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Effects of a Phonological Awareness Professional Development Program on Preschool Teachers and Children *

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Abstract

This study aimed to investigate the effects of a phonological awareness professional development program on teachers' phonological awareness knowledge, teaching quality, and the phonological awareness skills of children. The study was planned with a quasi-experimental design and a pretest-posttest control group, and 67 children and 4 preschool teachers were participated. Teachers in the experimental group were given 5 hours of training and applied 10 hours of coaching. The results showed that the teachers' knowledge and teaching quality increased. After expressive language and category naming scores of the children were controlled, there were significant differences between the experimental and control group children in phonological awareness skills.

Keywords

Phonological awareness
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Introduction

Emergent literacy skills are the foundation of learning to read and write. Children who have advanced emergent literacy skills in the preschool period are more successful in the process of learning reading and writing in primary school (Nelson, 2005; Spira, Bracken, & Fischel, 2005). Emergent literacy skills emerge in early infancy and early childhood through participation in meaningful activities involving talking, sounds, and print with adults. The knowledge, skills, and attitudes required for literacy are seen as emergent literacy (Whitehurst & Lonigan, 1998). According to the Scientifically Based Reading Research (SBRR) approach, there are four basic emergent literacy skills. These are "verbal language (the development of receptive language and expressive language and vocabulary), phonological awareness, alphabet knowledge, and print awareness" (Vukelich, Christie, & Enz, 2008, p. 29).

Phonological awareness is one of the most important prerequisite skills that facilitate and support reading and writing processes. It can be defined as the acquisition of the awareness of words, rhymes, syllables, and phonemes that form the subunits of a language (Gillon, 2007; Guidry, 2003). In this context, phonological awareness encompasses awareness skills related to words, syllables, rhyme, and phoneme stages (Yound, 2013). Studies have shown that phonological awareness predicts reading speed and fluency (Catts, Gillispie, Leonard, Kail, & Miller, 2002; Ehri, Nunes, Stahl, & Willows, 2001; Oudeans, 2003; Rakhlin, Cardoso-Martins, & Grigorenko, 2014) and reading comprehension skills

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(Güldenoğlu, Kargın, & Ergül, 2016; Kjeldsen, Kärnä, Niemi, Olofsson, & Witting, 2014) in primary school. Although migration background, child age, child intelligence, language difficulties, watching TV (Fröhlich, Petermann, & Metz, 2013), home literacy environment (Foy & Mann, 2003) and vocabulary knowledge (Frijters, Barron, & Brunello, 2000; Ouellette & Haley, 2013) have a significant influence on phonological awareness, phonological awareness skills can be taught to children successfully in the early years (Akdal & Kargın, 2019; Bayraktar & Temel, 2014; Dinler & Kalburan, 2021; Göle & Temel, 2023; Kartal, Babür, & Erçetin, 2016; Lefebvre, Trudeau, & Sutton, 2011; Lovett, Lacerenza, & Borden, 2000; Lundberg, Larsman, & Strid, 2012; Parpucu & Dinç, 2017; Suortti & Lipponen, 2014; Tyler, Osterhouse, Wickham, Mcnutt, & Shao, 2014; Ukrainetz, Nuspl, Wilkerson, & Beddes, 2011).

The learning environments and experiences formed by teachers are also significant for children to gain phonological awareness skills in the early period. How to teach basic literacy skills effectively has been researched within the scope of SBRR. It has been revealed that the most effective methods involve systematic and direct education processes (Vukelich et al., 2008). These processes are "explanation, modeling by the teacher, practicing with guidance, and allowing independent practice" (Vukelich et al., 2008, p. 29). Therefore, planned and direct phonological awareness education should be provided to children by preschool teachers who have both theoretical and practical knowledge (Blachman, 2000). However, in previous studies, it was seen that preschool teachers' knowledge about the scope of phonological awareness skills and the development of these skills was insufficient (Akdal, 2020; Cheesman, McGuire, Shankweiler, & Coyne, 2009; Cunningham, Zibulsky, & Callahan, 2009; Jaskolski, 2013; McCollum, Hemmeter, & Hsieh, 2013; McLachlan & Arrow, 2014; Mather, Bos, & Babür, 2001; Moats & Foorman, 2003; Parpucu & Güler Yıldız, 2022; Robbins, 2000). In addition, teachers had misconceptions about sounds, words, and sentences (Moats & Forman, 2003), and the concepts of letters and sounds were used interchangeably (Akbaba Altun, Şimşek Çetin, & Bay, 2014). It was reported that teachers could not choose suitable activities for the development of phonological awareness skills (Cheesman et al., 2009) and they did not have the competence to include these activities in their daily plans (Phillips, Clancy-Menchetti, & Lonigan, 2008). It was also found that preschool teachers spent very little time on phonological awareness activities in their daily plans (Ergül et al., 2014; Hawken, Johnston, & McDonnell, 2005; Jaskolski, 2013; Schachter, Spear, Piasta, Justice, & Logan, 2016). Some studies revealed that phonological awareness activities are mostly related to phoneme awareness and studies are mostly conducted on the sounds of vowels (Akbaba Altun et al., 2014; Taşkın, Katrancı, & Uygun, 2014; Tuğluk, Kök, Koçyigit, Kaya, & Gençdoğan, 2008). It has been found that teachers have problems in organizing learning environments in terms of phonological awareness, planning, implementing, and evaluating activities, and they often see themselves as inadequate (Parpucu & Güler Yıldız, 2022). These research results can be interpreted as evidence that teachers do not know enough about how to teach children phonological awareness skills. There may be many underlying reasons for this situation.

Especially in the context of Türkiye, preschool teachers do not have sufficient knowledge regarding phonological awareness (Akbaba Altun et al., 2014; Erdoğan, Özen Altınkaynak, & Erdoğan, 2013; Ergül et al., 2014; Parpucu & Güler Yıldız, 2022; Taşkın et al., 2014; Tuğluk et al., 2008). The major source of teacher education is the faculties of education. All of the teacher education programs last four years. Council of Higher Education of Türkiye is the only administrative body that designs the teacher education programs in the universities. When all undergraduate programs of preschool education overseen by the Council of Higher Education (CoHE) of Türkiye (CoHE, 1998, 2007) were examined, it is seen that teachers do not receive training for this skill during their undergraduate education. Moreover, the continuing professional development of teachers (excluding teachers work in private schools) in Türkiye are governed by the Ministry of National Education in Türkiye. Therefore, in-service training is obligatory for the teachers and in-service training activities are realized in accordance with the defined regulations and planning of the Directorate for Teacher Education and Development Office. When in-service training plans of the Ministry of National Education (MoNE) between 2001 and 2019 are examined (Kamuajans, 2019; MoNE, 2018), it is seen that teachers do not receive training on phonological awareness during their professional service.

In Türkiye, children attend preschool education between the ages of 3 to 6. It is not compulsory and National Preschool Education Curriculum (MoNE, 2013) is implemented in public institutions. In the curriculum, there are limited number of aims and objectives related to phonological awareness skills and the scope of the objectives is superficial. In addition to these explanations concerning the objectives in the program, these are not sufficient for the preschool teacher who have low phonological awareness knowledge and practices. Also there is the discontinuity between preschool and primary school curricula in terms of reading and writing (MoNE, 2019).

Considering all these points, it can be said that preschool teachers' knowledge and instructional practice skills concerning phonological awareness should be improved. For this reason, it is very crucial to carry out professional development training, which entails processes designed to improve the knowledge, skills, and attitudes of educators to support children's learning. In literature, there are many professional development models employed to support teachers. Among these models, coaching stands out due to its greater effectiveness compared to traditional professional development models such as one-time seminars and training sessions (Knight, 2012).

In studies comparing the effectiveness of the methods used in professional development programs for preschool teachers, it is striking that coaching teachers in the classroom environment is more effective with educational training (Koh & Neuman, 2009; Landry, Anthony, Swank, & Monseque-Bailey, 2009; Neuman & Cunningham, 2009). In a meta-analysis conducted by Markussen-Brown et al. (2017) examining the variables affecting the results of professional development programs related to early literacy, it was found that the effect size of the programs in which the coaching method was used was large. The Learning Policy Institute also examined studies that included experimental or comparative research on professional development in the last three decades, controlling children's characteristics and context-related variables while statistically evaluating child outcomes. As a result of these investigations the Effective Teacher Professional Development Report was prepared (Darling-Hammond, Hyler, & Gardner, 2017). In this report, which reveals the characteristics of effective professional development programs, it is affirmed that providing coaching support facilitates teachers' learning in the context of practice.

In the literature, there are studies in which the professional development of preschool teachers about phonological awareness is supported by coaching (Al Otaiba et al., 2011; Assel, Landry, Swank, & Gunnewig, 2007; Brady et al., 2009; Buysse, Castro, & Peisner-Feinberg, 2010; DeBaryshe & Gorecki 2007; Girolametto, Weitzman, & Greenberg, 2012; Jaskolski, 2013; Landry et al., 2009; McCollum et al., 2013; McCutchen et al., 2002; McLachlan & Arrow, 2014; Muñoz, Valenzuela, & Orellana, 2018; Neuman & Cunningham, 2009; Powell, Diamond, Burchinal, & Koehler, 2010; Schwanenflugel et al., 2010; Wasik & Hindman, 2011). It is seen that professional development programs prepared in some of the studies are provided with the focus of phonological awareness or within the scope of early literacy. In some of the studies, the effects of the programs prepared only on teachers or children were investigated. It is striking that some of them evaluated the effect on both teachers and children together. However, there is no study investigating a professional development program on preschool teachers and children in Türkiye.

For this reason, it seems that there is a need for a professional development program in Türkiye that focuses on phonological awareness skills and in which teachers' classroom practices are supported by the coaching method. Therefore, this study aims to examine the effect of the Phonological Awareness Professional Development Program (PAPDP), which is applied to preschool teachers with the coaching method, on both teachers and children. The difference of this study from other studies in the literature is that the program was prepared by taking into account the criteria determined by the Effective Teacher Professional Development Report (Darling-Hammond et al., 2017) and the components and principles of instructional coaching (Knight, 2012) in order to increase the quality of the applied program and also its being in Turkish language that is an orthographically transparent language. In addition, the fact that the implementation reliability was considered during the implementation process of the program also makes the study different from many other studies.

The research questions related to the aim are as follows:

1. Does the PAPDP have an effect on the phonological awareness knowledge and teaching quality of the teachers?
2. Is there a significant difference between the pretest and posttest scores of the control group children?
3. Is there a significant difference between the pretest and posttest scores of the experimental group children?
4. After the PAPDP is applied, is there a significant difference between the total posttest scores of the children in the experimental and control groups when their expressive language and general naming skills are controlled?
5. Is there a significant difference in the posttest scores of the sub-dimensions of phonological awareness skills between the experimental and control group children?

Method

Research design

The research was planned with a pretest-posttest control group quasi-experimental design. After the pretests, the PAPDP was applied by the researchers for the teachers in the experimental group. The control group was business as usual. At the end of the program, posttests were administered to the working groups.

Working groups

The working groups were determined by criterion sampling method, one of the purposeful sampling types. The criterion for preschool teacher was working with 60- to 72-month-old children and not receiving training on phonological awareness. Two preschool teachers were assigned to the experimental group and two teachers from a different school were assigned to the control group. Interviews conducted with these four teachers showed that the teachers had not participated in any training on phonological awareness before. In addition, the plans prepared by the teachers for the spring semester of the 2018-2019 academic year were also examined. It was observed that the teachers in the groups carried out similar practices with each other. The schools of the experimental and control groups were public kindergartens affiliated with the MoNE at one of the big cities of Türkiye. Moreover, according to the district and street level of development data in terms of transportation, infrastructure services, rent, and the nature of buildings and residences obtained from the address-based population registration system of the Türkiye Statistical Institute (2018), the level of development of the schools was moderate. In addition, the monthly income of the families was classified into three groups namely low (0-2014 TL), medium (2015-6561 TL), and high (6562 TL and above) based on the hunger threshold of March 2019 in Türkiye (Türk-İş, 2019), which is the month when the data were collected (TL: Turkish lira). As seen in Table 2, the majority of the children were in the medium group.

In the study one researcher made the training and the implementation of the program and the other researcher made supervision through the training and implementation process. The limited number of teachers who volunteer to being observed in the classroom is the limitation of the researchers. Also, the number of teachers in the experimental group was limited to two in order to make regular and qualified observations and to provide qualified feedback to the teachers during the program. All of the teachers had undergraduate degrees and 13-14 years of professional experience.

A total of 67 children participated in the study, with 34 (17 + 17) in the experimental group and 33 (18 + 15) in the control group. Table 1 and Table 2 below show various characteristics of the children and their families. In order to compare whether the categorical variables given in the tables below were similar in the experimental and control groups chi-square test was applied. As a result of the analysis, it was found that variables except for the mother's education level and mother's work level did not show a statistically significant difference. However, when the pre-test scores of the control and experimental

groups were compared, no significant difference was observed between the two groups. Therefore the difference between the mother's education level and mother's work level of the groups can be ignored. On the other hand, whether the continuous variables presented in the tables below differ in the experimental and control groups were analyzed with the independent groups t-test. It was found that there was no statistically significant difference between the groups in terms of any variable.

Tablo 1. Characteristics of The Children in the Working Groups

		Experimental group		**Control group**	
		Frequency (*f*)	**Percent (%)**	**Frequency (*f*)**	**Percent(%)**
Gender	Female	26	76.5	18	54.5
	Male	8	23.5	15	45.5
Number of sibling	Only child	8	23.5	13	39.4
	One sibling	22	64.7	16	48.5
	Two siblings	3	8.8	4	12.1
	Three siblings	1	2.9	0	0
Duration of	1 year	1	2.9	2	6.1
preschool	2 years	12	35.3	9	27.3
education	3 years	15	44.1	17	51.5
	4 years	5	14.7	0	0
Computer/tablet	Yes	32	94.1	32	97.0
presence at home	No	2	5.9	1	3.0
Internet	Yes	30	88.2	29	87.9
connection	No	4	11.8	4	12.1
Library status	Yes	9	26.5	7	21.2
	No	24	70.6	25	75.8
The child wanting	Hardly ever	2	5.9	2	6.1
a book to be read	Once or twice a month	1	2.9	5	15.2
to him or her	Once or twice a week	12	35.3	6	18.2
	Almost every day	19	55.9	20	60.6
Average daily time	Minimum		0		0
spent in front of a	Maximum		240		120
computer/tablet	Mean		46.62		53.06
(min)	Standard deviation		48.033		42.717
Daily average time	Minimum		0		0
spent watching TV	Maximum		240		180
(min)	Mean		75.15		73.64
	Standard deviation		53.95		48.91

Table 2. Characteristics of The Families of Children in The Working Groups

		Experimental Group		Control group	
		Frequency (*f*)	**Percent (%)**	**Frequency (*f*)**	**Percent (%)**
Mother's education level	Primary school graduate	0	0	0	0
	Middle school graduate	2	5.9	4	12.1
	High school graduate	13	38.2	6	18.2
	Graduated from a university	19	55.9	20	60.6
	Postgraduate	0	0	3	9.1
Father's education level	Primary school graduate	2	5.9	0	0
	Middle school graduate	2	5.9	1	3.0
	High school graduate	12	35.3	11	33.3
	Graduated from a university	17	50.0	18	54.5
	Postgraduate	1	2.9	3	9.1
Mother's employment status	Not working	12	35.3	11	33.3
	Working	22	64.7	22	66.7
Father's employment status	Not working	1	2.9	1	3.0
	Working	33	97.1	32	97.0
Family income*	Low (0-2014 TL)	0	0	1	3.0
	Medium (2015-6561 TL)	26	76.5	28	84.8
	High (6562 TL and above)	8	23.5	4	12.1
Average number of adult books in the home	Minimum		0		0
	Maximum		200		600
	Mean		52.76		103.97
	Standard deviation		57.24		155.56
Home Literacy Scale score	Minimum		86		101
	Maximum		185		176
	Mean		148.76		151.79
	Standard deviation		21.00		17.99
Parents' average weekly time spent reading picture books to their children (min)	Minimum		5		0
	Maximum		200		420
	Mean		69.71		85.15
	Standard deviation		56.10		91.53
Parents' weekly frequency of reading to their children (times)	Minimum		0		0
	Maximum		10		15
	Mean		4.24		4.70
	Standard deviation		2.61		3.48

*Monthly income of the families was classified according to the hunger threshold of March 2019 in Türkiye (Türk-İş, 2019), which is the month when the data were collected (TL: Turkish lira).

Data collection tools

Children's General Information Form. This form includes 26 questions about age, gender, number of siblings, duration of preschool education, parents' education levels and employment statuses, family income, number of books available at home, and time spent reading to the child.

Home Literacy Environment Questionnaire. The scale used to determine the characteristics of children in this study was developed by Marjonovick Umek, Podlesk, and Fekonja (2005) to evaluate different aspects of the home literacy context and the interactions that support children's language development. In this 6-point Likert-type scale filled out by families, there are five factors consisting of 32 items that explain 54.1% of the variance. These five factors are stimulation to use language,

explanation; reading books to the child, visiting libraries and puppet theaters; joint activities and conversations; interactive reading; and zone-of-proximal-development stimulation. It was translated into Turkish and adapted by Altun (2013). The Cronbach alpha coefficient for the Turkish version is .89. In the Turkish version, the five factors explain 48.7% of the variance. The Cronbach alpha coefficient of each of the five factors is .84, .82, .83, .76, .75, and .79, respectively.

Teachers' General Information Form. This form includes 7 open-ended questions about the teacher's educational status; years of experience; participation in lectures, seminars, or workshops on phonological awareness; and needs for phonological awareness. The scoring of the questions was evaluated as 1 point if correct and 0 point if incorrect.

Teachers' Phonological Awareness Knowledge Assessment Tool. By examining theoretical knowledge regarding phonological awareness in the literature (Christie, 2007; Ecenbarger, 2006; Gillon, 2007; Guidry, 2003; Phillips et al., 2008; Torgesen & Mathes, 2000; Vukelich et al., 2008; Whitehurst & Lonigan, 1998) and the assessment tools used in previous studies (Brady et al., 2009; Jaskolski, 2013; McLachlan & Arrow, 2014; Neuman & Cunningham, 2009; Powell et al., 2010), an assessment was created by the researchers to evaluate the content knowledge of teachers about phonological awareness. Opinions of five experts in the field of preschool education were obtained for the measurement tool. Experts found all of the items appropriate but offered a few suggestions for the comprehensibility of the statements for the items. Content validity of these expert opinions was evaluated with the Lawshe technique. Since the content validity rate (CVR = 1.00) was above the content validity criterion (CVC= .99), it was appropriate to use all items. The content validity of the measurement tool was found to be significant since the content validity index (CVI = 1.00) value was greater than the minimum CVC value (Yurdugül, 2005). The measurement tool was also administered to three preschool teachers who were not members of the study group to check the comprehensibility of the items. After revisions, the tool consisted of 22 questions with 3 correct/incorrect, 7 multiple choices, and 12 open-ended questions. Answers were coded as 1 if correct and 0 if incorrect. Pretest and posttest total scores obtained from the measurement tool were used in the study.

Phonological Awareness Activity Implementation Checklist. This checklist, which aims to determine the improvement levels of teachers in phonological awareness instruction, was prepared by examining the theoretical background (Christie, 2007; Ecenbarger, 2006; Gillon, 2007; Guidry, 2003; Phillips et al., 2008; Torgesen & Mathes, 2000; Vukelich et al., 2008; Whitehurst & Lonigan, 1998). In the checklist, there are points that teachers should pay attention to during the application process for the stages of word awareness, rhyme awareness, syllable awareness, and phoneme awareness. The final version of the list was presented to five experts in the field of preschool education. The content validity of the measurement tool was found to be meaningful, as all of the items were approved by the experts (Yurdugül, 2005). The phonological awareness activities performed by the teachers in the experimental group were evaluated with the checklist while observing their instructional practices in the classroom.

Phonological Awareness Scale of Early Childhood Period (PASECP). This scale, developed by Sarı and Aktan Acar (2013), was used to measure the effectiveness of the program for children. The norm study of the PASECP was conducted with 733 children and the scale includes eight subdimensions. Test-retest coefficients of the scale varied between .97 and .43. The internal consistency coefficients of the total scores of the scale are between .96 (Cronbach alpha) and .84 (Guttman). The internal consistency Cronbach alpha coefficients of each subdimension of the scale are as follows: for recognizing rhymes, .82; for beginning sound detection, .97; for generating new words related to the desired phoneme, .86; for grouping words starting with the same sound within a group of words, .86; for blending phonemes, .78; for segmenting a word into its syllables, .90; for omitting a word in a compound, .92; and for alphabet knowledge, .93. These results showed that the scale is valid and reliable for measuring both all subdimensions and phonological awareness skills as a whole. The scale, applied to children individually, includes 8 items in the first subdimension and 10 items in each of the other subdimensions, for a total of 78 items. The answers are coded as 1 if they are correct and as 0 if they are incorrect.

Test of Early Literacy (TEL). The TEL, developed by Kargın, Ergül, Büyüköztürk, and Güldenoğlu (2015) to measure the early literacy skills of 60- to 72-month-old children, was used for control variables in the study. It consists of 102 items in 7 dimensions: receptive language, expressive language, general naming, functional knowledge, letter knowledge, phonological awareness, and listening comprehension. The validity and reliability study of the scale was carried out with 403 children. Correct answers are scored as 1 and wrong answers are scored as 0. The factor loading values of the items in the subdimensions range between .43 and .93.

Intervention

Phonological Awareness Professional Development Program (PAPDP)

The PAPDP includes 6 training sessions and 20 coaching sessions for phonological awareness activities that teachers practice in their classrooms. In the training sessions, the preschool teachers are instructed about the content and implementation of the PAPDP. The content of the program is presented by using powerpoint slides in the training sessions. Also, techniques such as question-answer, role playing, brainstorming and small group work were used too. Teachers in the experimental group were given a total of five hours of phonological awareness training for six weeks. Each training session lasted approximately 45-75 minutes. In the coaching session, teachers were given feedback on their practices by observing the activities of teachers on phonological awareness skills that they applied in the classroom after the participation to the training sessions. Coaching sessions was conducted three times a week during seven weeks and two times in the last week for 20 activities that teachers carried out with children. Thus, in total, approximately 10 hours of coaching sessions were carried out with both of the teachers.

Development of the PAPDP

While preparing the program, seven factors affecting the quality of professional development programs determined in the Effective Teacher Professional Development Report (Darling-Hammond et al., 2017) were taken into account. These factors were content focus, active learning, supporting collaboration, using models and modeling for effective practice, providing coaching and expert support, offering feedback and reflection, and sustained duration. For content focus, the theoretical literature was examined (Christie, 2007; Ecenbarger, 2006; Gillon, 2007; Guidry, 2003; Phillips et al., 2008; Torgesen & Mathes, 2000; Vukelich et al., 2008; Whitehurst & Lonigan, 1998). The content covered emergent literacy in the preschool period, development of phonological awareness in the preschool period, word awareness, rhyme awareness, syllable awareness and phoneme awareness.

In order to ensure *active learning* component, the examples of activities were modeled interactively with the teachers. Regarding the *cooperation*, the teachers selected and rearranged the activities by brainstorming with each other and the researcher. *Various models* such as presentations, watching videos, examples of activity plans, use of educational materials, figures and tables and examples of mistakes that children often make for some activities and *modelling* the activities were used. The PAPDP was created based on instructional *coaching*, one of the scientific evidence-based coaching models (Cornett & Knight, 2009). By instructional coaching, teachers were guided to achieve the set goals (Cornett & Knight, 2009). In this context, the principles and components of instructional coaching were taken into consideration (Knight, 2012). Instructional coaching is based on the principles of equality, choice, voice, dialogue, reflection, praxis, and reciprocity. Components of instructional coaching such as enroll, identify, explain, model, observe, explore, and refine guided the process. *Feedback and reflection* were carried out in the training and coaching sessions of the program. A total of five hours of training was given to the teachers at the point of maintaining the program in *sufficient time*, and each teacher was coached for approximately 10 hours.

Expert opinion. Five experts in the field of preschool education evaluated the program and activity examples in terms of objectives, scope, assessment, and evaluation processes. As a result of the expert opinions, the session presentations were simplified in terms of theoretical knowledge and scientific research results. Objectives of the activities were reviewed, the types of activities were specified, and the word groups suggested to be used in the activities were rearranged from simple to

difficult. The use of written letter cards for letter-sound relationships in phoneme awareness activities was removed because it was not included in the National Preschool Education Program of Türkiye (MoNE, 2013).

Pilot study. A pilot study was conducted with a teacher working in a different school than the working group. Two sessions chosen randomly were presented to the teacher. As a result, it was seen that the teacher used concepts such as words, sentences, syllables, and letters interchangeably. For this reason, which expressions and instructions teachers should use were added to the training sessions. It was also noticed that the teacher did not know how to pronounce consonants and so how to pronounce sounds was added to the program. It was observed that the teacher was anxious to receive confirmation from the researchers about what she should pay attention to before applying the activity. For this reason, it was decided to share the checklist with teachers. In addition, it was decided to reorganize the activities together with the teachers, if necessary.

Implementation of the PAPDP

Implementation of the training sessions. Theoretical and practical information was presented to the teachers in the sessions. During the presentations, opportunities were created for active learning and collaboration, which are among the factors to increase the effectiveness of professional development programs (Darling-Hammond et al., 2017). During the presentations, teachers were asked questions so that they would talk about their practices. Educational readings, sample activity plans, figures showing the stages of phonological awareness development, videos, and picture word cards were also shared with the teachers so that different teaching models were used (Darling-Hammond et al., 2017).

After the 3rd, 4th, 5th, and 6th training sessions, the teachers applied the phonological awareness activities related to the relevant session with the children. Coaching sessions were then held for those activities and after then the next training session was started. Modeling teaching is seen as a factor that helps teachers acquire practical skills (Darling-Hammond et al., 2017). For this reason, in the training sessions, what should be considered during the activity, the mistakes children often make, and what can be done about those mistakes were shown to the teachers as role models through sample activity plans. Teachers were then asked to model this by role-playing.

After the training sessions, questions were asked to evaluate the session. Information was reshared for the teachers' missing or incorrect answers. In addition, teachers were asked to evaluate the duration, scope, and adequacy of the session. The time for the implementation of the activities was determined together with the teachers. Activity examples (Parpucu & Dinç, 2018) related to the sessions were shown to the teachers; teachers did not develop activities. In this way, all teachers did the same activities and the quality of the activities was the same. However, the learning process and type of activities were changed in line with the interests and needs of the teachers and children.

Implementation of coaching sessions. Coaching sessions were conducted over seven weeks for each activity that teachers practiced. Teachers implemented a total of 20 activities, with three activities for word awareness, three for rhyme awareness, three for syllable awareness, and 11 for phoneme awareness. The number of activities has been differentiated by taking into account that the majority of the children in the class have learned the relevant stage. For effective coaching, the components and principles of instructional coaching (Knight, 2012) were taken into consideration as summarized in Table 3.

Table 3. What Is Done According to The Principles and Components of Instructional Coaching?

		Implemented actions
Components of instructional coaching	Enroll	The process and its benefits for the children were shared with the teachers
	Identify	Teachers' needs concerning phonological awareness were identified
	Explain	The content, duration, checklists, and observation processes were explained to the teachers
	Model	The activities to be implemented by the teachers were modeled and shown by the researcher/coach
	Observe	The deficiencies or mistakes seen during the implementation of the activity were recorded and reported to the teacher by the coach in a way that would not hinder the implementation
	Explore	At the end of the activity, good practices and points to be developed were discussed with the teacher and one-on-one feedback was given
	Refine	Continuous support was provided to teachers
Principles of instructional coaching	Equality, voice, and dialogue	Teachers were able to share their ideas at every stage of the process
	Choice	An opportunity was provided for teachers to choose the activities that they would implement
	Reflection	The teachers reflected on the feedback given about the activities
	Praxis	Teachers were allowed to act upon the given feedback with the next activity
	Reciprocity	The teacher and the coach mutually supported each other for developing their skills

Treatment Fidelity

All of the training sessions were videotaped and watched by the researchers and an observer using a treatment fidelity form. The inter-observer reliability coefficient, which should be at least 80% (Tekin-İftar & Kırcaali-İftar, 2012), was found to be 92% for the sessions and treatment fidelity was achieved. Coaching sessions could not be recorded by video as the necessary permissions could not be obtained. For this reason, treatment fidelity was determined with the researchers and an observer during the coaching process. For inter observer reliability, checklists and a treatment fidelity form were used. Seven activities corresponding to 30% of the activities (Tekin-İftar, 2012) were selected for reliability. Inter-observer reliability coefficients were on average 90% for the checklist and 96% for the coaching treatment fidelity form so reliability was ensured (Tekin-İftar & Kırcaali-İftar, 2012).

Data Analysis

For the teachers' data, the percentage of success was obtained by dividing the number of correct items from the measurement tools by the total number of questions. The children's data consisted of phonological awareness total scores and scores related to the subdimensions of the scale. The alphabet recognition subdimension was not included in comparisons as there is no related gain defined in the preschool education program implemented in Türkiye (MoNE, 2013). Children's data were analyzed using ANCOVA and t-tests for dependent and independent groups. The assumptions required for these analyses were met. While determining the control variables for ANCOVA, home literacy environment (Foy & Mann, 2003) and vocabulary knowledge (Frijters et al., 2000; Ouellette & Haley, 2013), which are known to be associated with phonological awareness, were taken into account. In this context, home literacy environment questionnaire scores, expressive language, receptive language, general naming, and functional knowledge scores were examined for the probability of being as control variables. As preliminary analyses; showing a significant and linear relationship with the dependent variable, having high correlation coefficients with other variables, homogeneity of regression slopes were tested. As a result of these analyses, expressive language and general naming skill were determined as control variables. When multiple comparisons were performed for the same groups, new critical alpha values (.006 and .007) were determined by dividing the alpha level (.05) by the number of comparisons to be

made with Bonferroni correction to reduce the possibility of finding meaningful results by chance (Akbulut, 2010, p. 125). Moreover, there was no significant difference between the pretests of the experimental and control groups concerning phonological awareness total scores and subdimensions (p>.006).

Results

Findings Regarding Teachers

The effects of the PAPDP on teachers' phonological awareness knowledge. After implementation of the PAPDP, it was seen that the experimental group teachers achieved a 100% success rate by answering all questions of the measurement tool correctly (Table 4). It was also striking that there was no change in the knowledge level of the control group teachers. These results can be interpreted as evidence that the program is beneficial in increasing the knowledge of teachers.

Table 4. Pretest and Posttest Success Rates for The Phonological Awareness Knowledge Assessment Tool

		Measurement time	Total score	Success rate
Experimental group	Teacher 1	Pretest	5	23%
		Protest	22	100%
	Teacher 2	Pretest	4	19%
		Protest	22	100%
Control group	Teacher 1	Pretest	4	19%
		Protest	4	19%
	Teacher 2	Pretest	5	23%
		Protest	5	23%

The effects of the PAPDP on teaching quality in the implementation of phonological awareness activities.

Effects on word awareness. Concerning word awareness activities, the success rate of the instructional practice for the first activity was 78%. It was observed that the teachers used sentences that contained excessive number of words for the task of dividing sentences into words. Also, they did not use any physical actions such as clapping their hands to represent each word while dividing the sentences into words, and they did not explain what a sentence was to the children. With the feedback given to the teachers, they reached a 100% success rate in the other two activities. This result shows that the training sessions on word awareness and coaching in the process were effective.

Effects on rhyme awareness. While the teachers' success rate in the first activity for rhyme awareness was respectively 33% and 67%, this increased to 67% and 83% for the second activity. In the first two activities, it was observed that teachers could not provide appropriate instructions to children, and the chosen rhymed words were not suitable for the children's development. In the third activity, the success rate was 100%. It can be concluded that rhyme awareness training sessions and coaching in the process were beneficial in increasing teachers' teaching quality.

Effects on syllable awareness. Regarding syllable awareness, the instructional practice skill of the teachers in the first activity was evaluated with a success rate of 83%. It was observed that the teachers could not give appropriate instructions for syllable awareness in the first activity. With the feedback given, the performance of the teachers in the implementation process reached 100% in the second and third activities. This finding can be interpreted as evidence that teachers' practice skills can be improved by training sessions and coaching.

Effects on phoneme awareness. While the instructional practice level of the first activity was evaluated with a success rate of 71%, it was 83% for the second and third activities. In the first three activities, it was observed that teachers could not do appropriate modeling while explaining what the first sound was, they could not give appropriate instructions to children, and some of the words selected were not appropriate for the children's development in terms of the level of difficulty. However, the success rate for the fourth, fifth, sixth, and seventh activities was 100% with the feedback provided during and after the implementation process. The reason for this increase is that, with coaching, the teachers learned how to perform an appropriate activity for distinguishing the first sound. In the eighth activity, it was seen that the success rate of both teachers fell to 86%. This was because the phoneme awareness task changed in the eighth activity and the teachers carried out an activity related to distinguishing the last sound for the first time. In the ninth activity, an activity was carried out on generating new words related to the given sound, and both teachers achieved 100%. The success rate of the teachers decreased again in the tenth activity because the teachers tried a new task related to blending phonemes for the first time. However, the success rate of the eleventh activity, which included the same task, was 100% with the feedback given in the coaching process.

Findings Regarding Children

In Table 5, it is striking that there was no significant difference between the pretest and posttest scores of children in the control group regarding phonological awareness and its subdimensions.

Table 5. Dependent Samples t-test Results of the Control Group Regarding Pretest-Posttest Phonological Awareness Total Scores and Subdimensions

	Measurement time	**N**	**$\bar{X}$**	**Sd**	**df**	**t**	***p*<**
Total phonological awareness score	Pretest	33	28.72	11.630	32	-1.780	.084
	Posttest	33	30.57	10.674			
Recognizing rhymes	Pretest	33	3.48	2.622	32	-0.210	.835
	Posttest	33	3.55	1.755			
Beginning sound detection	Pretest	33	.94	.609	32	-0.828	.664
	Posttest	33	1.03	.305			
Generating new words related to the desired phoneme	Pretest	33	2.94	1.676	32	-1.893	.067
	Posttest	33	3.45	1.839			
Grouping words starting with the same sound within a group of words	Pretest	33	4.39	2.561	32	-1.803	.081
	Posttest	33	4.91	2.127			
Blending phonemes	Pretest	33	2.85	2.093	32	-0.300	.766
	Posttest	33	2.94	1.886			
Segmenting a word into its syllables	Pretest	33	6.48	3.144	32	-0.901	.374
	Posttest	33	6.91	2.466			
Omitting a word in a compound	Pretest	33	5.33	3.566	32	0.095	.925
	Posttest	33	5.30	3.147			

p<.006

After the PAPDP, a significant difference was found between the pretest and posttest scores of the children in the experimental group regarding phonological awareness and its subdimensions (see Table 6).

Table 6. Dependent Samples t-test Results of the Experimental Group Regarding Pretest-Posttest Phonological Awareness Total Scores and Subdimensions

	Measurement time	**N**	**$\bar{X}$**	**Sd**	**df**	**t**	***p*<**
Total phonological awareness score	Pretest	34	27.03	10.820	33	-15.628	.000
	Posttest	34	52.76	10.369			
Recognizing rhymes	Pretest	34	3.09	2.353	33	-9.322	.000
	Posttest	34	6.68	1.364			
Beginning sound detection	Pretest	34	.94	.600	33	-7.457	.000
	Posttest	34	4.85	2.996			
Generating new words related to the desired phoneme	Pretest	34	2.65	1.612	33	-12.012	.000
	Posttest	34	6.85	2.017			
Grouping words starting with the same sound within a group of words	Pretest	34	3.82	2.823	33	-9.477	.000
	Posttest	34	8.47	1.581			
Blending phonemes	Pretest	34	3.15	1.760	33	-6.161	.000
	Posttest	34	5.29	1.586			
Segmenting a word into its syllables	Pretest	34	6.56	2.699	33	-6.508	.000
	Posttest	34	9.62	.779			
Omitting a word in a compound	Pretest	34	5.15	3.636	33	-7.373	.000
	Posttest	34	8,56	2,439			

p<.006

When the effects of expressive language and general naming scores were controlled, the corrected averages of the phonological awareness posttest total scores of the experimental and control groups were obtained as given in Table 7.

Table 7. Corrected Means of Phonological Awareness Posttest Scores for Experimental and Control Groups

Group	**N**	**$\bar{X}$**	**Corrected mean**
Experimental	34	52.764	52.932
Control	33	30.575	30.668

The results of covariance analysis in Table 8 reveal that when the effects of expressive language and general naming scores were controlled, the phonological awareness posttest total scores of the children in the experimental and control groups differed significantly. According to the corrected posttest scores of the groups, the phonological awareness scores of the children in the experimental group were higher than those in the control group. When the expressive language and general naming scores were kept constant, it was seen that the PAPDP had a great effect on the phonological awareness of children and 66% of the change in the dependent variable was caused by the program.

Table 8. Covariance Analysis Results of Phonological Awareness Posttest Total Scores

Source of variance	SS	df	MS	F	*p*<	η_p^2
Expressive language	1216.461	1	1216.461	15.290	.000	.195
General naming	325.835	1	325.835	2.336	.131	.036
Group	8257.749	1	8257.749	103.793	.000	.662
Error	5012.252	63	79.560			
Total	132705.000	67				

When the posttest scores of the experimental group and the control group for the subdimensions were analyzed, it was seen that there was a significant difference between the two groups (Table 9). There was a very large difference between the means, since all eta-squared effect size values were greater than .14 (Büyüköztürk, 2014).

Table 9. Independent Samples t-test Posttest Results for Phonological Awareness Subdimensions of the Experimental and Control Groups

	Group	N	$\bar{X}$	Sd	df	t	*p*<	η^2
Recognizing rhymes	Experimental	34	6.68	1.364	65	8.146	.000	.507
	Control	33	3.55	1.752				
Beginning sound detection	Experimental	34	4.85	2.996	65	7.291	.000	.450
	Control	33	1.03	.305				
Generating new words related to the desired phoneme	Experimental	34	6.85	2.017	65	7.211	.000	.444
	Control	33	3.45	1.839				
Grouping words starting with the same sound within a group of words	Experimental	34	8.47	1.581	65	7.762	.000	.483
	Control	33	4.91	2.127				
Blending phonemes	Experimental	34	5.29	1.586	65	5.522	.000	.320
	Control	33	2.94	1.886				
Segmenting a word into its syllables	Experimental	34	9.62	.779	65	6.155	.000	.368
	Control	33	6.91	2.466				
Omitting a word in a compound	Experimental	34	8.56	2.439	65	4.766	.000	.257
	Control	33	5.30	3.147				

Discussion

The results of this research have shown that the PAPDP was effective on teachers' phonological awareness knowledge, the teaching quality of phonological awareness activities, and children's phonological awareness skills.

Teachers' phonological awareness knowledge. The increase in the phonological awareness knowledge of teachers participating in the PAPDP may indicate that the program was effective. Similarly, studies in the literature revealed that professional development programs can increase teachers' knowledge of phonological awareness (Brady et al., 2009; Jaskolski, 2013; McCutchen et al., 2002; McLachlan & Arrow, 2014). However, in one study, it was found that there was no difference between study groups in terms of phonological awareness (Neuman & Cunningham, 2009). This was explained by the insufficient quality of the education provided to the teachers and the insufficient connection between theory and practice in the content of the training. The meta-analysis conducted by Markussen-Brown et al. (2017) demonstrated that programs applied to teachers did not have a significant impact on teachers' emergent literacy knowledge. However, that was discussed in light of the failure to provide sufficient heterogeneity in the effect sizes due to the characteristics of the sample groups of the studies included in the meta-analysis.

In the current study, the training and coaching sessions in the program, complementing each other, may have facilitated the connection between theoretical knowledge and practical information, potentially enhancing teachers' understanding of the subject matter. While providing coaching support, the discussions concerning feedback and skill analysis for children also improved the content knowledge of the teachers (Darling-Hammond et al., 2017). The fact that the program was prepared specifically for phonological awareness, the inclusion of learning-teaching methods, and modeling by sharing sample activity plans with teachers in training sessions may have also increased the effect of the program.

Teaching quality of phonological awareness activities. As a result of the program, the instructional practice level of the experimental group teachers increased in every stage of phonological awareness. In the literature, professional development programs concerning language and literacy that focus on or include phonological awareness skills and are based on coaching methods increased the quantity and quality of teachers' classroom practices. In these studies, the programs increased the frequency (Jaskolski, 2013) and the quality level of activities related to phonological awareness of the teachers in the experimental group compared to the control group (Al Otaiba et al., 2011; Buysse et al., 2010; Jaskolski, 2013; Girolametto et al., 2012; Powell et al., 2010; Neuman & Cunningham, 2009). In addition, these programs enable teachers to use more skills (McCollum et al., 2013) and non-contextual language related to phonemic awareness (Girolametto et al., 2012) by improving their instructional skills. In another study, the teachers in the experimental groups were able to offer more opportunities to children related to phoneme awareness. Also, they were able to use the terms concerning phonological awareness more often and more accurately (Schwanenflugel et al., 2010). In addition to coaching, it has been observed that teachers who receive feedback on children's progress tend to engage in more effective practices (Landry et al., 2009)

It is believed that the consideration of the principles and components underlying instructional coaching (Knight, 2012) has influenced the improvement of teachers' implementation levels in the current study. Through providing information about the process, identifying needs, and explaining the benefits of the training, teachers have willingly participated in the study. This, in turn, has supported teachers in exerting more effort for their own development throughout the process. Also, sharing the content, duration, and checklists for evaluation with the teachers allowed them to be informed about the process and to come prepared.

It can be said that demonstrating how the activities presented by the researcher should be implemented and allowing teachers to try them out during the training process is essential. This situation has provided teachers with the opportunity to gain experience with the activities before implementing them in the classroom. Sharing the common mistakes that children make and how to give feedback to them also prepared the teachers for practice. In the coaching sessions, with instant feedback, the teachers could instantly correct their implementation. Thus, while creating a more appropriate learning process for children, the teachers had the opportunity to reconsider their practices with feedback. In this way, it is thought that they could better establish a connection between their theoretical knowledge and applications.

Children's phonological awareness skills. The reason for the lack of a significant difference in scores among the control group in the study may be attributed to the fact that the phonological awareness-related practices specified in the preschool education program (MEB, 2013) were not effectively implemented by teachers. Studies have shown that very few phonological awareness activities were implemented by teachers (Ergül et al., 2014; Taşkın et al., 2014) and worksheets were mostly used in the activities (Parpucu & Güler Yıldız, 2022).

As a result of this study, when expressive language and general naming skills were controlled, it was observed that there was a significant difference in the phonological awareness of the children in the experimental and control groups. It was found that the program had a large effect size for phonological awareness. This result shows that the PAPDP is effective on children's phonological

awareness skills. In the literature, it has been found that teacher training programs utilizing coaching methods similarly enhance children's phonological awareness skills (Al Otaiba et al., 2011; Assel et al., 2007; Buysse et al., 2010; DeBaryshe & Gorecki, 2007; Jaskolski, 2013; Landry et al., 2009; Powell et al., 2010; Schwanenflugel et al., 2010; Wasik & Hindman, 2011). When the effect sizes of the studies are examined, there are studies with a high effect size (Assel et al., 2007; Wasik & Hindman, 2011) similar to the current study. Other studies have medium to high (DeBaryshe & Gorecki, 2007) and medium effect sizes (Buysse et al., 2010; Landry et al., 2009; Powell et al., 2010).

The PAPDP created a significant difference in favor of the experimental group in terms of rhyme awareness skills, and this difference had a large effect size. Research in the literature showed different results regarding the effects of programs applied to teachers using coaching methods on children's rhyme awareness skills. Some studies provided evidence that these skills improved (Assel et al., 2007; Buysse et al., 2010; DeBaryshe & Gorecki, 2007; Landry et al., 2009; Schwanenflugel et al., 2010; Wasik & Hindman, 2011), while others suggested no impact (Jaskolski, 2013; McLachlan & Arrow, 2014). It has been noted that the studies with no impact lacked sufficient intervention duration (McLachlan & Arrow, 2014). Among the effective studies, some have reported large effect sizes (Assel et al., 2007; Landry et al., 2009; Wasik & Hindman, 2011), while others found medium-sized effects (Buysse et al., 2010; DeBaryshe & Gorecki, 2007).

To enhance children's rhyme awareness within the framework of SFMGP, it is recommended that teachers use nursery rhymes, songs, and books containing rhyming words more frequently. Furthermore, sharing activity plans with teachers and presenting them in a practical and modeled manner has proven to be effective in increasing this awareness. Additionally, a list of rhyming words was given to the teachers for rhyme awareness, how the structure of words can affect rhyme awareness was discussed, and it was explained how words can be chosen ranging from simple to difficult in this respect. Therefore, it was beneficial to provide feedback for using the correct terms in the implementation of the activities.

As another result of this study, a significant difference was found in syllable awareness between children in the experimental and control groups, and this difference was explained with a large effect size. Therefore, it can be said that SFMGP supports teachers' knowledge and implementation skills, ultimately leading to the development of children's syllable awareness skills. When similar professional development studies using the coaching method were examined, it was seen that the programs improved children's syllable awareness skills (Assel et al., 2007; Landry et al., 2009; Schwanenflugel et al., 2010). The effect size of the programs on syllable awareness ranges from medium (Landry et al., 2009) to small (Assel et al., 2007), while it is high in the current study. In a cross-sectional study, it has been determined that children are most capable of performing the syllable separation task among their phonological awareness skills (Akyüz, 2016). Another study findings showed that Turkish-speaking children began manipulating syllables earlier than English-speaking children (Durgunoğlu & Öney, 1999). This situation arises from the structure of Turkish language. In comparison to English, the number of syllable types in Turkish is small, and the forms are simple. As a result, the syllable boundaries in Turkish are more distinct than in English. Also, the phonetic harmony rules in Turkish increase the level of understanding of the language by making the words sound pleasant (Onan, 2009). As a result, Turkish-speaking children develop syllable unit awareness earlier than English-speaking children. In this way, it can be said that syllables are easier to understand by the Turkish children. Although children understood how to divide words into syllables in the activities during the coaching process in the current study, they made mistakes while counting syllables, so relevant strategies were shown to the teachers. Additionally, teachers had problems in giving instructions and choosing appropriate words, but with the feedback provided, they were able to improve themselves.

A significant difference was found in favor of the experimental group for phoneme awareness skills and this difference had a large effect size. This can be interpreted as evidence that the program had an effect on children's phoneme awareness. The results of related studies in the literature are consistent with the results of this research (Al Otaiba et al., 2011; Assel et al., 2007; Buysse et al., 2010;

DeBaryshe & Gorecki, 2007; Jaskolski, 2013; Landry et al., 2009; McCutchen et al., 2002; Muñoz et al., 2018; Powell et al., 2010; Schwanenflugel et al., 2010; Wasik & Hindman, 2011). In the studies the effect size of the programs on phoneme awareness ranges from low (Powell et al., 2010), low to moderate (Assel et al., 2007), moderate (Buysse et al., 2010), moderate to large (DeBaryshe & Gorecki, 2007) and large (Landry et al., 2009; Wasik & Hindman, 2011). In the PAPDP, teachers were given feedback on the use of correct terms, explanations to be made in the event that children gave wrong answers, and the difficulty levels of the selected examples. Considering the need for providing more support to children, it can be stated that conducting more activities at this stage has a positive impact on the outcomes.

Conclusion, Limitations and Suggestions

When all the results are considered collectively, it can be seen that PAPDP enhances teachers' phonological awareness knowledge and their skills in implementing activities, ultimately leading to the improvement of children's phonological awareness skills. In the research process, a limitation was the involvement of only two teachers in the experimental group in terms of conducting regular and high-quality observations and providing feedback. In future studies, expanding the number of individuals providing coaching can help reach more teachers, thereby broadening the study group. In this study the the short-term effects of the PAPDP were presented so follow-up evaluations and the effects of the program on the performance of reading and writing in the primary school can be examined in further studies. Furthermore, the impact of the program on variables such as learning environments, teacher motivation, teacher attitudes towards professional development, and teachers' self-efficacy perceptions can be investigated. The effectiveness of training programs can be compared when coaching is delivered both online and face-to-face. Longitudinal studies can also be planned to examine the long-term effects of this program applied to preschool teachers on elementary school children's reading speed, reading fluency, and reading comprehension abilities.

In addition to these suggestions on further studies, policy and practice recommendations can be given. It is known that phonological awareness skills in the preschool period are an important predictor of children's reading and writing success in primary school. Therefore, considering that teachers are not adequately supported about phonological awareness in undergraduate courses and in-service training, it can be suggested that in-service training on phonological awareness should be given with coaching to teachers by field experts, as in this study, as opposed training. At this point, considering the components and principles of instructional coaching will enable the process to progress more effectively. Also, teacher candidates should be prepared within the framework of the topics covered in the PAPDP. In addition to the theoretical knowledge about phonological awareness within the scope of the relevant course, as in this study, sample activities can be shared with pre-service teachers, modeling how to apply, and feedback can be provided by observing pre-service teachers during teaching practices. Thus, it will be ensured that they will participate in this field as qualified teachers, and in this regard, preservice teacher preparation is vital.

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