing to PD	6
	No change	Encouraging hybrid education models	5
		Embracing the profession	4
		More collaboration/sharing among colleagues	4
		More research conducted by teachers	4
		Enhancing teacher-student-parent collaboration	2
		Development of technology-based materials	2
		Facilitating daily life	1
		Helping time management	1
		Teacher resistant to change	12
		The process' not being taken seriously	4
Teachers' disbelief in this process	4		
Systematic barriers for development	4		
The value of face-to-face education is understood	2		
Finding ineffective	1		
Continuing problems of students	1		
School as a barrier to change	1		

As Table 6 displays, most of the responding teachers stated that there would be positive changes in teacher LPD by signifying changes in the improvement of knowledge and skills about technology, development in using online education, integrating ICT into education, teachers' openness to development, increase in using technology, and transformations in standpoint towards technology, education, and online education. The global crisis seems to have been considered as an opportunity to trigger changes and transformations in technology and its usage and teacher skills and knowledge and standpoints towards education and different modes of education. A small

group of teachers did not opine that there would be positive changes and transformations due to teacher resistance to change, not taking the process seriously, teachers' disbelief in this process, and system-related barriers for development. Two teachers opined that:

I believe that teachers have developed in terms of online education and synchronous teaching. We have many things to learn such as giving assignments to students through the Internet.
I do not believe it. I know that most of my colleagues do not participate in training activities as these are not obligatory. I know that they still teach through classical lecturing or by using only the board without using web tools.

DISCUSSION, CONCLUSION, AND IMPLICATIONS

Teacher LPD plays a significant role in enhancing teacher quality. Technological advancements have brought about a novel and diverse LPD process for teachers. This research attempted to reveal teachers' perceptions and experiences of changes in their approaches to LPD, their LPD studies, and the LPD activities organized by the MoNE during the pandemic. Regarding the changes in teachers' LPD approaches, it may be observed that teachers' studies in using technology in education (81.9%) and monitoring/following online PD studies (80%) have increased to a large degree. Teachers' endeavors to engage in studies for using technology may be considered as an inevitable situation. The global pandemic has made it visible that teachers do not have digital skills and competencies as required (Bozkurt et al., 2020). In a multi-country comparative study, Huber and Helm (2020) underlined the need for supporting schools through financial and material sources to develop technical equipment and professional development of school staff for digital competencies.

Despite teachers' technological incompetencies reported by OECD, UNESCO, and World Bank, this process has emerged as an opportunity for teachers to develop their pedagogical skills for using technology in education (Sarı & Nayır, 2020; Kırmızıgül, 2020). The increase in teachers' monitoring/following online LPD activities may have resulted from the differences in teachers' participation modes in these activities: (a) Teachers' formal participation in online LPD activities organized by the MoNE, (b) increasing informal interactive education-based chatting in social media (i.e. Instagram, Twitter, etc.) and other platforms (i.e. Zoom, Microsoft teams, Skype, etc.) (Trust et al., 2016); (c) teachers' finding opportunities to participate in the activities based on their interests (Shaha et al., 2016), and (d) flexibility in time for online LPD activities.

One of the most interesting findings was that some teachers asserted that there were no changes in their reading subject-related books (44%) and following scientific publications (47.6%) during the pandemic, an inconsistent finding with the related literature. For example, Kaya et al. (2020) concluded that teachers tended to read books during the pandemic more than normal times. The present study revealed an increase in designing suitable materials for online education (66.7%) and using these materials in the courses. The findings demonstrated that there was an increase in teachers' sharing professional issues with their colleagues (62.4%) and examining other colleagues' instructional practices (60.1%). The main reason behind this increase may be that teachers continuously needed to interact with their colleagues to experience this process more effectively as teaching online was a unique experience for most teachers. Consistently, Lantz-Anderson et al. (2018) argue that online PD activities both strengthen the collaboration among teachers and enhance interaction and sharing. Burke and Dempsey (2020) concluded that teachers used various online tools and applications to communicate; schools took some measures to ensure teachers' sharing with their colleagues, and specifically, teachers held meetings frequently for

sharing resources and course plans at the same grade level. Furthermore, it was found that online LPD activities were perceived to have contributed to teacher development. Teachers reported having opportunities to participate in online LPD activities based on their interests and needs. Planning learning and development activities based on teachers' needs and interests may contribute to their reflections on classroom practices (Bümen et al., 2012).

An issue focused on in the study was to determine what teachers think of LPD activities organized by the MoNE during the pandemic. A large group of teachers stated they were generally informed about the MoNE's LPD activities. In recent years, more than one million teachers have engaged in a search for various PD activities in Turkey. The MoNE announces the PD activities that are specifically organized in line with online education and training on the website of the General Directorate of Teacher Training and Development, its social media sites, and the Education Information Network (EBA).

Several teachers opined that online LPD and in-service training activities organized by the MoNE should continue in the post-pandemic period, which stands out as a significant finding. Previous research demonstrates that online PD activities can strengthen critical thinking and learning (Şendağ & Odabaşı, 2009), meet professional learning needs (Farris, 2015), support the social aspects of learning (Holmes et al., 2010), have content that could be easily transferred to the classroom environment (Reeves & Pedulla, 2011) and promote self-reflection (Scott & Scott, 2010) when compared to face-to-face PD activities. In recent years, the quality and effectiveness of traditional PD activities have been questioned and the advantages of online PD have been widely stressed. Therefore, the MoNE's designing and implementing online PD activities seems to be important for addressing this need because more than half of the respondents found the LPD activities carried out by the MoNE effective and considered these activities to be need-based. However, prior research indicates the ineffectiveness and insufficiencies of the PD activities held by the MoNE (Baştürk, 2012; Bayrakçı, 2009; Bümen et al., 2012; Eroğlu & Özbek, 2020; Bellibaş & Gümüş, 2016; Karip, 2019; Sıcak & Parmaksız, 2016). Few studies in the literature found the PD activities by the MoNE effective for teacher development (see Gültekin & Çucukçu, 2008). In this sense, the findings obtained in the present research are inconsistent with those of previous studies. Thus, it may be argued that the MoNE may have increased the quality of PD activities held online during the pandemic. Furthermore, some teachers believed that the MoNE's activities were flexible in terms of timing. This may have resulted from the MoNE's carrying out the LPD programs both synchronously and asynchronously and teachers' finding opportunities to spend time for participation in these programs thereof. However, one-third of the respondents thought that there were no incentives and motivating factors for participation in the MoNE's LPD activities. Bümen et al. (2012) posit that the main reason behind this situation is associated with Turkey's PD policies, which was supported by previous research results (see Baştürk, 2012; Bümen et al., 2012; Gönen & Kocakaya, 2006).

The findings of the current research indicated that most of the respondents (n=237) found more opportunities to participate in LPD activities during the pandemic. This finding was consistent with the study conducted by Bakioğlu and Çevik (2020). It was revealed that holding LPD activities in a frequent timeline and economical mode in terms of time, access, and costs were among the main factors that facilitated teachers' participation in LPD activities. Yurtbakan and Akyıldız (2020) found that virtually held, diverse training activities helped classroom teachers to participate in these activities as there was flexibility in terms of time and place during the pandemic. Demir and Kale (2020) revealed that teachers have developed their knowledge and skills about using distance education in this process.

Some teachers stated not to have participated in PD activities during the pandemic. There were various reasons behind this finding: the pandemic affected their anxiety levels negatively and lowered their motivation; some novel issues regarding the pandemic caused workload and constructed time constraints; some teachers did not believe in the effectiveness of online education, and some disadvantages were stemmed from insufficiencies of the infrastructure and technological means. Research has consistently revealed that teachers and prospective teachers suffered from negative emotional states such as pandemic-related fear, anxiety, and demotivation (Agnoletto & Queiroz, 2020; Bakioğlu & Çevik, 2020; Demir & Kale, 2020), and uncertainty and distrust in new learning situations (Gonzalez-Calvo et al., 2020). Furthermore, Daniel (2020) stated that there were some barriers to learning during the pandemic because individuals were anxious and suffered from a lack of motivation, home environments were not sufficient for learning, and there were infrastructural insufficiencies and problems about owning required technological means.

The results of the second open-ended question indicated that face-to-face PD activities were left unfinished, and those online training activities were perceived to be ineffective. Also, time constraints, an unsuitable home environment for learning, and insufficient knowledge and skills about using ICTs were reported to be barriers to participation in LPD activities. Consistently, Lau et al. (2020) underlined that negative attitudes towards online education and unsuitable home environment came to the fore as barriers to benefit from online training. Burke and Dempsey (2020) also found that teacher knowledge and skills about distance education and technology use were insufficient. Hartshorne et al. (2020) revealed that teachers' insufficient preparation, training, and competencies prevented them from making use of the online education process effectively and caused this process to mark as an additional source of stress. On the other hand, teachers opined that online education enabled flexibility in terms of time and place, enhanced collaboration and sharing among colleagues, and developed technology usage skills.

Based on the findings, it may be asserted that participating teachers found some of the LPD activities useful and effective. These were the activities by the MoNE regarding distance education, the seminars held on the social media platforms, storytelling education, training on using technology and distance education, training on mind and intelligence games, and museum education. Parsons et al. (2019) found that teachers participated in online PD programs offering training on technology, classroom management, culture, and diversity. In this study, some participants found the LPD activities ineffective, and some even did not participate in any activities during the pandemic. Although reasons for these thoughts may vary, possible reasons may include reluctance to leave existing habits and assumptions, inability to adapt to the new situation, and disowning required knowledge and skills. Research revealed that teachers had difficulties regarding adaptation to distance education (Allen et al., 2020) and were reluctant to teach remotely (Leech et al., 2020). Other significant barriers were believed to have resulted from the lack of infrastructure, the unpractical nature of the distance education system, and limited technological means.

A significant number of teachers (N=286) thought that the LPD activities organized and carried out by different organizations were effective. Among the organizations, the MoNE (N=197) was ranked as the most contributing organization because the activities were planned by experts based on teachers' needs and delivered free of charge, as teachers argued. Consistently, Demir and Kale (2020) stressed that the MoNE's activities regarding distance education helped teachers to experience this process more productively. Additionally, universities, CSOs, and private education organizations were detected to be other contributing organizations.

The findings revealed that most of the teachers believed that there would be transformations in teacher LPD to a great extent (N=221) in the post-pandemic period. On the other hand, some teachers (N=67) did not think that there would be changes in teacher approaches to LPD after the pandemic. The reasons provided were that teachers are resistant to change, do not take this process seriously, and do not believe in the effectiveness of online education. Confirming this finding, Külekçi Akyavuz and Çakın (2020) found that teachers had limited knowledge about distance education and were uninterested in distance education. Leech et al. (2020) underline the need for providing technology training for teachers to enhance the quality of remote instruction and argue that it is necessary to help students and parents learn how to navigate technology and e-learning platforms.

Taken together, the findings of the research may indicate that teachers used technology and engaged in tracking LPD activities more than normal times. Furthermore, teachers tried to develop suitable materials for online education and use these materials in the courses. Teachers shared professional issues with their colleagues and examined other colleagues' instructional practices. Online LPD activities were perceived to have contributed to teacher development. Teachers had opportunities to participate in online LPD activities to a large degree based on their interests and needs, such as the ones about distance education, storytelling education, technology, and mind and intelligence games, *inter alia*. Only half of the participants believed that the LPD activities were need-based, which means some LPD activities were not in line with teachers' needs. This issue requires further consideration as a lack of adopting a need-based perspective in LPD may limit learning and development opportunities for teachers. Some teachers perceived no change in their orientations towards reading subject-related books and scientific publications.

Despite being a crisis causing a global panic, this process helped many teachers to participate in LPD activities. This was mostly because of the characteristics of the LPD activities carried out: being frequent and economical in terms of time, access and costs. The results give the impression that teachers enhanced their LPD by acquiring new knowledge and skills and experiencing changes in their understanding of technology and education. Increased collaboration and sharing among colleagues were among the perceived benefits which refer to TL. However, the same fruitful process was not valid for some others. Once more, the impacts of the pandemic such as negative psychological effects, increased workload, time constraints, insufficiencies in terms of infrastructure and technological means, and disbelief in the effectiveness of online education limited teacher LPD, apart from working from home that made participation in LPD difficult.

The activities organized by the MoNE were considered to be among the most effective ones, along with those of universities, CSOs, and private education organizations. An issue that requires further consideration is the lack of incentives and motivating factors for participation in the MoNE's LPD activities. System- and school-level incentives and motivating factors should be provided to enhance teacher participation in LPD activities. Lastly, the results indicate that teachers mostly believed that there would be transformations in teacher LPD in the post-pandemic process. There were concerns about such transformations, though, due to teacher resistance, inability to take advantage of this process, and disbelief in online education. Future LPD activities and training may focus on the potential ways to facilitate the expected transformation of teacher approaches for LPD.

LIMITATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

This study bears some limitations that need to be considered while interpreting the results of the study. This study is based on teachers' self-reports that were collected using an online survey

mode. Social desirability may have played a role in teacher responses to the questionnaires. A longer period of investigation into teacher LPD activities, related behaviors, and perceived benefits could have illuminated the results obtained in this study. The study employed a cross-sectional survey design which has hindered observing changes in teachers' endeavors for LPD during the pandemic. Utilizing various research methods, especially qualitative, may help to gain deeper insights into teacher LPD and affecting factors from an ecological perspective.

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