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Investigation of Master's and Doctorate Theses on Preschool Period Science Education in Turkey

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Highlights

1. There are 37 studies on science education in pre-school period in Turkey.
2. The studies found were classified in terms of thesis type, years, institutes, universities, method, study group and subject.
3. This is the most up-to-date study on the examination of master's and doctoral theses on pre-school science education in Turkey.

Abstract

The objective of this study conducted in Turkey pre-school period is the examination of science education on graduate and doctoral theses. The data were analyzed by content analysis method.
Within the scope of the study, 37 studies, which were reached in the last 17 years, were grouped according to their years, thesis types, qualitative / quantitative / mixed approach, university and institute to which the thesis belongs, study group and it's subjects. According to the findings obtained from the study, it was found that more master's theses were reached in preschool science education, there were more studies on this field in recent years, studies were carried out in 25 different universities and 5 different institutes, the study group mostly worked with teachers and It was found that the subject of study was the attitudes of teachers. According to the approach of the studies, it was found that the quantitative approach was used more often.

Keywords: Science education, pre-school, preschool science education, thesis review.

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Introduction

The development of man starts from the moment he first falls into the womb and continues until death. Among these periods, the pre-school period is a period in which the child meets life, learns and discovers. It is also known as a period when various areas of development were greatly developed. Considering that children are absorbent like sponges during this period, it can be said that it is a productive process in terms of preparing them for life. During this period, the child learns something new with everything he discovers, and new connections are formed in his brain with everything he learns. The pre-school period has a critical importance in terms of the speed of brain development and the formation of meaningful connections in the brain.

What is pre-school education?

In order for the child to realize the above-mentioned learning, explore and do mental activities like this, a rich and stimulating environment should be provided to the child as much as possible. All families may not have the same favorable conditions for providing this environment. This is where pre-school education comes into play.

It is the education that prepares children for the next years of their lives by considering the interests, needs and developmental characteristics of children in the first six years of pre-school life. Preschool education includes the development of cognitive development, social and emotional development, language development, motor development and self-care skills of children.

Objectives of preschool education

The aims of preschool education in the 2013 preschool education program (Meb, 2013) are as follows sorted:
1. To enable children to develop body, mind and emotion and to gain good habits,
2. To prepare them for primary school,
3. To create a common upbringing environment for children from unfavorable environments and families,
4. To ensure that children speak Turkish correctly and beautifully.(p.10)

Science Education

When talking about preschool education, it is mentioned about the cognitive development of children, preparing them for life and introducing life to them. Science education plays a major role in this regard. Many situations that the child discovers or observes in or around nature are related to science. Science activities are very effective when explaining these situations to children.

Effective science education has an important place in the child's discovery of nature, recognizing life and gaining scientific process skills.

In addition to all these, if preschool science education has an important task, it is to enable the child to develop a positive attitude towards science and science.

Related Studies

In a study (Kiras, B, 2019) in which theses on science education were examined, it was stated that the theses written were mostly master's theses, and the universities that wrote the most theses were Gazi University, Middle East Technical University, Atatürk University, Marmara University, Dokuz Eylül University and Karadeniz Technical University, respectively. It has been stated that it is mostly written about teaching method approach, strategy and techniques in terms of subject. It was found that there were the highest number of secondary school students as a sample and the most quantitative method was used as a method. In addition, it has been found that they do not give much methodical features in many of the theses.

Karamustafaoğlu (2009) in his study on basic trends in science and technology education, after examining the papers presented and published in 12 journals and three national congresses, determined that measurement-evaluation was the subject with the most studies in eight different categories according to the subject titles.

When Gürdal, Bakioğlu and Öztuna analyzed the 36 theses they reached in their study (2005) on the examination of science education graduate theses, it was determined that the most quantitative method as the research method, the state school students the most as the sample group, and the trial model the most as the research model. In addition to these, it is among the findings that there is no great disproportion in the gender distribution of the researchers, and that the theses mostly belong to the science teaching department and the physics teaching department as the department.

The studies in which the above-mentioned science education theses were examined were not particularly studies on pre-school science education.

Preschool science education; content analysis of national and international studies on the subject in the context of viewing Mantas Ozpir on fire (2018) in their study between 2003 and 2017 National 100, 80 preschool science education international study in 2010 examined most of the work in Turkey and in the world in 2014 stated that they had encountered. As a sample, the most Preschool Teachers are used in Turkey, while preschool students are used in the world. While he determined that the most studied subject in Turkey is teacher education, he determined that the most studied subject in the world is my concept teaching. When the studies were examined according to the method, it was seen that while the most quantitative method was used in Turkey, the qualitative method was more common in the world. As a data collection tool, the most interview techniques have been used in Turkey and the world.

Purpose Of The Study

This study aims to analyze the distribution of graduate theses on science education in pre-school period in Turkey by thesis type, distribution by years, distribution by study group, universities and institutes, distribution by method and subjects.

In the study, the answers to the research questions given below were sought:

What is the distribution of dissertations on science education for preschool education conducted in Turkey by dissertation type?
What is the distribution of theses on pre-school science education conducted in Turkey by year?
What is the distribution of the theses on science education in the pre-school period conducted in Turkey between the universities and institutes to which they belong?
What is the distribution of theses on pre-school science education conducted in Turkey according to the method?
What is the working group distribution of theses on pre-school science education conducted in Turkey?
How are the subject distributions of theses on science education in preschool education conducted in Turkey?

Method

This section covers the design of the study, its sampling, the process of data collection and the process of analyzing the data.

The Pattern Of Study

This study was carried out by document analysis from a qualitative research pattern. Since it may be difficult to study graduate theses for science education in preschool age by traditional methods, it was thought that it would be more appropriate to use a qualitative research method in order to provide more in-depth information. (Büyüköztürk et al., 2016).

Sampling

The sample of the study is comprised of graduate theses on pre-school science education conducted in Turkey. There are 37 theses in the sample, 28 of which are master's and 9 are doctoral.

The Process of Data Collection

In the research process, the YÖK Thesis Center was used to obtain theses on science education in preschool education in Turkey. When searching for theses, the keywords “preschool”, “science education” were written in the summary section in the detailed search section and the Deceses that came out were scanned. Without selecting an institute, 37 of the 696 theses listed with the keyword “science education” were found to be related to science education in the preschool period. The screening of the data was based on the years Dec004-2020.

Analysis of the Data

In the analysis of the data, the content analysis method was used.
Stages of content analysis ;
Provision of relevant work Jul
Determination of categories and codes to be used in the content analysis of related studies
Analysis in the light of categories (Özpir Mantaş, Coştu, 2018)
After collecting the data, the categories and codes were determined.
The data are grouped according to the type, year of the thesis, the university and institute to which it belongs, the study group, the method and the subjects of the thesis. The findings obtained are illustrated with tables.

Findings

In this part of the study, the findings obtained within the framework of the research questions included in the purpose of the study were analyzed and interpreted. The findings obtained were visualized with tables. First, it was thought that it would be a good start to make an analysis according to the type of theses. 28 of them are master’s theses and 9 of them are doctoral theses when theses on science education in preschool education have been examined in Turkey since 2004. The first two of the doctoral dissertations were awarded in 2014. Finally, two doctoral theses were obtained in 2020. 10 of the 28 master’s studies have been given in the last two years.

Table 1. Types of theses on Pre-School Science Education in Turkey

Type of Thesis	f
Master’s DegreeThesis	28
Doctoral Thesis	9
Total	37

As a second, a classification was made for the distribution of theses on science education in preschool education in Turkey by year.

According to the results obtained, it is seen that there are no serious study Dec in the first years of the pre-school science education studies conducted between 2004 and 2020. It is seen in the data given in the table that no studies have been given in some years. It is seen that studies in the related field are given every year in 2014 and in the following years. In addition, it is observed that the number of studies conducted in the field of pre-school science education for the last seven years has increased compared to previous years. In particular, it is observed that the largest number of studies have been given in the last two years compared to other years.

Table 2. Distribution of the theses on pre-school science education in Turkey by years

Years	f
2020	6
2019	7
2018	2
2017	3
2016	3
2015	3
2014	4
2013	0
2012	2
2011	1
2010	2
2009	1
2008	0
2007	1
2006	2
2005	0
2004	0

Then, the distribution of studies in the field of pre-school science education in Turkey towards universities and institutes is visualized in table3 and table4.

Table3. Distribution of the theses on pre-school science education in Turkey by universities

University Name	Master's Degree	Doctoral	Total
Gazi University	4	1	5
Çukurova University	2	1	3
İstanbul Aydın University	3	0	3
Abant İzzet Baysal University	2	0	2
Çanakkale Onsekiz Mart University	2	0	2
Eskişehir Anadolu University	2	0	2
Hacettepe University	0	1	1
Marmara University	0	2	2
Ankara University	0	1	1
Boğaziçi University	1	0	1
Celal Bayar University	1	0	1
Erciyes University	0	1	1
Fırat University	1	0	1
İnönü University	1	0	1
Kafkas University	1	0	1
Karadeniz Teknik University	0	1	1
Kütahya Dumlupınar University	1	0	1
Okan University	1	0	1
Ondokuz Mayıs University	0	1	1
Orta Doğu Teknik University	1	0	1
Recep Tayyip Erdoğan University	1	0	1
Trakya University	1	0	1
Uşak University	1	0	1
Yeditepe University	1	0	1
Yıldız Teknik University	1	0	1
Total	28	9	37

When the studies on science education in the pre-school period are examined, it is seen that Gazi University has the highest number of studies in this field. Çukurova University and Istanbul Aydın University are the two universities that follow this ranking.

Table4. Distribution of the theses on pre-school science education in Turkey by institutes

Institute Name	f
Institute of Education Sciences	18
Social Sciences Institute	11
Graduate School of Natural and Applied Sciences	5
Graduate School of Education	2
Health Sciences Institute	1
Total	37

When the institutes to which the theses on preschool science education belong were examined, 5 different institutes were encountered. Among these institutes, the institute that gave the most theses with 18 theses within the scope of the related subject was the education institute, while the institute that followed it and gave the second most theses with 11 theses on the related subject was the institute of social sciences. This is followed by the institute of science with 5 theses in the third place, and the graduate education institute with 2 theses in the fourth place. In the last place is the health sciences institute with a thesis.

Of the 18 theses in the education institute, 7 are doctoral theses and 12 are master's theses. Of the 11 theses in the social sciences institute, one is a doctoral thesis and 10 is a master's thesis; One of the 5 theses in the institute of science is doctorate and 4 of them are master's thesis.

All of the theses in the graduate education institute and the thesis in the health sciences institute are the master's thesis.

When the distribution of the theses on pre-school science education in Turkey is examined according to the method, the findings are visualized in Table 5.

Table 5. Distribution of the theses on pre-school science education in Turkey according to their method

Research methods	f
Qualitative	9
Quantitative	16
Mixed	12
Total	37

When the prepared theses were examined, according to the approaches of the theses, 9 of them were prepared with qualitative method, 17 of them with quantitative method and 12 of them with mixed method. Based on the result obtained in the table, it was determined that the researchers preferred the quantitative method the most, while the least preferred method was the qualitative method.

When the study groups of the theses on pre-school science education in Turkey are examined, the findings are given in Table 6.

Table 6. Sample distribution of theses on pre-school science education in Turkey

Sample	f
Teacher	20
Student	17
Pre-School Teacher Candidate	4
Executive	2
Mothers of Preschool Students	1
Headmen (old/new)	1
Document	1

In the studies, it was seen that the researchers mostly determined the teachers as the study group. After the teachers, the most common study group was the students.

Finally, when the distribution of the subjects in the examination of the theses on pre-school science education in Turkey is examined, the data obtained are given in table 7.

Table 7. Subject distribution of theses on pre-school science education in Turkey

Concepts on Topics	f
Attitudes (teachers and teacher candidates)	11
Opinions (teachers and teacher candidates)	6
Science Applications	6
Variables on Children's Science Process Skills	6
Self-Efficacy Levels	5
Concept Development	2
Science education programs	2
STEM	3
Knowledge Level of Teachers	2
Scale Development	1
Establishing a Science Education Execution Standard	1
The Effect of the Environment on the Quality of Science Education	1
Out-of-School Learning Environments in Science Education	1
The Effect of Preschool Science Education on Science Process Skills at High School Level	1
Review of Materials and Resources	1
Developing Science Activities	1
Cognitive Flexibility	1
Teacher's Science Education Pedagogical Content Knowledge	1
Problems in Science Education	1
Content Analysis of Academic Studies	1
Use of Guide Materials	1
Teacher Competence	1

While determining the concepts they focus on in the subjects of the studies, it was thought that the attitudes and opinions of the teachers should be taken under the same concept. However, since a difference of almost half was detected between the two, it was thought that examining both concepts under separate headings would provide clearer results.

When the data obtained are examined, it is seen that the researchers mostly include the attitudes of teachers or teacher candidates in their theses. So much so that there is almost twice as much difference between the subject of teachers' opinions that follow it.

When we look at the studies on the variables of teacher / pre-service teachers' opinions, science applications and children's science process skills, it is seen that they all have the same frequency.

This ranking is followed by the issue of self-efficacy level with a slight difference. There are three studies on STEM and two each on concept development, science education programs, and teachers' knowledge level.

Conclusion and Recommendations

When the findings obtained in the study were compared with the findings obtained in similar studies in the literature, some common and divergent points were determined.

According to the results obtained from the research, 28 of the 37 theses prepared on pre-school science education in Turkey are master's theses and nine are doctoral theses.

Making science education more efficient in the pre-school period will only be possible by determining the needs of teachers and the problems in the planning and evaluation stages of the science education process (Alisinanoğlu et al., 2017). For this reason, studies on pre-school science education are of great importance in order to increase efficiency. The importance of this will be understood, as an increase has been observed in the number of thesis studies on the subject, especially in the last two years, which is based on the study. Until 2014, it is seen that at most two studies were carried out per year. However, after the restructuring of the science and technology curriculum in 2013, an increase was observed in pre-school science education studies in 2014 (Taş et al., 2019). However, with seven studies, 2019 was the year with the most studies. The significant increase in theses in 2019 and 2020 gives the result that in recent years, pre-school science education has been given more place in the literature compared to other years.

Gazi University has the highest number of theses among universities; Among the institutes, the most came from the institute of educational sciences. A consistent result was obtained when compared with the data of Kiras (2019). In both studies, Gazi University was the university to which the most studies belonged.

While the most quantitative research method was used, the teachers were mostly used as a sample. As a sample, students are in the second place by a small margin.

The fact that the most used research method is quantitative is a result that overlaps with many studies in which document analysis of previous studies in science education was conducted (Aydoğdu, 2015; Kiras, 2019; Gürdal,Bakioğlu, & Öztuna, 2005; Özpir Mantaş, Coştu,2018).

When the studies are examined according to the sample, a result consistent with the studies of Özpir Mantaş and Coştu has been obtained. However, in some other studies (Gürdal, Bakioğlu and Öztuna 2005; Kiras 2019), it is seen that the sample consists mostly of students. It should be taken into account that the student population of the studies on the difference in this comparison is not pre-school students.

When theses are examined in terms of their subjects, “attitudes” come first with a clear difference. This is followed by “opinions”, “science practices” and “variables on children’s science process skills” in equal numbers. This result is consistent with the finding of Özpir Mantaş and Coştu(2018) that most of the teacher education subjects are studied in their studies. It has been stated that Özpir Mantaş and Coştu’s (2018) teacher education code includes teacher attitude competencies.

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