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Focusing on Sustainable Development of Teachers

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Abstract

The present study aims to investigate in which areas teachers need Professional Development Activities (PDAs), the barriers that prevent teachers from participating in PDAs, their frequency of participating in collegiality-based PDAs, and the relationship between their views about the effectiveness of PDAs and their professional commitment. The sample of the study comprised 821 teachers working at different grades in public schools. The study draws the following conclusions: The vast majority of teachers were of the opinion that the PDAs they participated in had positive effects. It was found that teachers mostly needed knowledge about the effective use of information technologies in education as well as about subject-specific teaching methods and techniques. It was observed that teachers did not participate sufficiently in collegiality-based PDAs that include peer coaching. Finally, it was found that teachers' perceptions of barriers to their participation in PDAs, their level of need for PDAs, and their frequency of participation in collegiality-based PDAs had a significant effect on their attitudes towards PD.

Key words: professional development, teacher improvement, learning needs, learning barriers, collegiality learning

Introduction

With globalization, the ultimate goal of modern education systems has become to provide educational outputs of high quality and standards. Despite differing views and debates (Desimone, 2011), teachers and training of teachers have a key role in improving the quality of various aspects of education systems, particularly student achievement (Blömeke et al., 2011; Hattie, 2009; Organisation for Economic Co-Operation and Development [OECD], 2005). The goal of reaching high pedagogical standards in education as a reflection of competition and the race to keep up with the times increases the expectations from teachers (Bubb, 2004). With the increasing importance of student-centred modern learning approaches, teachers, rather than being the sole ruler of the

classroom and the transmitter of unchanging knowledge, are expected to stay up-to-date in ever-changing learning environments, adapt to various roles, and undertake a mission to develop professionally. From this point of view, it can be said that countries care about teachers' professional development and invest a lot in PDAs as a way of facilitating improving the quality of learning outcomes (Guskey & Yoon, 2009; Hardy, 2012).

Guskey (2003) defines PDAs as "processes and activities designed to enhance the professional knowledge, skills, and attitudes of teachers so that they might improve the learning of students." (p. 748). Effective PDAs help teachers refresh and develop their knowledge and improve their classroom practices (OECD, 2005). However, seeing teachers as passive recipients of knowledge and therefore designing PDAs with a top-down approach without focusing enough on teachers' personal qualities, prior knowledge, competencies, or needs are some of the criticisms towards PDAs (Avalos, 2011; Neil & Morgan, 2003). Teachers are among the main actors of educational reforms (Villegas-Reimers, 2003; Heasly et al., 2020). PDAs developed for teachers should be reflective, collegiality-based, long-term, and school-based, taking into account their interests and needs and allowing them to control their own learning (Hunzicker, 2011; Korthagen, 2017).

Research results revealed that effective PDAs not only improved teachers' professional knowledge and skills (Jacob et al., 2017; Girvan et al., 2016; Noonan, 2019) but also positively affected their classroom practices (Antoniou & Kyriakides, 2013; Garet et al., 2001). It can be said that effective PDAs developed for teachers also positively affect student achievement (Akiba & Liang, 2016; Higgins & Parsons, 2009; Shava, 2016). Furthermore, school-based practical PDA develops teachers' self-confidence and teaching competencies (Ríordáin et al., 2017; Xu, 2003). Indeed, in the TALIS (Teaching and Learning International Survey) 2018 report, 55 % of teachers underlined the qualification for effective PDAs and 81.8 % emphasized the positive effects of participation in PDAs on their teaching practices (OECD, 2019). Effective PDAs ensure job retention for inexperienced teachers (Allensworth et al., 2009) and positively influence their motivation to work in disadvantaged schools (Coggshall & Ott, 2010).

Teachers' aspirations, potentials, and goals motivate them to participate in PDAs (Korthagen, 2017). It has been reported that teachers who are willing to participate in PDAs benefit more from PDAs and are more eager to use the new knowledge they have learned in PDAs (Hunzicker, 2011). It has been emphasized that most PDAs developed by central governments are not compatible with teachers' needs, as a result of which participation in these activities is limited (Opfer & Pedder, 2011). According to the TALIS 2018 report, teachers mostly participate in PDAs about "subject and content knowledge" (76 %) and "teaching competencies" (73 %). The PDA areas in which teachers need the least improvement but most participate are those related to teacher-parent cooperation and school management (OECD, 2019). In addition, it was determined that teachers mostly needed PDAs in areas such as "education of students with special needs" (22.2 %), "information and communication technology skills for teaching" (17.7 %), and "teaching in multicultural and/or multilingual classrooms" (15 %). Considering the increasing need for using technology in education with the COVID-19 pandemic, as well as the lack of PDAs to meet this need, it is very likely that teachers need PDAs in this area (Vila, 2020).

It has been determined that teachers are not very willing to participate in one-shot theoretical PDAs that are not related to classroom practices (Cohen & Hill, 2000; Hill, 2009). On the other hand, reasons such as PDAs coinciding with class hours (54 %) and the lack of incentives to promote participation in PDAs (48 %) prevent teachers from participating in PDAs (OECD, 2019). In order to enable teachers to participate in PDAs, several hours should be devoted to PDAs during their working hours (Darling-Hammond et al., 2017). Designing needs-oriented, participatory, and collegiality-based activities can be effective in encouraging teachers to participate in PDAs (Opfer & Pedder, 2011). Education systems of developed countries offer effective guidance to teachers in choosing and participating in PDAs in areas where they need improvement most (Darling-Hammond et al., 2017). Lack of motivation, professional burnout, inability to afford expensive PDAs, and lack of time due to family responsibilities can be listed as other barriers to participation in PDAs (Can, 2019; OECD, 2019).

Effective PDAs aim to enable teachers to positively affect students' learning outcomes through practical knowledge and practices (Desimone, 2009). Effective PDAs that take into account the school-specific context, as well as local needs, have the potential to combine teachers' professional experience, the local context of the school, and colleague cooperation (Borko, 2004). Hence, PDAs that are productivity-based, low-cost, and relevant to teachers' daily teaching practices are likely to produce effective results (Avalos, 2011). Indeed, teachers attach more importance to school context-based PDAs (Hung & Yeh, 2013). In addition, school context-based PDAs also improve collaboration and interaction among teachers (Zepeda et al., 2013; Spiteri & Chang-Rundgren, 2017). Interaction among teachers, in turn, provides an opportunity for teachers to develop their classroom practices and exchange ideas with their peers (Gallo-Fox & Scantlebury, 2016).

PDAs prepared from central administration, not based on the needs of teachers and schools, are usually developed and implemented by decision-making authorities rather than teachers' participation. On the other hand, school context-based PDAs are based on organizational learning culture and cooperation rather than individual learning culture. This positively affects teachers' sense of belonging to their school, their job satisfaction, and productivity, as well as collegiality among teachers (Austin & Harkins, 2008; Stephens & Boldt, 2004). Despite the potential for collaborative school-based PDAs to positively affect student achievement (Kissau et al., 2017; Opfer, 2016; Yoon et al., 2007), only 21 % of teachers in OECD countries participate in collaborative PDAs at least once a month, according to the TALIS 2018 report (OECD, 2020). Considering the positive effects of effective PDAs on learning outputs, as highlighted in the literature review above, this large-scale study is expected to contribute to the relevant literature by describing in detail the PDAs that teachers participated in and by explaining the relationship of PDAs with various variables.

Purpose of the Study

The present study aims to investigate in which areas teachers need PDAs, the barriers that prevent teachers from participating in PDAs, their frequency of participating in collegiality-based PDAs, their perception related to effectiveness of PDAs and teachers' professional commitment level along with relationships among these variables. To this end, answers to the following questions were sought:

Research Questions

1) What are teachers' beliefs about the effectiveness of the PDAs they have previously participated in and what are their perceptions of the effects of the COVID-19 pandemic on their individual PDAs?
2) In which subjects and at what level PDAs do teachers need? Does this level differ significantly according to teachers' demographic characteristics such as gender, marital status, subject they teach, school type, or seniority? Is there a significant relationship between teachers' level of need for PDAs, the number of PDAs and collegiality-based PDAs they participated in 2020?
3) What is teachers' perception of the barriers that prevent their participation in PDAs? Does their perception differ according to teachers' demographic characteristics such as gender, marital status, subject they teach, school type, number of lessons they teach in a week, or seniority?
4) Do teachers' perceptions of the barriers that prevent their participation in PDAs, their level of need for PDAs, and their frequency of participation in collegiality-based PDAs significantly predict their beliefs about the effectiveness of PDAs? Are teachers' beliefs about the effectiveness of PDAs a significant predictor of their professional commitment?

Method

The present study employed the predictive correlation design to investigate the relationships among variables, to explore to what extent independent variables predict dependent variables, and to reveal the percentage of variance explained by independent variables on dependent variables. First, the study sought to describe in which areas teachers (who are the variables of this study) need PDAs, the barriers that prevent their participation in PDAs, their frequency of participation in collegiality-based PDAs, their perceptions of the effectiveness of PDAs they participated, and their professional commitment. Then, the relationships among these variables were tried to be explained.

Population and Sample

The study sample comprised 821 teachers working in public schools. To increase generalizability, the sample included teachers from different cities of Turkey working at different school levels, with different teaching specialties and years of seniority. Considering that a total of 974.837 (Ministry of National Education, 2021) teachers work in public schools in Turkey in 2020, it can be stated that the sample is quite representative. Of the participating teachers, 41 % were male, 59 % were female, four-fifths were married, one-fifth are single, one-third work at a pre-school or a primary school, nearly half work at a secondary school, about a quarter work at a secondary school or at similar school levels, two-thirds are undergraduates, and nearly one-third are graduate students or graduates.

Data Collection Instruments

Data were collected by means of a survey developed by the researchers. The survey included questions aimed at revealing participants' demographic characteristics such as gender, marital status, school level, subject they teach, educational background, professional seniority, and household monthly income. To reveal teachers' beliefs about the effectiveness of the PDAs they have participated in and demonstrate the effects of the COVID-19 pandemic on their individual PDAs, two Likert-type items for each were asked. The survey included eight Likert-type items to reveal in which areas teachers need PDAs, six Likert-type items to determine teachers' perceptions of the barriers that prevent their participation in PDAs, and four Likert-type items to find out their frequency of participation in collegiality-based PDAs. Teachers' seniority and household monthly income were determined as continuous variables, and the relationship of these variables with PDAs was analysed by Pearson's correlation coefficient. Means and standard deviations were used to describe the variables, and t-test, one-way ANOVA, and Pearson's correlation coefficient were used to identify the relationships between dependent variables and demographic variables. The fit of the data to normal distribution was investigated with the Skewness and Kurtosis values of each variable. Since the variables included in the analysis did not deviate excessively from a normal distribution, parametric statistical techniques were used.

The path analysis, which is a structural equation modelling, was used to determine whether and to what extent the barriers that prevent teachers' participation in PDAs, their level of need for PDAs, and the number of collegiality-based PDAs they participated in predicted their beliefs about the effectiveness of the PDAs they participated in. In addition, the path analysis was used to determine whether teachers' beliefs about the effectiveness of PDAs were a significant predictor of their professional commitment. After identifying their professional commitment in detail and describing a few indicators as examples, teachers were asked to rate their commitment level from 1 (lowest) to 100 (highest).

Findings

Table 1 demonstrates teachers' views on whether their participation in PDAs improved their knowledge, skills, and classroom practices and increased student learning and achievement.

Table 1

Teachers' Views on the Effectiveness of PDAs

Variable	Frequency	Percent (%)	Cumulative Percent
PDAs do not have sufficient effects.	90	11	11
PDAs have limited effects.	188	22.9	33.9
PDAs have positive effects.	409	49.8	83.7
PDAs have quite positive effects.	134	16.3	100
Total	821	100	

As can be inferred from Table 1, of the participating teachers, one-third think that PDAs do not have sufficient effects or have limited effects, whereas two-thirds think that PDAs have positive or very positive effects. Table 2 demonstrates descriptive statistics on the effects of the COVID-19 pandemic on teachers' individual PDAs.

Table 2

Descriptive Statistics on the Effects of the COVID-19 Pandemic on Teachers' Individual PDAs

Variable	Frequency	Percent (%)	Cumulative Percent
Very negative effects	106	12.9	12.9
Negative effects	356	43.4	56.3
No effects	123	15.0	71.3
Positive effects	191	23.3	94.5
Very positive effects	45	5.5	100
Total	821	100	

As can be inferred from Table 2, more than half of the teachers (56.3 %) think that the COVID-19 pandemic has had a negative effect on their PDAs, while more than a quarter (28.8 %) of them think that it has had a positive effect. Accordingly, the number of participants who thought that the COVID-19 pandemic has had a negative effect was one quarter more than the number of those who thought otherwise. The ANOVA performed to examine the effects of the COVID-19 pandemic on teachers' participation in PDAs revealed that compared to the participants who thought that the pandemic affected their individual PDAs *very negatively*, those who thought that it affected their individual PDAs *very positively* participated in a higher number of PDAs (books and articles read; congresses, symposiums, seminars, workshops attended; collaborations with colleagues, etc.) ($F_{(4\text{-}816)} = 10.51$; $p < .01$), as well as engaged in more collegiality-based PDAs (those given in Table 5) with other teachers ($F_{(4\text{-}816)} = 2.64$; $p < .05$). Table 3 demonstrates the descriptive statistics on the areas in which teachers need PDAs.

Table 3

Descriptive Statistics on the Areas in Which Teachers Need PDAs (N = 821)

Variables	Minimum	Maximum	$\bar{X}$	Sx
1) Use of information technologies in education, effective execution of distance/online education activities	1	5	3.50	1.14
2) Subject-specific teaching methods and techniques	1	5	3.41	1.03
3) Educational programs, curriculum studies, adapting the curriculum to students' level	1	5	3.29	1.15
4) Children who need special education	1	5	3.28	1.17
5) Subject-specific field knowledge (mathematics knowledge for math teachers, history knowledge for history teachers)	1	5	3.27	1.13
6) Classroom management, decreasing disciplinary issues in the classroom, motivating students	1	5	3.18	1.22
7) Measurement and assessment achievement	1	5	3.13	1.15
8) School administration, leadership, educational administration	1	5	3.13	1.20

As can be inferred from Table 3, as a result of the transition to online education with the COVID-19 pandemic, teachers mostly need PDAs about *effective use of information technologies in education* ($\bar{X}$ = 3.50), followed by *subject-specific teaching methods and techniques* ($\bar{X}$ = 3.41) and whereas relatively less about *school management and leadership* ($\bar{X}$ = 3.13).

Teachers' scores for the areas in which they need PDAs (higher score measured as teachers' need in higher level) were analysed according to various demographic variables. It was found that participants' scores for the areas did not differ according to their gender ($t_{(819)}$ = .67; p > .05), marital status ($t_{(819)}$ = 1.31; p > .05), school level ($F_{(5\text{-}815)}$ = .634; p > .05), subject they teach ($F_{(7\text{-}811)}$ = 1.37; p > .05) and educational background ($F_{(3\text{-}817)}$ = 1.72; p > .05). Hence, this finding indicates that regardless of their demographic characteristics (except for seniority), teachers need PDAs in similar areas. The Pearson's correlation analysis that was performed to reveal the relationship between the scores for the areas (the activities given in Table 3), and teachers' seniority yielded a negative, very low-level, significant relationship between the two variables (r = -.129; p < .01). Accordingly, as professional seniority increases, teachers' level of need for PDAs decreases. Teachers' level of need for PDAs had a positive, low-level, significant relationship (r = .236; p < .01) with the total number of PDAs they participated in 2020 (books and articles; congresses, symposiums, seminars, workshops; peer coaching, co-teaching; education experts followed on social media, and lessons in which the school principal observed the teacher) and a positive, low-level, significant relationship (r = .116; p < .01) with their frequency of participation in collegiality-based PDAs including peer coaching (activities given in Table 5). Accordingly, it can be concluded that the more teachers need PDAs, the more they participate in PDAs.

Spearman-Brown analysis that was performed to reveal the relationship between teachers' scores for the areas (variables given in Table 3) and their beliefs about the effectiveness of PDAs (variables given in Table 1) yielded a positive, low-level, significant relationship (r = .303; p < .001). Accordingly, it can be concluded that the more importance teachers attach to PDAs, the more they need PDAs.

It was revealed that participating teachers' average household monthly income was 8.477 TL (equivalent to 750 USD) and their average monthly expenditure for PDAs was 301,2 TL (equivalent to 36 USD). Accordingly, teachers spend 3.5 % of their average household monthly income on PDAs. There was no significant relationship between teachers' scores for the areas (variables given in Table 3) and their monthly expenditures for PDAs (r = .048; p > .05). Accordingly, it can be concluded that the level of need for PDAs does not affect their expenditures for PDAs. Table 4 demonstrates descriptive statistics on the barriers that prevent teachers' participation in PDAs.

As can be inferred from Table 4, teachers' average score for the barriers preventing their participation in PDAs corresponded to the "I agree" level ($\bar{X}$ = 2.70). Accordingly, their perceptions of the barriers in Table 4 were found to be slightly above the midpoint score ($\bar{X}$ = 2.50). The most frequently stated barriers were *the lack of incentives to participate in PDAs* ($\bar{X}$ = 2.98) and *PDAs coinciding with class hours* ($\bar{X}$ = 2.89). On the other hand, the least frequently stated barrier was *"PDAs are not much useful"* ($\bar{X}$ = 2.28).

Table 4

Descriptive Statistics on the Barriers that Prevent Teachers' Participation in PDAs (N = 821)

Variables	Minimum	Maximum	$\bar{X}$	Sx
The lack of incentives to promote participation in PDAs	1	4	2.98	.81
PDAs coinciding with class hours	1	4	2.89	.82
Lack of time due to family responsibilities	1	4	2.88	.90
Inability to afford expensive PDAs	1	4	2.62	.90
PDAs are not relevant to my interests and needs	1	4	2.57	.81
PDAs are not much useful	1	4	2.28	.75
Mean	1	4	2.70	.47

Teachers' total scores for the barriers were analyzed according to various demographic variables. Accordingly, the comparison by gender ($t_{(819)} = 2.016$; $p < .05$) revealed that male teachers ($\bar{X} = 6.46$) had a higher level of perception of barriers than female teachers ($\bar{X} = 16.05$), whereas the comparison by marital status ($t_{(819)} = 2.139$; $p < .05$) revealed that married teachers ($\bar{X} = 16.32$) had a higher level of perception of barriers than single teachers ($\bar{X} = 15.80$). On the other hand, the comparison by educational background ($F_{(3\text{-}817)} = .1269$; $p > .05$) and subject they teach ($F_{(7\text{-}811)} = .58$; $p > .05$) did not yield a significant difference. Additionally, the comparison by school level revealed that pre-school teachers had a lower level of perception of barriers those working in primary, middle, or high schools ($F_{(5\text{-}815)} = 2.75$; $p < .05$). There was no significant relationship (r) between teachers' total scores for the barriers and their teaching hours per week ($r = .042$; $p > .05$). Accordingly, it can be concluded that teaching hours per week does not prevent their participation in PDAs. Table 5 demonstrates the descriptive statistics on teachers' frequency of participation in collegiality-based PDAs as effective development approach which based on peer coaching.

As can be inferred from the descriptive statistics given in Table 5, half of the teachers exchange views and collaborate with their peers several times a year (four times or less) in order to increase student achievement, whereas the other half does this a few times a month or a few times a week. On the other hand, about two-fifths exchange materials (textbooks, lesson plans, question banks, electronic content, three-dimensional materials) with peers four times a year or less, again two-fifths five times a year or more, and about one-third once or more than once a week. To the question about whether they experienced co-teaching, more than half stated that they did not have such experience, while nearly three-quarters of them stated that they experienced it once a year or less frequently. To the question about their frequency of involvement in peer coaching (observing other teachers in lessons and giving them feedback), more than three-fifths stated that they never experienced it, nearly one-fifth stated that they experienced it once a year or less, and less than one-tenth stated that they experienced it a few times a month to a few times a week.

Table 5

Descriptive Statistics on Teachers' Frequency of Participation in Collegiality-Based PDAs

		Exchanging views and collaborating with peers to increase student achievement	Exchanging materials with peers	Co-teaching	Peer coaching
Never	f	31	60	445	512
	%	3.8	7.3	54.2	62.4
Once a year or less	f	81	88	141	146
	%	9.90	10.7	17.2	17.8
2 to 4 times a year	f	194	169	94	80
	%	23.6	20.6	11.4	9.7
5 to 10 times a year	f	105	105	30	25
	%	12.8	12.8	3.7	3.0
1 to 3 times a month	f	153	135	26	26
	%	18.6	16.4	3.2	3.2
Once a week or more	f	257	264	85	32
	%	31.3	32.2	10.4	3.9
$\bar{X}$		3.27	3.17	1.15	.79
S_x		1.53	1.64	1.65	1.30

Analyses were performed to compare teachers' total scores for their frequency of participation in collegiality-based PDAs (activities given in Table 5) according to various demographic variables. Accordingly, it was found that female teachers ($\bar{X}$ = 8.79) participated in collegiality-based PDAs more frequently than male teachers ($\bar{X}$ = 7.77) ($t_{(819)}$ = 3.21; p < .01), whereas there was no significant difference between married ($\bar{X}$ = 8.45) and single ($\bar{X}$ = 8.07) teachers ($t_{(819)}$ = .94; p > .05). The one-way ANOVA performed to reveal the relationship between teachers' frequency of participation in collegiality-based PDAs and the level of the schools where they worked (preschool, primary school, middle school, high school) yielded a significant difference ($F_{(5\text{-}815)}$ = 4.47; p < .01). Accordingly, it was found that preschool teachers ($\bar{X}$ = 11.21) participated in collegiality-based PDAs more frequently than middle school teachers ($\bar{X}$ = 8.02) and high school teachers ($\bar{X}$ = 7.90). On the other hand, there were no significant differences between the other school levels (primary school teachers, $\bar{X}$ = 8.51 and vocational high school teachers, $\bar{X}$ = 9.32). Additionally, the comparison by subject they teach yielded significant differences ($F_{(7\text{-}811)}$ = 4.68; p < .001); preschool, special education, and classroom teachers ($\bar{X}$ = 8.96) participated in collegiality-based PDAs more frequently than teachers of history, geography, social studies, culture of religion, and philosophy and school psychologists ($\bar{X}$ = 7.18); whereas there were no significant differences among the other teachers in terms of subject they teach. The analysis to reveal the relationship between teachers' frequency of participation in collegiality-based PDAs and their educational background yielded no significant differences ($F_{(3\text{-}817)}$ = 1.01; p > .05). On the other hand, Pearson's correlation analysis yielded a positive, low-level, significant relationship between the frequency of participation in collegiality-based PDAs and average household monthly income (r = .093; p < .01) but no significant relationship between the frequency of participation in collegiality-based PDAs and seniority (r = .046; p > .05).

Pearson's correlation analysis performed to reveal the relationship between teachers' beliefs about the effectiveness of PDAs (Table 1) and their frequency of participation in collegiality-based PDAs (activities given in Table 5) yielded a positive, low-level, significant relationship ($r = .148$; $p < .01$). Accordingly, it can be concluded that the more importance teachers attach to PDAs, the more collegiality-based PDAs they participate in. Similarly, there was a positive, low-level, significant relationship ($r = .090$; $p < .01$) between teachers' frequency of participation in collegiality-based PDAs and their expenditures for PDAs.

A path analysis was performed to examine the effects of barriers to participation in PDAs, teachers' level of need for PDAs, and their frequency of participation in collegiality-based PDAs on their attitudes towards PDAs. Accordingly, the following hypotheses were tested:

- H_1: The barriers to participation in PDAs have a negative effect on teachers' attitudes towards PDAs.
- H_2: The sum of PDAs that teachers need has a positive effect on their attitudes towards PDAs.
- H_3: The quantity of collegiality-based PDAs attended by teachers has a positive effect on their attitudes towards PDAs.
- H_4: Teachers' attitudes towards PDAs have a positive effect on their professional commitment.

The path analysis and standardized weights of the model were given in Figure 1, and the parameter estimates of the path analysis with latent variables were given in Table 6.

Figure 1

Parameter Estimates of the Path Analysis With Latent Variables

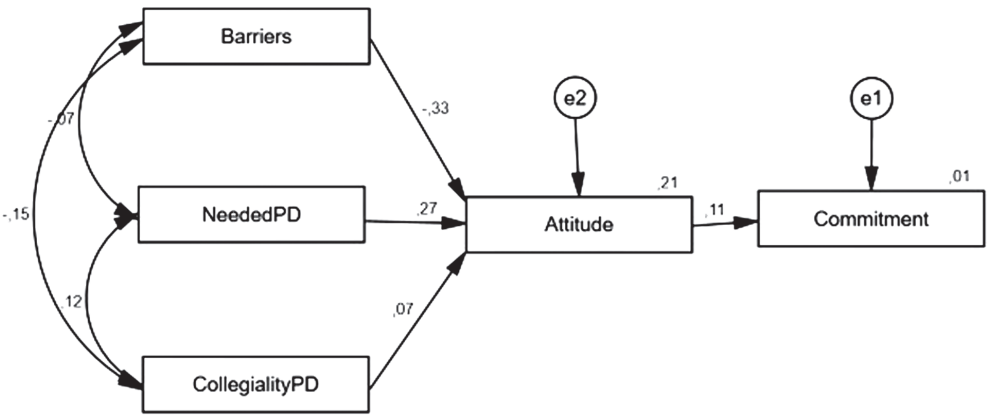


Table 6

Parameter Estimates of the Path Analysis with Latent Variables

Structural Model	Standardized β	Unstandardized β	SE	p	Hypothesis	Decision
Attitude to PD ← Barriers to PD	-.334	-.102*	.010	***	H_1	Accepted
Attitude to PD ← Needed PD	.266	.033***	.004	***	H_2	Accepted
Attitude to PD ← Collegiality PD	.068	.013**	.006	.031	H_3	Accepted
Professional Commit ← Attitude to PD	.108	2.552	.822	.002	H_4	Accepted

X^2 = [3, N = 814] = 17.911; $p < .05$; χ^2 / df = 25.97; CFI = 938; NFI = .930; RMSEA = 0.78

The exogenous variables of the research, "the barriers to participation in PDAs" (the variables given in Table 4) were measured with six items, "the areas in which teachers need PDAs and their level of need for PDAs" (the variables given in Table 3) with eight items, and "their frequency of participation in collegiality-based PDAs" (the variables given in Table 5) with four items. Since the endogenous variables of the research (attitudes toward PDAs and professional commitment) were measured with an item for each, the variables included in the analysis were defined as observed variables. Since the data did not deviate excessively from the normal distribution, the maximum likelihood estimation method was used in the analysis. The analysis results (as can be seen in Table 6) revealed that the model had acceptable fit indices. The results of the path analysis revealed that teachers' level of need for PDAs ($\beta = .26$; $p < .01$) and their frequency of participation in collegiality-based PDAs ($\beta = .068$; $p < .05$) have a positive and significant effect on their attitudes towards PDAs. On the other hand, teachers' perceptions of barriers to participation in PDAs ($\beta = -.33$; $p < .01$) have a negative and significant effect on their attitudes towards PDAs. Also, teachers' attitudes towards PDAs ($\beta = .108$; $p = < .05$) have a significant positive effect on their professional commitment. According to these results, H_1, H_2, H_3, and H_4 were accepted. Finally, it was found that teachers' perception of barriers to participation in PDAs, their level of need for PDAs, and their frequency of participation in collegiality-based PDAs explain 21 % of the variance in teachers' attitudes towards PDAs while attitudes towards PDAs explain 1 % of the variance in professional commitment.

Research Findings and Discussion

According to the results of the research, the vast majority of teachers think that the PDAs they participated in had positive effects. Accordingly, it can be said that PDAs have a positive effect on teachers' classroom practices. Although previous research has reported different features that make PDAs effective (Garet et al., 2001; Guskey, 2003; Knapp, 2003), according to the TALIS 2018 report, 82 % of the teachers in OECD countries think that PDAs have a positive effect on their classroom practices (OECD, 2019). In the same report, 71.8 % of Turkish teachers, and in this study 66.1 % were of the same opinion. According to these results, it can be said that teachers have positive

perceptions towards PDAs. The reasons for this finding were listed as PDAs being based on teachers' prior knowledge (91 %), PDAs being structured according to their needs (78 %), PDAs having a consistent structure (76 %), and PDAs having a design suitable for the content to be taught (72 %) (OECD, 2019). PDAs developed with purposes such as increasing teachers' motivation (Girvan et al., 2016; Higgins & Parsons, 2009), contributing to their classroom practices (Ilgan et al., 2021; Penner-Williams et al., 2019), reducing their burnout (Kyriacou, 2001), and improving their reflective and critical thinking skills (Kintz et al., 2015) have an important role in improving the quality of various educational outputs, especially student achievement (Girvan et al., 2016; de Groot-Reuvekamp et al., 2018; Yoon et al., 2007). Teachers' perceptions of their influence on individual and social progress lead them to exert greater effort to increase their motivation to deliver quality public service and teaching activities (Perry & Wise, 1990). It is not surprising that teachers who have this motivation are willing to participate in PDAs in order to improve themselves (Andersen et al., 2014; Girvan et al., 2016).

Research results show that the COVID-19 pandemic has negatively affected teachers' participation in PDAs and their professional development. However, as there is opportunity in every crisis, more than a quarter of teachers think that the pandemic has had positive effects on their individual PDAs. These participants participated in more PDAs than those who thought COVID-19 pandemic effected their PDAs negatively. Indeed, teaching and learning settings that changed with the sudden impact of the pandemic caused many teachers to feel unprepared and inadequate in understanding the pedagogy of online teaching, creating online, synchronous, and asynchronous content, involving parents in the process, and handling students' mental health issues constructively (Hartshorne et al., 2020).

It was found that regarding professional development, teachers mostly needed knowledge about the *effective use of information technologies in education* as well as about *subject-specific teaching methods and techniques*. On the other hand, they needed fewer PDAs about *school management and leadership*. As a result of the transition to online education with the COVID-19 pandemic, it is an expected result that teachers need knowledge about the effective use of information technologies in teaching. Indeed, regarding Turkey's average scores in the 2018 TALIS report, it is seen that the need for *effective use of information technologies* is below 10 % (OECD, 2019). These results are important in that they show that digitalization in education is gaining importance with the effect of the COVID-19 pandemic. It was determined that teachers working in OECD countries mostly needed PDAs in areas such as "education of students with special needs," "information and communication technology skills for teaching," and "teaching in multicultural and/or multilingual classrooms" (OECD, 2019).

It was found that teachers' gender, their marital status, the level of the schools where they worked, subject they teach, and their educational background had no effect on their level of need for PDAs. Therefore, it can be stated that the teaching profession itself is the main factor behind teachers' needs to participate in PDAs. Lending support to the current research results, in the TALIS 2013 and 2018 reports, teachers' level of need for PDAs did not differ significantly according to the level of the schools where they worked and their demographic characteristics (OECD, 2019). It can be stated that it is an expected result that as teachers' seniority increases, their level of need for PDAs decreases. As seniority in a profession increases, the level of specialization in that profes-

sion also increases. In other words, the more experienced teachers get, the better they are at classroom management and the less they need PDAs. On the other hand, considering the studies reporting that it takes five to six years to master and have fewer problems in a profession (Darling-Hammond, 2000; Gladwell, 2008), it is also an expected result that those with less experience in the teaching profession need PDAs more. In the TALIS 2018 report, when the content of the PDAs attended by teachers are examined according to their seniority, there were significant differences between teachers with five years of experience or less and those with more than five years of experience.

Considering the average of OECD countries, the differences between less experienced teachers and experienced teachers are relatively small. The PDA area where this difference is the highest in the OECD average is the "student behavior and classroom management" area, with a 6 % difference in favour of teachers with five years of experience or less (OECD, 2019). Consistent with the current research results, Choy et al. (2006), reported that teachers with three years of experience or less tend to participate in PDAs more often than those with 10 years of experience or more. Accordingly, it can be said that teachers' needs lead to participation in PDAs. In addition, the fact that novice teachers usually work in schools with more difficult working conditions can be cited as the reason for this need (OECD, 2018).

It can be stated that it is an expected result that teachers' tendency to participate in PDAs increases as their level of need for PDAs increases. The fact that the content theory, which is a subset of motivational theories (Maslow's hierarchy of needs, Alderfer's ERG theory, Herzberg's two-factor theory), suggests that needs are the main motives that direct human behaviours (Robbins & Judge, 2019) support the result of this research. From this point of view, teachers' interests, aspirations, and needs should be the top priority during the design and implementation phases of PDAs, and teachers should take an active role in PDAs (Desimone & Garet, 2015; Hardy, 2012; Zepeda, 2015). PDAs should also be diversified by considering teachers' teaching specialties and seniority, as well as the socio-economic context of the schools they work in (Ilgan, 2021). School context-based PDAs that aim to support teachers' individual, emotional, and social development contributes positively to teachers' participation in PDAs (Desimone, 2009; Neil & Morgan, 2003).

According to the results of the research, teachers' perceptions of barriers to participation in PDAs were relatively high, above the midpoint score, which is not a desirable result. It was found that reasons such as *PDAs coinciding with class hours* and the *lack of incentives to promote participation in PDAs* were the main barriers that prevent teachers' participation in PDAs. Similarly, in the TALIS 2018 report, the lack of incentives was found to be the main reason that prevented Turkish teachers from participating in PDAs. On the OECD average, the top three factors that prevented teachers' participation in PDAs were PDAs coinciding with class hours, the lack of incentives, and costs of participation in PDAs, respectively (OECD, 2019). Drage (2010) stated that the biggest barrier to teachers' participation in PDAs was that they do not have enough time. From this point of view, in order to ensure that PDAs are a part of teacher's professional life and routine teaching work, it is important to allocate time for PDAs within teachers' legal working hours, as well as changing legal and cultural norms (Garet et al., 2001; Ilgan, 2021; Zepeda, 2017). Indeed, it is possible to state that short-term or one-shot conferences or workshops usually fail to help teachers improve their classroom practices effectively (Craft, 2002; Hardy, 2012). The leadership of school administrations is needed

(Ilgan, 2021) to provide free time for teachers to participate in PDAs, to encourage teachers to participate in PDAs (Jensen & Farmer, 2013), to provide the support and incentives to help them use in their classrooms the ideas and strategies they have learned (Desimone & Garet, 2015), and to plan teachers' weekly lessons in a way to facilitate their participation in PDAs (OECD, 2019).

PDAs not only improve teachers professionally but also have an important function in the development of their personal, social, and affective skills (OECD, 2019). A study conducted in Turkey (Can, 2019) reported that reasons such as developing one-shot PDAs without taking into account teachers' needs and adopting the presentation technique in these PDAs reduced the effectiveness of PDAs and negatively affected teachers' participation. In addition, being closed to change and development due to working on permanent employment contracts, administrators' negative attitudes, uncertainty and frequent changes in education policies, excessive workload, professional burnout, lack of motivation, and negative school culture are some of the other reasons why Turkish teachers do not participate in PDAs. It was found that male teachers had a higher level of perception of barriers than female teachers and married teachers than single teachers. Also, preschool teachers had a lower level of perception of barriers than those working in primary, middle, or high schools. The TALIS 2018, on the other hand, revealed that primary school teachers had a lower level of perception of barriers than teachers working at other school level (OECD, 2019).

It was found that female teachers participated more in collegiality-based PDAs than male teachers and preschool teachers than middle or high school teachers. Based on the fact that half of the teachers exchange views and collaborate with their peers in order to increase student achievement only several times a year, two-fifths exchange materials with their peers four times a year or less, and more than half have not experienced co-teaching; it is possible to conclude that teachers do not sufficiently participate in collegiality-based PDAs, which are a very effective learning approach. Consistent with these results, in the TALIS 2018 report, only 21.5 % of Turkish teachers reported participating in peer coaching and/or self-directed observation (OECD, 2019). Zepeda et al. (2013), reported that Turkish educators were less willing than their American counterparts to adopt and implement peer coaching as a form of teacher professional development. In addition, it was reported that in OECD countries, collegiality-based PDAs performed within schools were fewer in number than traditional PDAs. In this study, the rate of those who provided observation-based feedback to other teachers was found to be 9 %. In addition, the number of teachers participating in teacher professional development practices such as co-teaching or peer coaching was less than that of those participating in superficial collaboration activities such as discussing the academic development of some students and exchanging teaching materials (OECD, 2020). Considering these results as a whole, it is possible to infer that collegiality-based PDAs that contribute to trust-based relationships (Farina & Kotch, 2008), colleague solidarity (Allen & leBlank, 2005; Orland-Barak & Wang, 2020), positive school climate, and teachers' professional development (Zepeda et al., 2013) are not appreciated sufficiently by teachers. Indeed, in this study, a positive, low-level, significant relationship was found between teachers' participation in collegiality-based PDAs and their beliefs about the effectiveness of PDAs. Consistent with this result, according to the TALIS 2018 results, teachers who received feedback from their peers related to their teaching practices stated that the feedback was useful in improving their teaching competencies. In the same report, while 74 % of

teachers found collegiality-based PDAs effective, only 44 % of teachers participated in collegiality-based PDAs (OECD, 2019).

In this study, it was found that teachers' level of need for PDAs and their frequency of participation in collegiality-based PDAs have positive, significant effects on their attitudes towards PDAs. Also, teachers' perceptions of barriers to participation in PDAs were found to have negative, significant effects on their attitudes towards PDAs, which is an expected result. Accordingly, as teachers' perceptions of the barriers to PD increase, it is likely that their beliefs about the effectiveness of PDAs will decrease. Also, as teachers' level of need for PDAs increases, it is likely that their beliefs about the effectiveness of PDAs will also increase. On the other hand, teachers' attitudes towards PDAs were found to have a positive, low-level, significant effect on their professional commitment. Collaborative PDAs increase teachers' self-efficacy, motivation to teach, and job satisfaction, positively affecting their sense of belonging and intention to stay (Blandford, 2012; OECD, 2019). The results of this research reveal the importance of school-centered collegiality-based PDAs to be developed considering teachers' needs. From this point of view, rather than traditional PDAs, collaborative PDAs that take into account the sociocultural context of schools, as well as the individual and social contexts of teachers, should be employed (Avalos, 2011; Neil & Morgan, 2003). Cooperation between central authorities and local administrators leads to coordination, which, in turn, contributes positively to the design of PDAs according to the needs of schools (Collinson et al., 2009).

Implications

It is recommended that arrangements be made to reduce the negative effects of the COVID-19 pandemic on teachers' participation in PDAs. Due to the widespread use of online education at all school levels with the effect of the COVID-19 pandemic, it is recommended to develop PDAs for teachers to use information technologies effectively in teaching processes. Subject-specific content should be included in the PDAs to be developed for teachers working in middle schools and high schools. Considering the lack of incentives to promote participation in PDAs, it is suggested that promotion of participation in PDAs through incentives or opportunities for career advancement be considered.

School principals therefore may take into account teachers' needs when scheduling their weekly lessons in order to promote their participation in PDAs. In order to enable teachers to participate in more PDAs, it is recommended that employment of substitute teachers in schools, as well as to plan weekly lessons by taking into account the needs of school stakeholders. Financial support can be provided to teachers for them to participate in the paid PDAs they need.

The reasons why teachers do not engage sufficiently in collegiality-based PDAs as effective PD approach can be examined. It is recommended to plan to increase teachers' participation in such practices. It is recommended that school leaders and policymakers make necessary arrangements for peer coaching and co-teaching to become a part of school culture. To nurture positive attitudes in teachers about PDAs, it is recommended that reducing the barriers to their participation in PDAs, will increase their awareness of PDAs, and ensure that they engage more in collegiality-based PDAs.

The reason why male teachers have a higher level of perception of barriers than female teachers and why preschool teachers have a lower level of perception of barriers

than those working at other school levels can be investigated. Also, the reason why female teachers more than their male counterparts and preschool teachers more than those working at other school levels participate in collegiality-based PDAs can be investigated.

Limitations

The results of the current research are limited to teachers' responses to quantitative measurement instruments aimed at measuring in which areas they need PDAs most, the barriers to their participation in PDAs, their frequency of participation in collegiality-based PDAs, and their perceptions of the effectiveness of PDAs. In which areas teachers need PDAs most, the barriers to their participation in PDAs, and their perceptions of the effectiveness of collegiality-based PDAs can be investigated comprehensively using qualitative measurement instruments such as interviews and in-class observations.

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