



A Study on the Effect of Pre-school Education on Early Literacy Skills*

Research Article

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To cite this article: Cetin, O. S., Gulhan, M., Katranci, M. (2018). A Study on the Effect of Pre-School Education on Early Literacy Skills, *International Online Journal of Educational Sciences*, 10(5), 201-221.

ARTICLE INFO

Article History:

Received: 29.06.2018

Available online:

20.11.2018

ABSTRACT

This research aimed to identify the literacy skills of the pre-school children (phonological awareness, recipient language skill, writing awareness, writing preparation and name writing). It examined these skills according to the age and gender of the children and explored the effect of pre-school education on the development of early literacy skills. The study was conducted in preschools and kindergartens in Kırıkkale. Random sampling is used to recruited participants. The participants of this study are 71 students attending pre-school and 107 students at kindergarten. The study is based on relational survey model and five different data collections tool were used. Computer-assisted statistical software program was utilised for data analysis. Children's general literacy skills were assessed based on phonological awareness, writing preparation, written awareness, name writing, and total scores obtained from the recipient language skills. The results also demonstrated that the pre-school education process positively affected the literacy skills of the children. The research also found out that gender and age are not a significant variable in the general literacy skills of children. Findings are discussed within the context of the relevant literature and some suggestions are presented.

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Keywords:

Early childhood education, early literacy development, Reading and writing skills, Phonological awareness

Introduction

The concept of literacy starts from the early years of life and continues to develop with daily life experiences. The term of "emergent literacy" refers to the experiences of children in reading and writing from

*This research was supported by the Scientific Research Projects Unit of Kırıkkale University as Project number 2016/043.

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DOI: <https://doi.org/10.15345/iojes.2018.05.014>

birth, together with the development of verbal and written language (Robinson, Johanson, Schneider and Hutinger, 2006, p. 8). When the children began to take a pencil in their hands and make scribbles to express themselves, they also begin to use it as a means of communication by combining written and spoken language (Roskos, Christie and Richgels, 2003, p. 2).

The development of the child's reading and writing skills consists of sub-fields such as reading, writing and verbal language skills and the interaction of these fields affect these skills. The development in one of these fields also affects the other (Morrow, 2005, p. 12). In other words, the stronger the reading skills of children grow, the stronger their writing skills become, and the stronger their writing skills grow, the stronger their reading skills become (Morrow, 2005, p. 206). Literacy skills of pre-school children are covered under the titles of verbal language skills, phonological awareness, writing awareness and writing skills. Each of these fields is interrelated and their development interacts (Pullen and Justice, 2003; Vukelich, Christie and Enz, 2008).

Reading is a language-based skill; thus, it requires the understanding and use of verbal language (Allor and McCathren, 2003, p. 73). Children have difficulty learning to read when they start primary school with insufficient vocabulary (McCathren and Allor, 2002, p. 3). Therefore, the development of vocabulary of children in pre-school period is of great importance for the later periods.

Phonological awareness is one of the most critical language skills and has a strong relationship with reading success (Sadler and Mcevoy, 2003, p. 503). The skill of phonological awareness starts in the pre-school period and contributes to the reading process in the first years of school life (Turan and Gül, 2007, p. 273). Researches (Anthony et al., 2006; Anthony, Williams, McDonald and Francis, 2007; Batson-Magnuson, 2009) show that phonological awareness skills of pre-school children are related to other reading and writing skills, and they are effective in reading and writing skills in later ages. Evaluating the phonological awareness skill, which is the most important predictor of future reading success, is important in terms of both giving preliminary information about future reading performance and identifying risky groups in terms of reading skill (Turan and Akoğlu, 2011, p. 66).

Writing awareness is also an important component of early literacy. It is important for children to understand the form and function of written language in the development of pre-school literacy (Justice, Bowles and Skibbe, 2006, p. 229). Writing awareness is defined as an understanding of the form and function of written language (Ezell and Justice, 2005, p. 76). Children need to understand the form, function and characteristics of writing before starting primary school (McGinty and Justice, 2009, p. 81). Studies conducted with pre-school children (Farver, Nakamoto and Lonigan, 2007; Kelman, 2006) have found that the strongest skill in predicting children's reading skills in the future is writing awareness.

In pre-school period, children's behaviors such as making scribbles or signs are not random drawings, but rather an important part of literacy development (Lopez, 2011). Writing is a developmental process. The writing skill of pre-school children can be seen in different ways, such as recording ideas for someone else, making physical movement of handwriting, mimicking this behavior, making letter or letter-like shapes, copying words or letters, writing words. The purpose of writing is communication. Children learn this purpose of writing by being supported by adults who see them writing and speak to them about writing (Ranweiller, 2004). Güneş (2007, pp. 30-31) states that writing is composed of physical, mental, developmental and interactive processes. In the physical process of writing, there are skills such as pen holding, line drawing, hand gestures, left to right writing. Handwriting is a complex action involving multiple sensory systems (visual and motion), movement system (planning, controlling and sorting the movement) and the muscular system (providing appropriate distance with the writing device) (Berninger et al., 2006). Pre-school children actively explore the link between verbal and written language in a rich literacy environment. Therefore, in this period the child is an active constructor of literacy (Brenneman, Massey, Machado and Gelman, 1996). One of

the most important evidences of this is the ability of children to write their own names (Puranik and Lonigan, 2012). This situation shows that children have noticed both verbal and written language (Haney, Bissonnette and Benkhen, 2003).

When the literature on early literacy in Turkey is examined, it is noteworthy that there is an increase in research on the subject in recent years. It is clear that some of the research is on phonological awareness (Aktan, 1996; Güldenoğlu, Kargın and Ergül, 2016; Karaman and Üstün, 2011; Kartal and Güner, 2017; Özcan and Özcan, 2014; Parpucu and Dinç, 2017; Sarı and Aktan Acar, 2013; Sayar and Turan, 2012; Turan and Akoglu, 2011; Turan and Gul, 2008). Some of them are researches about writing awareness (Işıtan and Akoğlu, 2016; Şimşek Çetin and Alisinanoğlu, 2013, Şimşek Çetin, 2014). Some researches are about writing skills (Alisinanoğlu and Şimşek, 2012; Altun, Şimşek Çetin and Bay, 2014; Işıkoğlu Erdoğan, Muslugüme, Huz, Yılmaz and Öztürk, 2015; Ateş, 2007, Yıldız, Ataş, Aktaş, Yekeler and Dönmez, 2015). Researches on literacy skills as a whole are generally aimed at determining the views of teachers and teacher candidates (Altun et al., 2014; Erdoğan, Altınkaynak and Erdoğan, 2013; Ergül et al., 2014; Özdemir ve Bayraktar, 2015; Tuğluk, Kök, Koçyiğit, Kaya and Gençdoğan, 2008; Taşkın, Sak and Sak, 2015; Taşkın, Katrancı and Uygun, 2014). In the literature review, scale development studies that focus on children's literacy skills as a whole (Karaman and Aytar, 2016; Kargın, Ergül, Büyüköztürk and Güldenoğlu, 2015) and experimental researches (Aktan Kerem, 2001; Bayraktar and Temel 2014) were also found. There was only one study that examined the literacy skills in children in general and determined the situation (Kargın, Güldenoğlu and Ergül, 2017). It is thought that researches that show the current situation regarding the literacy skills of pre-school children will make a significant contribution to the development of pre-school education programs, to researchers and pre-school teachers in this field. From this point of view, it is aimed to determine the level of literacy skills (phonological awareness, receptive language skills, writing awareness, preparation for writing and name writing) of pre-school children, to examine these skills in terms of different variables and to show the effect of pre-school education process on these skills. For these general purposes, the following questions were sought.

- What are the phonological awareness, receptive language skills, writing awareness, preparation for writing skills and name writing skills of pre-school children?
- Do the phonological awareness, receptive language skills, writing awareness, preparation for writing skills and name writing skills of pre-school children differ according to age and gender variables?
- Does the pre-school education process have an impact on children's phonological awareness, receptive language skills, writing awareness, preparation for writing skills and name writing skills?
- Do the general literacy skills of pre-school children differ according to age and gender variables?
- Does the pre-school education process have an impact on children's general literacy skills?

Method

Research Model

The research was designed in the relational survey model of quantitative research methods. The relational survey model is a research model that aims to determine if two or more variables change together, and if they change, it tries to understand the degree of this relationship. The relational survey model does not give a real cause-effect relationship but allows the other to predict if the situation in a variable is known (Karasar, 2006, p. 82).

Universe and Sample

The universe of the research is the children attending the official kindergarten and nursery schools in the city center of Kırıkkale in the 2015-2016 academic year (n = 2334). The sample of the study consisted of 82 children attending kindergarten and 118 children attending nursery school chosen by simple random sampling method. The valid and the best way to select representative sampling is random sampling. No technique guarantees representative sampling. However, it can be said that random sampling methods are

stronger than others in order to provide representation (Büyüköztürk et al., 2010, p. 84). In the process of determining the research sample, 200 children were chosen randomly in accordance with the information received from Kırıkkale National Education Directorate. Data were collected from all samples in the first stage of the data collection process. However, in the second stage of the data collection process, children who could not be contacted due to reasons such as dropout, absenteeism and other relocations were excluded from the sample. The analyses were conducted on a total of 178 children, including 71 children attending kindergarten and 107 children attending nursery school. Table 1 shows the information for children participating in the study.

Table 1. Information for children participating in the study

Variable		N	%
Gender	Female	85	47,8
	Male	93	52,2
	Total	178	100
Birth Year	2009	8	4,5
	2010	163	91,6
	2011	7	3,9
	Total	178	100

Table 1 shows that 85 girls and 93 boys participated in the study. 8 of the children were born in 2009, 163 in 2010 and 7 in 2011.

Data Collection Tools

In order to determine the literacy skills of the children, Phonological Awareness Scale, Checklist for Evaluating Preparation for Writing Skills of Pre-school Children, Checklist for Evaluating Writing Awareness of Pre-school Children, Name Writing Checklist and Peabody Image Word Matching Test were used. A detailed description of these scales is presented below.

Phonological Awareness Scale. In order to determine the students' phonological awareness, the Phonological Awareness Scale (PAS) developed by Ateş, Erdoğan and Erdoğan (2010) is composed of five sub-dimensions (“noticing that the sentences are composed of words”, “noticing that the words are composed of syllables”, “noticing that the words may be in rhyme”, “noticing that the words can start with the same voice”, and “noticing that the words can end with the same voice”). The lowest score is 0 and the highest score is 35. The KR-20 reliability coefficient determined during the development of the scale was 0.74. The KR-20 reliability coefficients calculated within the scope of this study were 0.72 for the first measurement and 0.75 for the last measurement.

Checklist for Evaluating Preparation for Writing Skills of Pre-school Children. In the Checklist for Evaluating Writing Preparatory Skills of Pre-school Children (EWPS) developed by Şimşek (2011), the “Evaluation Paper”, which contains three lines for preparing to the contiguous slant writing, and the “Individual Enrollment Form”, where the researcher recorded his observations while children’s completing the lines. The application period is approximately 10 minutes and the scale is applied individually for each child. In the development stage of the scale, expert opinions were applied for scope validity, and test-retest reliability was determined as 0.90 (Şimşek and Alisinanoğlu, 2013).

Checklist for Evaluating Writing Awareness of Pre-school Children. The scale, which was developed by Şimşek (2011), was prepared for the purpose of evaluating the knowledge levels of children in pre-school period about the concepts of book, function of writing, form of writing, direction of writing, sentence, word and letter related to writing. There are a total of 17 items in the Checklist for Evaluating Writing Awareness of Pre-school Children (EWA). The checklist is applied individually for each child and the application time is

approximately 10 minutes. The total variance explanation rate of the two-factor checklist was 73.71%. The KR-20 reliability coefficient for the development of the checklist was calculated as 0.72 (Şimşek Çetin and Alisinanoğlu, 2013). The KR-20 reliability coefficient of the scale was 0.73.

Checklist for Name Writing. The Checklist for Name Writing (NAW) was developed to identify pre-school children's name writing skills. The following criteria are handled in the scoring of name writing skills: doesn't want to write (0 points), makes random scribbles (1 point), makes writing imitation scribbles (2 points), forms similar letters (3 points), writes random letters (4 points), writes only the first letter of his/her name (5 points), writes more than one letter of his/her name (6 points), writes multiple letters of his/her name sequentially (7 points), writes all the letters of his/her name (8 points), writes name and surname (9 points) (Şimşek Çetin, 2015).

Peabody Image Word Matching Test. The original form of Peabody Picture Matching Test (PWMT) is English, and it was prepared by Dunn (1965) and adapted to Turkish by Katz and his friends in 1972 (Katz, Önen, Demir, Uzlukaya and Uludağ, 1974). PWMT, which is applied to children aged between two and twelve years, measures the development of vocabulary. In practice, there is no time limit and can be completed in 10–15 minutes. In the test, there are questions that aim to determine the development of vocabulary (concept) with the pictures. In the test consisting of 100 cards, the child is asked to find and show the picture which is suitable for the word which is told to him / her from the four pictures on each card. Each correct answer is given a point. The test is continued until six of the last eight questions are answered incorrectly. The sum of the points constitutes the raw score of the test (Koçyiğit and Kayılı, 2014, p.19).

Data Collection

Data were collected twice to determine the literacy skills of children. The first measurement was made in October and November, and the second and last measurement was performed in May and June. In the process of collecting the data, permission was obtained from Kırıkkale Provincial Directorate of National Education and Kırıkkale University Social and Human Sciences Ethics Committee. In addition, written consent of the parents was obtained for collecting data from the children in the sample. The data were collected by the researchers.

Data Analysis

In order to analyze the data obtained from the research, all data were transferred to the computer. In order to determine the statistical tests to be used in the analysis process, it is examined whether the data show normal distribution. As a result of the analysis, Kolmogorov Smirnov test p values of the data obtained from the scales ranged between .93 and .976, and skewness and kurtosis values were between -1 and +1. According to this finding, it was assumed that the data were distributed normally and in the analysis, dependent samples t-Test, independent samples t-Test and Pearson correlation analysis were used. However, since the number of sub-groups was less than 30 in the comparisons according to the age of the children participating in the study, the non-parametric Kruskal Wallis-H test was used in the analyzes for this variable. A computer aided statistical program was used in all analyzes. In order to determine the significance of the results in practice, the effect sizes were also calculated. For the evaluation of the effect size, for et square it was considered to be .01 small .06 medium and .14 large; For Cohen's d, it was considered to be .20 small, .50 medium, and .80 high impact value (Pallant, 2016, p. 231).

Findings

This section includes data on literacy skills (phonological awareness, receptive language skills, writing awareness, preparation for writing and name writing) and the effects of age, gender, pre-school education process on these skills.

Study of Phonological Awareness of Pre-school Children in Terms of Various Variables

Phonological awareness levels of pre-school children in the study were determined by PAS at the beginning and end of the pre-school education period. Table 2 shows the findings of the phonological awareness levels of the children determined in the first and last measurements.

Table 2. Phonological awareness levels of pre-school children in the first and last measurements

Dimension	Test	N	\bar{X}	S	Level
Word Awareness	First Measurement	178	2,67	1,77	Medium
	Last Measurement		2,85	1,72	Medium
Rhyme Awareness	First Measurement	178	2,91	1,62	Medium
	Last Measurement		3,56	1,69	Medium
Startup Voice Awareness	First Measurement	178	2,75	1,56	Medium
	Last Measurement		3,16	1,60	Medium
Syllable Awareness	First Measurement	178	2,97	1,79	Medium
	Last Measurement		3,61	1,94	Medium
Finished Voice Awareness	First Measurement	178	2,06	1,46	Low
	Last Measurement		2,65	1,39	Medium
General Phonological Awareness	First Measurement	178	13,35	5,24	Medium
	Last Measurement		15,84	5,33	Medium

According to Table 2, the phonological awareness levels of the children were medium in all sub-dimensions except for the sub-dimension of *finished voice awareness*. On the other hand, it is observed that the mean scores of the first measurement of the children are low and the mean score of the last measurement is medium in the sub-dimension of voice awareness. When the first measurement and last measurement scores were examined, it was determined that the scores obtained in all sub-dimensions increased. The results of the dependent sample t-Test to determine whether there is a significant difference between the first and last measurement scores are shown in Table 3.

Table 3. First and last measurement t-Test results of phonological awareness levels of pre-school children

Dimension	Test	N	\bar{X}	S	Sd	t	P	Cohen's d
Word Awareness	First Measurement	178	2,67	1,77	177	-1,22	,223	,11
	Last Measurement	178	2,85	1,72				
Rhyme Awareness	First Measurement	178	2,91	1,62	177	-4,27	,000*	,40
	Last Measurement	178	3,56	1,69				
Startup Voice Awareness	First Measurement	178	2,75	1,56	177	-2,68	,008*	,26
	Last Measurement	178	3,16	1,60				
Syllable Awareness	First Measurement	178	2,97	1,79	177	-4,42	,000*	,34
	Last Measurement	178	3,61	1,94				
Finished Voice Awareness	First Measurement	178	2,06	1,46	177	-4,55	,000*	,41
	Last Measurement	178	2,65	1,39				
General Phonological Awareness	First Measurement	178	13,35	5,24	177	-6,76	,000*	,47
	Last Measurement	178	15,84	5,33				

*<,05

According to the results in Table 3, the phonological awareness of children is significantly different in all sub-dimensions except the word awareness sub-dimension and in favor of the last measurement in the scale. When effect size values are examined, it is noticed that there are significant differences in sub-dimensions and the scale-wide effect is small. However, the effect on general phonological awareness is quite close to the medium level ($d = ,47$). According to the findings, it can be said that pre-school education process positively affects the phonological awareness of children.

Whether or not the phonological awareness levels of children changed according to gender was examined with independent samples t-Test. The results are given in Table 4.

Table 4. The t-Test Results of the phonological awareness of pre-school children by gender

Test	Gender	N	\bar{X}	S	Sd	t	P	Cohen's d
Phonological Awareness First measurement	Female	85	13,98	5,39	176	1,53	,832	,23
	Male	93	12,77	5,06				
Phonological Awareness Last measurement	Female	85	16,58	5,61	176	1,78	,514	,26
	Male	93	15,16	5,00				

According to Table 4, phonological awareness of children does not show a significant difference according to gender in both the first measurement ($t_{(176)}=1,53$; $p>,05$; $d=,23$) and the last measurement ($t_{(176)}=1,78$; $p>,05$; $d=,26$). When the effect size values are examined, it is understood that the difference between the means is at small effect level. According to these findings, it can be stated that gender has no effect on the phonological awareness of children.

Kruskal Wallis-H test was used to determine whether phonological awareness levels of children vary according to age. The findings are given in Table 5.

Table 5. Kruskal Wallis-H Test results of phonological awareness of pre-school children by age

Age	N	Mean Rank	Sd	X^2	P	Difference	η^2
5 years old	7	76,64					
6 years old	163	89,17	2	1,417	,492	-	,003
7 years old	8	107,44					

When the results in Table 5 are analyzed, the phonological awareness of children does not differ significantly according to age ($\chi^2_{(2)}=1,417$; $p>,05$; $\eta^2=,003$). Considering the effect size value, it can be stated that the age of children has no effect on phonological awareness.

Study of Receptive Language Skills of Pre-school Children in Terms of Various Variables

The receptive language skills of the children who participated in the study were determined by PWMT at the beginning and end of the pre-school education period. The points obtained from the measurements of the receptive language skills of the children are given in Table 6 with point ranges.

Table 6. Distribution of pre-school children's receptive language skills points

Point Range	First Measurement		Last Measurement	
	N	%	N	%
20-29 points	-	-	2	1,1
30-39 points	5	2,9	-	-
40-49 points	15	8,6	3	1,7
50-59 points	61	34,2	44	24,7

60-69 points	56	31,4	68	38,3
70-79 points	31	17,4	51	28,7
80-89 points	10	5,5	10	5,5
Total	178	100	178	100

When the data in Table 6 are examined, it is observed that approximately half of the children in the first measurement are in the range of 20-59 points; In the last measurement, approximately 72% of the children were in the range of 60-89 points. According to these findings, it can be said that there is an improvement in the language skills of children.

The dependent sample t-Test was applied to determine whether the children's receptive language skills were different between the first and last measurement points. The results of the analysis are given in Table 7.

Table 7. First and last measurement t-Test results of receptive language skills of pre-school children

Test	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	178	61,01	10,53	177	-5,618	,000*	,60
Last Measurement	178	64,94	9,63				

*<,05

According to Table 7, there is a significant difference between the first and last measurement scores of the children in favor of the last measurement ($t_{(177)} = -5,618$; $p < ,05$; $d = ,60$). When the effect size value is examined, it can be said that pre-school education has a significant effect on children's receptive language skills in practice.

The independent samples t-test was used in terms of whether the receptive language skills of the children differed according to gender in the first and last measurement. The findings are given in Table 8.

Table 8. Results of t-Tests according to gender of receptive language skills of pre-school children

Test	Gender	N	\bar{X}	S	Sd	t	P	Cohen's d
Receptive Language Skill First Measurement	Female	85	60,36	10,91	176	-,775	,441	,12
	Male	93	61,59	10,21				
Receptive Language Skill Last Measurement	Female	85	63,35	9,06	176	-2,119	,035*	,32
	Male	93	66,39	9,96				

*<,05

When Table 8 is examined, it can be noticed that there is no significant difference between the receptive language skills of the children in the first measurement according to gender ($t_{(176)} = -,775$; $p > ,05$; $d = ,12$), and in the last measurement it shows a significant difference in favor of male students ($t_{(176)} = -2,119$; $p < ,05$; $d = ,32$). When effect size values were taken into consideration, it was determined that the difference between averages had no effect for the first measurement and had a low effect for the last measurement.

Kruskal Wallis-H test was used to determine whether the receptive language skills of the children differed according to their age. The findings are shown in Table 9.

Table 9. Kruskal Wallis-H Test results of receiving language skills of pre-school children by age

Age	N	Mean Rank	Sd	χ^2	P	Difference	η^2
5 years old	7	80,57	2	,220	,896	-	,01
6 years old	163	89,89					
7 years old	8	89,38					

According to the results in Table 9, the receptive language skills of the children in the study do not differ according to the age of them ($\chi^2(2)=,220$; $p>,05$; $\eta^2=,01$). When the effect size value is examined, it is seen that the difference between the mean ranks is small. Although the development of receptive language skills is expected as the age increases, the age level for children participating in this study did not have an impact on receptive language skills.

Study of Writing Awareness of Pre-school Children in Terms of Various Variables

The writing awareness of pre-school children in the study was determined by the EWA at the beginning and end of the pre-school education period. The levels of writing awareness of pre-school children in the first measurement and last measurement are given in Table 10.

Table 10. Writing awareness levels of pre-school children

Test	N	\bar{X}	S	Level
First Measurement	178	7,79	3,50	Medium
Last Measurement		9,63	3,28	Medium

According to Table 10, the writing awareness of the children participated in the research was medium in both the first and last measurements. In addition, it is observed that the last measurement points increased compared to the first measurement points. The dependent sample t-Test was applied to determine whether there was a significant difference between the first and last measurement scores of the children. The results obtained from the analysis are given in Table 11.

Table 11. First and last measurement t-Test results of writing awareness levels of pre-school children

Test	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	178	7,79	3,50	177	-6,712	,000*	,54
Last Measurement	178	9,63	3,28				

* $<,05$

According to Table 11, there was a significant difference between the first and last measurement scores of children participating in the research in favor of the last measurement ($t(177)= -6,712$; $p<,05$; $d=,54$). The medium effect size value also supports this difference. According to this result, it can be said that pre-school education contributed significantly to the children's awareness of writing.

Whether the children's writing awareness changes according to gender was analyzed by independent sample t-Test. The findings obtained from the analysis are presented in Table 12.

Table 12. The t-Test results of the writing awareness of pre-school children by gender

Test	Gender	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	Female	85	8,21	3,45	176	1,534	,127	,23
	Male	93	7,41	3,52				
Last Measurement	Female	85	9,75	3,19	176	,480	,632	,07
	Male	93	9,52	3,37				

According to Table 12, the first measurement ($t(176)=-1,534$; $p>,05$; $d=,23$), and the last measurement ($t(176)=,480$; $p>,05$; $d=,07$) of the children participating in the research do not differ according to gender. When the effect size values are examined, it is noticed that there is a small effect for the first measurement and the difference between the means for the last measurement does not have any effect. According to these findings, it can be stated that gender has no effect on children's writing awareness.

Kruskal Wallis-H test was used to determine whether the children's writing awareness differed according to their age. The results of the examination using the last test data are shown in Table 13.

Table 13. Kruskal Wallis-H Test Results of writing awareness of pre-school children by the age

Age	N	Mean Rank	Sd	X ²	P	Difference	η^2
5 years old	7	95,29					
6 years old	163	90,11	2	1,050	,592	-	,01
7 years old	8	71,94					

According to the results of Table 13, the writing awareness of children participating in the study does not differ according to the age of children ($\chi^2_{(2)}=1,050$; $p>,05$; $\eta^2=,01$). When the effect size value is examined, it is observed that the difference between mean ranks has a small effect. According to this finding, it can be said that the age has no effect on children's writing awareness.

Study of Pre-School Children's Preparation for Writing Skills in terms of Various Variables

The writing awareness of pre-school children in the study was determined by the EWPS at the beginning and end of the pre-school education period. Table 14 shows the pre-school children's first measurement and last measurement writing awareness levels.

Table 14. Levels of pre-school children's preparation for writing skills

Test	N	\bar{X}	S	Level
First Measurement	178	7,31	2,26	Orta
Last Measurement		8,57	1,90	Yüksek

According to Table 14, the preparation for writing skills of the children participating in the study were medium in the first measurement and high in the last measurement. In order to determine whether there was a significant difference between the first measurement-last measurement scores of children's preparation for writing skills, the dependent sample t-Test was performed. The findings are given in Table 15.

Table 15. First and last measurement t-Test results of preparation for writing skills of pre-school children

Test	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	178	7,31	2,26	177	-6,318	,000*	,61
Last Measurement	178	8,57	1,90				

* $<,05$

According to the results in Table 15, there is a significant difference between the first measurement-last measurement scores of the children who participated in the research in favor of the last measurement ($t_{(177)}= -6,318$; $p<,05$; $d=,61$). When the effect size value is examined, it is observed that the difference between the means has a medium size effect. According to this finding, it can be said that pre-school education has an effect on children's preparation for writing skills.

The independent sample t-test was used to determine whether writing skills of the children participating in the study differ according to gender variable. The results are shown in Table 16.

Table 16. t-Test results of pre-school children's preparation for writing skills by gender

Test	Gender	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	Female	85	7,11	2,23	176	-1,178	,240	,18
	Male	93	7,51	2,29				
Last Measurement	Female	85	8,27	1,94	176	-2,051	,042*	,31
	Male	93	8,85	1,83				

*<.05

When Table 16 is examined, it can be noticed that there is no significant difference in the preparation for writing skills of the children in the first measurement according to the gender variable ($t(176)=-1,178$; $p>,05$; $d=,18$), but there is a significant difference in favor of the male students ($t(176)=-2,051$; $p<,05$; $d=,31$) in the last measurement. When the effect size values are examined, it is seen that there is no effect for the first measurement and there is a low effect for the last measurement. It can be stated that gender does not have an effect on children's preparation for writing skills in terms of significance.

The Kruskal Wallis-H test was used to determine whether the children's preparation for writing skills differed according to their age. The results obtained from the study using the last measurement data are presented in Table 17.

Table 17. Kruskal Wallis-H Test results of pre-school children's preparation for writing skills by the age

Age	N	Mean Rank	Sd	χ^2	P	Difference	η^2
5 years old	7	91,29	2	,068	,967	-	,01
6 years old	163	89,22					
7 years old	8	93,69					

According to the results of the analysis in Table 17, the preparation for writing skills of the children do not show a significant difference according to the age of the children ($\chi^2(2)=,068$; $p>,05$). The small effect size value also supports this result. According to this finding, it can be stated that the age of the children is not effective on preparation for writing skills.

Study of Name Writing Skills of Pre-school Children in Terms of Various Variables

Name writing skills of children who participated in the study were determined by NAW. The descriptive statistics of the children in the first and last measurement for the points of name writing skills are presented in Table 18.

Table 18. Distribution of name writing skills points of pre-school children

Point range	First Measurement		Last Measurement	
	N	%	N	%
0 point	56	31,5	29	16,3
1 point	8	4,5	8	4,5
2 point	6	3,4	3	1,7
3 point	12	6,7	3	1,7
4 point	24	13,5	12	6,7
5 point	20	11,2	9	5,1
6 point	5	2,8	7	3,9
7 point	9	5,1	19	10,7
8 point	37	20,8	81	45,5
9 point	1	,6	7	3,9
Total	178	100,0	178	100,0

When Table 18 is examined, it is observed that approximately one third of the children who participated in the study did not get any points in the first measurement and the children who did not get points in the last measurement decreased by about half. In addition, in the first measurement, approximately one fourth of the children received a score of 7 and over, while in the last measurement, approximately 60% of the children had a score of 7 or more. The dependent sample t-Test was applied to determine whether there was a significant difference between the first measurement-last measurement scores of children. The findings are presented in Table 19.

Table 19. T-Test results of the first measurement-last measurement of pre-school children's name writing skills

Test	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	178	3,65	3,11	177	-8,684	,000*	,63
Last Measurement	178	5,63	3,15				

*<,05

According to the results of the analysis in Table 19, there was a significant difference between the first and last measurement scores of children participating in the research in favor of the last measurement ($t(177)=-8,684$; $p<,05$; $d=,63$). Considering the effect size value at medium level, it can be stated that pre-school education has an effect on the children's name writing skills.

The independent sample t-test was used to determine whether the name writing skills of the children in the sample were different according to gender. The findings are shown in Table 20.

Table 20. Results of t-Test of pre-school children's name writing skills by gender

Test	Gender	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	Female	85	3,64	3,34	176	-,067	,947	,01
	Male	93	3,67	2,92				
Last Measurement	Female	85	6,11	2,99	176	1,945	,053	,29
	Male	93	5,19	3,24				

According to Table 20, there isn't a difference on the name writing skills of the children according to gender in both the first measurement ($t(176)=-,067$; $p>,05$; $d=,01$) and in the last measurement ($t(176)=1,945$; $p>,05$; $d=,29$). When the effect size values were examined, it was found that the difference between the means did not affect the first measurement; it appears to have little effect for the last measurement. According to these findings, it can be stated that gender does not have an effect on the name writing skills.

Kruskal Wallis-H test was used to determine whether the pre-school children's name writing skills differed according to their age. The results obtained from the examination using the last measurement data are presented in Table 21.

Table 21. Kruskal Wallis-H Test results of name writing skills of pre-school children by age

Age	N	Mean Rank	Sd	χ^2	P	Difference	η^2
5 years old	7	84,00	2	,785	,675	-	,01
6 years old	163	90,41					
7 years old	8	75,69					

When the results in Table 21 are examined, it is seen that the name writing skills of the children who participated in the research did not show a significant difference according to their age ($\chi^2(2)=,785$; $p>,05$; $\eta^2=,01$). Considering the effect size value, it can be said that age has no effect on children's name writing skills.,

Study of Literacy Skills of Pre-school Children in Terms of Various Variables

The literacy skills scores of the children participating in the study were obtained by calculating the children's total scores obtained from PAS, EWPS, EWA, NAW and PWMT. In order to evaluate the effectiveness of the pre-school education process on children's literacy skills, a dependent sample t-test was applied to determine whether there was a significant difference between the first and last measurement points. The findings are presented in Table 22.

Table 22. First and last measurement t-Test results of literacy skills of pre-school children

Test	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	178	93,11	16,15	177	-11,877	,000*	,71
First Measurement	178	104,61	16,11				

*<,05

According to the results of the dependent sample t-Test in Table 22, there was a significant difference between the literacy skills of the children participating in the research and the first-last measurement scores in favor of the last measurement ($t_{(177)} = -11,877$; $p <,05$; $d = ,71$). When the effect size value is examined, it is seen that it is medium. According to this finding, it can be said that pre-school education has an effect on children's literacy skills.

The independent sample t-test was used to determine whether literacy skills of children in the study differ according to gender. The findings are shown in Table 23.

Table 23. Results of t-Tests of pre-school children's literacy skills by gender

Test	Gender	N	\bar{X}	S	Sd	t	P	Cohen's d
First Measurement	Female	85	93,29	17,31	176	,143	,886	,02
	Male	93	92,95	15,11				
Last Measurement	Female	85	104,06	16,53	176	-,433	,666	,07
	Male	93	105,11	15,79				

According to Table 23, the literacy skills of the children participating in the research do not differ according to gender in both the first measurement ($t_{(176)} = -,143$; $p >,05$; $d = ,02$) and the last measurement ($t_{(176)} = -,433$; $p >,05$; $d = ,07$). Considering the effect size values, it can be stated that gender has no effect on literacy skills.

Kruskal Wallis-H test was used to determine whether children's literacy skills differed according to their age. The results using the last measurement data are presented in Table 24.

Table 24. Results of Kruskal Wallis-H Test by pre-school children's literacy skills according to age

Age	N	Mean Rank	Sd	X ²	P	Difference	η^2
5 years old	7	81,36	2	,251	,882	-	,01
6 years old	163	89,60					
7 years old	8	94,50					

When the results in Table 24 are examined, it is seen that the literacy skills of the children who participated in the research did not show a significant difference according to the age ($\chi^2_{(2)} = ,251$; $p >,05$; $\eta^2 = ,01$). The effect size value is low. According to this finding, it can be said that age of children has no effect on literacy skills.

Conclusion, Discussion and Suggestions

As a result of the study, phonological awareness of children was found to be moderate in both the scale and sub-dimensions of the scale (except for the voice awareness). There was a significant difference between the first measurement and the last measurement in favor of the last measurement on the scale and the sub-dimensions except the word awareness. It was determined that the effect size was smaller in sub-dimensions and scale with significant difference but the effect towards general phonological awareness was very close to medium level (Cohen's $d = .47$). According to these results, it can be said that pre-school education process is effective in increasing phonological awareness of children. When MEB (2013) the achievements and indicators for phonological awareness in Pre-school Education Program were examined (Achievement 9. He/She indicates phonetic awareness. Indicators: he/she says the beginning voices of the words. He/she says the sounds at the end of the words. He/she produces the words that start with the same voice. He/she produces the words that end with the same voice. He/she says the rhyme in poetry and story. He/She says another word with rhymes.), it is noticed that there is no gain for vocabulary awareness. Therefore, it can be thought that teachers do not perform activities related to this sub-dimension and children cannot develop these skills. When the literature is examined, it is seen that phonological awareness skills follow a hierarchical structure. This structure consists of successive and increasingly difficult skills (Parpucu and Dinç, 2017). According to the research done by Acarlar, Ege and Turan (2002), these skills are described as separation of sentences into words, separation of words into syllable, word vocalization, vocabulary beginning with the given voice and word finding with the voice in the end. Phonological awareness is seen as the strongest determinant in the development of reading skills (Sayar and Turan, 2012). However, Acarlar et al. (2002) stated that the ability to divide the word into syllables is not related to reading development. In the study, it has also been found that the vocabulary vocalization and word finding with the voice in the end are gained from the first year and has strong ties with reading skill.

The investigations related to phonological awareness in Turkey show that the programs about phonological awareness in the pre-school period are effective (Bayraktar and Key, 2014; Parpuc and Dincer, 2017, Turan and Akoğlu, 2011). In this study, phonological awareness of children was found to be moderate. Therefore, it can be said that teacher practices should be strengthened by taking into consideration the phonological awareness programs.

As a result of the research, it was observed that gender was not a significant variable in phonological awareness skills. In parallel with research findings, Karaman and Üstün (2011) found that gender was not effective in phonological awareness. In contrast to the expectation, phonological awareness level did not increase with age. However, in some other studies, it is reported that as age has increased, phonological awareness skills has also increased (Acarlar et al., 2002; Kelman, 2006). In this study, the fact that age did not cause a significant difference on phonological awareness may be the result of the fact that the majority of the research sample consisted of 6 years ($n: 163$) group children.

In the study, it was determined that the pre-school education process had an impact on the receptive language skills of children (Cohen's $d = .60$). Similar results were found by Kargin et al. (2017). This situation can be interpreted as MEB (2013) Pre-school Education Program has an effect on children's language skills. Because this program is quite comprehensive about the development of language skills.

As a result of the study, it was found that the children's writing awareness was moderate and that the pre-school education process had an effect on writing awareness (Cohen's $d = .54$), and age has no effect on children's writing awareness. Similarly to this research, there are studies determining that gender is not a significant variable in writing awareness (Brown, Byrnes, Watson and Raban, 2013; Kelman, 2006).

It was noticed that the writing awareness of the children participating in the study did not differ according to the age of the children. As in other literacy skills, age is also expected to be a significant variable in writing awareness. There are studies that support this (Brown et al., 2013; Ezell and Justice, 2005). However, in this study, it is thought that age variable does not have a significant difference on writing awareness due to the limitations arising from the sample.

In the study, it was observed that the preparation for writing levels of the pre-school children were medium in the first measurement and high in the last measurement. In addition, it was determined that pre-school education process had a significant effect on preparation for writing skills (Cohen's $d = .61$). According to the results of the study conducted by Çelenk (2008), it can be said that children have gained experience and knowledge about primary school during the pre-school education and that pre-school education is effective on children's preparation for writing levels. When MEB (2013) Pre-school Education Program is taken into account, it is considered to be a result of the expected results because the teachers are expected to use pen and handicraft studies for children (keeping the pen correctly, pencil control and correct use, drawing, painting, cutting, folding, kneading, gluing etc.) within the scope of preparation to read and write.

When the research findings about children's name writing skills were examined, it was found that the last measurement scores were significantly higher than the first measurement scores (Cohen's $d = .63$). This is an expected situation. There are activities to show the letters and to make children write in educational programs (MEB, 2013) implemented in Turkey. However, children can write letters, especially letters in their names (Akbaba, Şimşek Çetin and Bay, 2014). This situation indicates that some of the pre-school children have spontaneous learning and developmental characteristics; children encounter their names at home and at school many times, and they can write it. The ability to write names is considered to be one of the most important indicators of developmental literacy skills (Haney et al., 2003; Puranik and Lonigan, 2012). The findings of this study are parallel with the findings of previous studies. Many studies show that children of different cultural and linguistic structures in pre-school age have the ability to write names even if they are illiterate (Chan and Louie, 1992; Levin, Both-De Vries, Aram, and Bus, 2005; Treiman, Cohen, Mulqueeny, Kesler and Schechtman, 2007; Villaume and Wilson, 1989; Yin and Treiman, 2013).

In the study, it was determined that age and gender variables did not have a significant effect on children's writing skills. Haney et al. (2003) found that gender was not a significant variable on name writing skills. However, there are also different research results. Işıkoğlu Erdoğan et al. (2015) found that age and gender were significant variables on name writing skills; as the age increased, the writing skills improved and the girls were more successful in name writing. In a study by Puranik, Petscher and Lonigan (2012), it was determined that girls were more successful in writing letters than boys. Similarly, Justice, Invernizzi, Geller, Sullivan, and Welsch (2005) found that girls had higher scores on their writing skills than boys.

In the research, general literacy skills of the children were evaluated on the total score obtained from phonological awareness, writing preparation, writing awareness, name writing and receptive language skills. It was determined that pre-school education process positively differentiated in general literacy skills of children attending the study (Cohen's $d = .71$).

As a result of the research, it was determined that gender and age were not a significant variable on general literacy skills of children. As a result of the research conducted by Kelman (2006), it was found out that age is a meaningful variable in literacy skills (alphabet knowledge and phonological awareness) of pre-school children and that older children are more successful than younger children. In another study, Acarlar et al. (2002) reported that the success in the metalinguistic functions (finding a word where voice given with syllable and voice volume division is at the beginning or in the end) is increased with age. Longcamp, Zerbato-Poudou and Velay (2005) determined in their research that 3-5 year-old children's letter detection and letter writing skills have increased as the age increases. Ezell and Justice (2005) also stated that the writing awareness

increases with age. Similarly, Brown et al. (2013) determined in their research that the writing awareness was related to age, and the children's writing awareness increased with age. In this study, age was not found to be a significant variable in literacy skills. The main reason for this is thought to be related to the limitation of the sample because the majority of the sample is 6 years old and the other age groups are very few. However, when literacy skills were analyzed separately and with general literacy skills were found, there was a significant difference between the first and last measurement in favor of the last measurement. According to this study, it can be said that MEB (2013) Pre-school Education Program is effective in literacy skills of children. However, there are other studies that suggest the opposite of this result. Kargin et al. (2017) examined the literacy skills of children in the study conducted in Ankara, and it was determined that the children were not sufficient in their literacy skills except for vocabulary. Supporting this result, the study conducted by Yazıcı and Kandır (2014) showed that the achievements to support literacy skills in the MEB (2013) program belong to the areas of cognitive and language development, which include the basic field of reading (alphabet knowledge, phonological awareness, verbal language, vocabulary), and that the achievements mostly support reading skills, but writing awareness fails to satisfy.

The researches that examined the opinions of teachers about the readiness to read and write studies indicate that teachers do activities for voice and line studies in preparation for reading and writing, but they do not conduct activities towards writing awareness (Altun et al., 2014; Taşkın et al., 2014). Ergül et al. (2014) found that teachers used concept teaching, line studies and book reading activities in preparation for readiness to read and write. On the other hand, it has been found that phonological awareness, writing awareness and letter skills are considered to be among the most important sub-skills of early literacy. In the light of this information, it can be said that this increase in the skills of children is not only caused by the implementation of programs and teachers, but also by age and developmental characteristics. In order to determine this situation clearly, quasi-experimental studies can be carried where there are children who have pre-school education and not.

The limited number of children in the sample of this study is seen as a limitation of the study. In subsequent studies, it is recommended to investigate the literacy skills of children in a larger sample group. In addition, the class literacy environment could not be studied in this study. It can be suggested that studies in which the teacher practices and the classroom environment can be observed in different studies. Only pre-school children were studied in this study. It is very important how the literacy skills in pre-school period affect primary school period. Therefore, longitudinal research involving primary school period can be done.

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