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TURKISH CURRICULUM AND INSTRUCTION ASSOCIATION

ULUSLARARASI EĞİTİM PROGRAMLARI VE ÖĞRETİM ÇALIŞMALARI DERGİSİ

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From the Editor In Chief

Unfortunately, one of the sectors that has been most closely affected by the pandemic process since last year is education. Due to the interruption of the face-to-face education process in schools, research-based studies of researchers from the field of educational sciences were adversely affected in this process. It was inevitable that this would affect our journal as well as other academic journals. Compared to previous years, it was observed that the manuscripts sent for publication to IJOCIS focused on (literature) review studies.

However, 11th volume of the "International Journal of Educational Curriculum and Instructional Studies", which we published the first issue of 2021, included different field study articles, such as 'evaluation of pre-school curriculum'; 'a disaster education model proposal for Turkey'; 'evaluation of an in-service training program'; 'augmented reality usage in learning process' and 'perceptions about teacher empowerment'; as well as two quality review studies such as 'analysis of graduate theses related to curriculum evaluation' and 'education process and admission to teacher education programs of two different countries'.

We congratulate the authors who contributed to this issue for their invaluable work and wish them continued success. In addition, we would like to thank the all reviewers, editors and the editorial board members, who carefully examined the articles, for their meticulous work and contribution to the publication of the current issue.

Necessary applications are made for our journal to be indexed in more recognizable databases. Finally, we continue to carry out our work with more rigor, seriousness and consistency than ever before, as we await the result of our application to be indexed in the ERIC database.

We call on all educators working in the field of Curriculum and Instruction to submit original and high level scientific studies to our journal.

With my best regards.

Prof. Dr. Kerim GÜNDOĞDU

Baş Editörden

Geçen yıldan bu yana pandemi sürecinden belki de en yakından etkilenen sektörlerden birisi de maalesef eğitimidir. Okullarda yüz yüze eğitim sürecinin sekteye uğramasından dolayı, özellikle eğitim bilimleri alanından araştırmacıların araştırma temelli çalışmaları bu süreçte olumsuz etkilendi. Bu durumdan diğer dergilerin olduğu kadar, dergimizin de etkilenmesi kaçınılmaz idi. Dergimizde yayımlanmak üzere gönderilen makalelerde önceki yıllara oranla derleme çalışmalarına ağırlık verildiği gözlemlendi.

Bununla birlikte, 2021 yılının ilk sayısını yayımladığımız “Uluslararası Eğitim Programları ve Öğretim Çalışmaları Dergisi”nin 11. Cilt 1. sayısında ‘okul öncesi eğitim programlarının değerlendirildiği; Türkiye için bir afet eğitim modeli önerildiği; bir hizmet içi eğitim programının değerlendirildiği; öğrenme süreçlerinde artırılmış gerçekliğin kullanıldığı ve öğretmen güçlendirmeye ilişkin algıların incelendiği’ *alan araştırmaları* ile ‘program değerlendirme konulu lisansüstü tezlerin analizi’, ‘iki farklı ülkenin öğretmen eğitimi programlarına kabul ve eğitim sürecinin karşılaştırıldığı’ nitelikli *derleme çalışmaları* yer almıştır.

Bu sayıya katkıda bulunan tüm yazarlarımızı çalışmalarından dolayı kutluyor ve başarılarının devamını diliyoruz. Ayrıca başta hakemlik tekliflerimizi geri çevirmeyip, makaleleri titizlikle inceleyen alanlarında uzman tüm akademisyenlerimize ve editörler kuruluna dergimizin yayımlanması için yapmış oldukları titiz ve özverili katkılarından dolayı çok teşekkür ederim.

Dergimizin daha tanınır veri tabanlarında dizinlenmesi için başvurular yapılmaktadır. Son olarak ERIC veri tabanında dizinlenmek üzere yaptığımız başvuru sonucunu beklediğimiz bu günlerde çalışmalarımızı her zamankinden daha fazla titizlik, ciddiyet ve tutarlılık içinde yürütmeye devam ediyoruz.

Eğitim Programları ve Öğretim alanında çalışan ülkemizdeki ve dünyadaki tüm eğitimcileri dergimize bilimsel niteliği yüksek ve özgün çalışmalar göndermeleri için çağrıda bulunuyoruz.

Esenlik dilekleriyle.

Prof. Dr. Kerim GÜNDOĞDU

Evaluation of 2013 Preschool Curriculum Objectives and Indicators According to Revised Bloom's Taxonomy

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Abstract

The purpose of the study is to reveal the types of knowledge level and cognitive processes by evaluating the objectives and indicators of Ministry of National Education 2013 Preschool Curriculum according to the Revised Bloom's Taxonomy. The study is a descriptive research and it was carried out by using case study methodology. The data set of this study consists of 63 goals and 241 indicators in the Preschool Curriculum, which was developed by Ministry of National Education-General Directorate of Basic Education in 2013. The data were collected by using the "Objectives and Indicator Evaluation Form" created by the researchers and the content analysis method was used in the analysis of the data obtained. The whole curriculum was analyzed and according to the cognitive processes and it was revealed that the highest intensity was at the application and understanding processes, and the least intensity at the creativity process. While factual knowledge was mostly used knowledge type in the curriculum, it was revealed that operational and metacognitive knowledge were the least used knowledge types. The curriculum was cognitive dominant, and the distribution of objectives and indicators of the curriculum was not balanced across all developmental domains. The curriculum objectives and indicators may be revised to support whole development of children.

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Introduction

The success of educational processes in schools can be possible with the effective implementation of a well-prepared education curriculum (Kocayığıt & Aykaç, 2019). A curriculum is defined by Varış (1996) as the activities provided by an educational institution for learners, and by Demirel (2020) as

the learning activities carried out in and out of the school environment. In this regard, a curriculum is a framework forming the basis of activities planned for learners and this framework should have content that will meet the needs of learners. Curricula have four basic elements; objectives, content, educational situations, and assessment (Bümen, 2006; Demirel, 2020). Among these elements, the objectives constitute the starting point for the implementation of the curriculum and points out the content of the learning experiences to be provided to the learner and the basic characteristics that the learner is desired to have. The objectives and indicators in a curriculum enable the implementation of the curriculum for concertizing the goals expected to be achieved (Ministry of National Education [MoNE], 2013). Therefore, the objectives and indicators of a curriculum should be evaluated and examined from different dimensions as they determine the direction of the next stages of the curriculum. In this study, the objectives and indicators of the Preschool Curriculum (PsC) prepared by the Ministry of National Education General Directorate of Basic Education (MoNE GDBE) were examined.

Different theories and approaches are used when developing curricula. Depending on the content of the subject to be learned, the characteristics of the learner, and the structure of the learning process, these approaches can be formed using "subject-based", "learner-oriented", "problem-centered", "modular", or "system approach" (Demirel, 2020). PsC is a curriculum prepared with a learner-oriented approach and consists of development-oriented objectives and indicators. The objectives and indicators included in the curriculum consist of successive stages that progress from simple to complex and from concrete to abstract (MoNE, 2013). While indicators ensure that the objectives are observable, they make the objectives reach an inclusive nature. Besides, these objectives and indicators were prepared according to three different month intervals (36-48 months, 48-60 months, 60-72 months) and it was suggested for the teachers to include objectives and indicators in their activities and consider the developmental characteristics of the children according to the age group in his class (MoNE, 2013). Regardless of the approach created, the strategy to be followed in the establishment of the goals of the curriculum should include content that can meet the interests and needs of the learners and enable them to have the skills required by the age.

The changes and alterations experienced in society are also reflected in education and it has become necessary to reflect the innovations brought by the day to the curriculum (Yaşar, 2013). In this context, the changes and alterations brought by the 21st century have led to the emergence of new skills and the need to acquire these skills in schools. Therefore, curricula should be reviewed from time to time, restructured, and put into practice in the light of scientific approaches to cover the processes required by the time within (Girgin, 2011). PsC has been updated in various periods to reflect the requirements of that time. In Turkey, curriculum development and review studies were conducted in the field of preschool education in 1952, 1989, 1994, 2002, 2006, and 2013 (Çelik & Gündoğdu, 2007; Düşek & Dönmez, 2012; Gelişli & Yazıcı, 2012; Sapsağlam, 2013; Yapıcı & Yapıcı, 2016). In the curriculum published in 1952, the necessary information was provided under headings as the activity scheme of the activities that should be done in preschool education institutions for teachers and the "things to be considered" when teachers are performing their activities. However, there was no explanation or information about the evaluation of the child and the teacher within this curriculum (Sapsağlam, 2013). This shortcoming shows that this curriculum is not a standard curriculum that covers all components. The curriculum developed in 1989 was based on unit and subject teaching. In line with special days and weeks with the unit titles published in the Journal of Announcements (Tebliğler Dergisi), at the beginning of each academic year, it was aimed to determine the goals of the daily, unit, and annual plans and the behaviors to be acquired by children. This curriculum included a list of sample activities consisting of 30 units. It was a subject-oriented and knowledge-based curriculum that supported the cognitive development of children. However, other development domains were limited, and life-oriented skills were not included.

The curriculum published in 1994, which was the first development-oriented curriculum, was the first national curriculum in which developmental goals and expected behaviors were included (Gelişli & Yazıcı, 2012; Sapsağlam, 2013). The goals and behaviors were given ready to the teacher for the first time. This curriculum emphasized that the subjects were tools rather than goals and they were child-centered and included evaluation and family participation. Annual, daily, and unit plans were excluded. Goals and behaviors expressions were used and an indicator table for monitoring which goals and how many of these goals had been achieved were included. Based on the developmental characteristics of the child, eight developmental domains (self-awareness, psychomotor, self-care, emotional, social, cognitive, language, aesthetics, and creativity) were included (MoNE, 1994). As a result of the studies, implementations, and observations regarding the 1994 Curriculum, it was determined that the curriculum was not sufficiently understood by teachers and teachers had some difficulties in implementation. Therefore, a new curriculum was needed, and it was prepared in 2002. The developmental domains in the previous curriculum were found to be excessive and, therefore, the developmental domains were reduced to five as psychomotor, social-emotional, cognitive, language, and self-care. Instead of subject teaching, it has become necessary to use the subjects as tools. Unit-based plans were removed, and daily plans were integrated into the curriculum. The number of goals in psychomotor domains was reduced and the teacher's self-assessment was added as well as the assessment of children. Considering the curriculum published in 2002, there were 264 objectives in total under 54 objectives (MoNE, 2002).

Curricula published in 1994 and 2002 were created based on the traditional teaching approaches. However, the curriculum published in 2006 was created based on the basic principles of multiple intelligences and constructive approach (Gelişli & Yazıcı, 2012). Similar to the 2002 PsC, the 2006 PsC was founded on developmental goals and the expression "goals" was changed to "objectives". There was no change in the development domains (psychomotor, language, cognitive, social-emotional, and self-care). However, the areas of development and their characteristics for 36-72 months children were divided into 36-48, 48-60, and 60-72 months. Importance was placed on family participation and family participation activities were diversified. Like the 2002 PsC, the 2006 PsC included daily and annual plans (MoNE, 2006). The 2013 PsC was developed within the scope of Strengthening Preschool Education Project supported by the European Union between 2011 and 2013 (MoNE, 2013). The purpose and objectives expressions used in the previous curriculum was changed to outcomes and indicators. The outcomes and indicators were rearranged and explanations for their use were expanded. The psychomotor domain was changed to the motor domain. Titles such as quality, teacher competence, professional ethics, environmental management, responsibility in preschool education, and respect for differences were not included. Thus, the curriculum became a more concise and framework plan. Play and movement activities were planned separately to make them more effective. Science and mathematics activities were separated into science activities and mathematics activities. Integrated activity term implementation was emphasized. Free time activity was changed to playtime. Group (small and large) and individual activities were emphasized. A plan-do-evaluate cycle was introduced. Annual plans were removed and reorganized as monthly plans. The daily plan concept was replaced by the daily schedule and activity plan. Concepts in the concept list were categorized. A schedule for including the concepts in the monthly training plan and another schedule for including objectives indicators were introduced. The number of child assessment tools was reduced (development observation form, development report, portfolio). Questions types were suggested for assessment at the end of the activities (for descriptive sensory, relation to life, and concepts) (MoNE, 2013).

Various taxonomies are used for the classification of objectives and indicators of curricula (Bümen, 2006). One of these taxonomies was Bloom's Taxonomy (BT) developed by Benjamin Samuel Bloom in 1956. This taxonomy was based on arranging the information needed to be known in a certain and progressive order from simple to complex. The processes determined for the classification were listed

consecutively, and the lower level should be accomplished to move to the next level. It became necessary to update this taxonomy, which was developed in 1956, with the new developments in education in the 21st century (Tutkun & Okay, 2012). This taxonomy was rearranged as Revised Bloom's Taxonomy (RBT) by Anderson et al. (2001). It was rearranged into two dimensions as the knowledge dimensions and cognitive process (Arı, 2011; Bümen, 2006). The knowledge dimension, which provided help with what teachers would teach students (Zorluoğlu, Kızılaslan, & Sözbilir, 2016), consisted of four sub-dimensions as factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge. The cognitive process dimension, which helped to continue teaching actively with the questions of "How is education provided?" and "How does the student learn meaningfully?" (Zorluoğlu et al., 2016), consisted of six sub-dimensions as remember, understand, apply, analyze, evaluate, and create (Anderson et al., 2001).

Studies in the literature show that different taxonomies were used in examination of objectives and indicators of different curricula. Marzano Taxonomy was used in examination of the objectives in primary school curricula (Karadağ & Kaya, 2017). SOLO Structure of Observed Learning Outcomes Taxonomy (SOLO) was used in the examination of the objectives of primary school mathematics lessons (Doğan, 2020), 6th, 7th, and 8th grades Turkish lesson (Göçer & Kurt, 2016) and science lesson (Dönmez & Zorluoğlu, 2020). RBT was the most used taxonomy for the examination of objectives and indicators. The objectives of Turkish (Aslan & Atik, 2018) and science (Doğan & Burak, 2018; Yolcu, 2019), social sciences (Gültekin & Burak, 2019), visual arts (Karip, 2019a), and religious culture and moral knowledge lessons were analyzed at the primary school level while the objectives of mathematics (Çelik, Kul & Çalık-Uzun, 2018), Turkish (Büyükalın-Filiz & Yıldırım, 2019; Çerçi, 2018), science (Zorluoğlu, Şahintürk & Bağrıyanık, 2017), social sciences (Önlen, Tatan & İbret, 2020) and physical education (Uğraş & Aral, 2018) lessons were analyzed at the middle school level. In addition to these, the objectives of mathematics (Çil, Kuzu & Şimşek, 2019), chemistry (Aydın, Ayyıldız, & Nakiboğlu, 2019; Ayyıldız, Aydın & Nakiboğlu, 2019; Zorluoğlu, Güven & Korkmaz, 2017; Zorluoğlu et al., 2016), geography (İlhan & Gülersoy, 2019; Sözcü & Aydınöz, 2019), visual arts (Karip, 2019b), and biology (Aslan-Efe & Efe, 2018) were analyzed at the secondary education level. Considering the literature review regarding the objectives and indicators of MoNE 2013 PsC, it was seen that there were studies conducted on subjects such as scientific basic process skills (Nuhoğlu & Ceylan, 2012), child's right to participate (Gürkan & Koran, 2014), developing the musical skills (Kandır & Türkoğlu, 2015), the concept of health (Sönmez & Bilir-Seyhan, 2016), and values education (Aral & Kadan, 2018; Özer & Çam-Aktaş, 2019). However, it was not evaluated according to any taxonomy. It is one of the important goals for educators to gain high-level thinking skills in the design of educational environments to reach the requirements of the 21st century (Ergin, 2005). It is considered that Bloom's Revised Taxonomy, with its rearranged form, can be a guide in evaluating the levels of cognitive processes of the objectives and indicators of the PsC. Therefore, this study aims to reveal the knowledge dimension levels and cognitive processes of the MoNE 2013 PsC objectives and indicators using the RBT. In order to achieve this, the researchers attempted to answer the following research question: "How are the objectives and indicators of the MoNE PsC distributed according to Bloom's Revised Taxonomy cognitive processes and knowledge dimensions?"

Method

This study was descriptive research in nature and a qualitative case study method was employed. Case can be described as a system whose boundaries can be defined consisting of a person, group, organization, activity, process or an event (Meriam, 2013). In this regard, PsC could be considered a bounded activity in which a curriculum content was developed. In case studies various methodologies could be used for collecting data such as observations, interviews and documents (Johnson & Christensen, 2014). Document review is a data collection methodology in which various documents, especially printed and electronic materials, are systematically reviewed and evaluated (Bowen, 2009).

On the other hand, Payne and Payne (2004) define document review as a method used to define and classify documents produced by public and private institutions and then, make conclusions about these documents. In this study, PsC, a document prepared by the Ministry of National Education General Directorate of Basic Education (MoNE-GDBE), a public institution, was systematically analyzed and the results regarding its content were presented.

Data Set

In document review, analyses are carried out through written texts. Therefore, concepts such as universe sample or study group cannot be used in these studies. In this regard, the texts named as data set and consisting of the data to be analyzed constitute the analysis units of the study. In document review studies, some stages are important to follow, and these stages are originality, reliability, representativeness, and meaningfulness (Scott, 1990). Originality indicates that the text is an original text produced by real persons or institutions. Reliability indicates that the information contained in the text is valid, accurate, and similar to information found in similar sources. Representativeness indicates that the content of the text represents the concepts and topics it is related to. Finally, meaningfulness indicates whether the text has a clear and understandable purpose and content for this purpose (Scott, 1990).

The data set of this study consists of the objectives and indicators in the PsC prepared by the MoNE-GDBE in 2013. PsC is a developmental curriculum and the objectives and indicators are organized under four development domains (cognitive development, language development, social-emotional development, and motor development) and one skill area (self-care skills). A total of 63 objectives and 241 indicators under these objectives were analyzed within the scope of the study. More detailed information on objectives and indicators was presented in the findings section.

Data Collection Process and Tools

Within the scope of this study, the PsC, which had a printed and electronic version and was accessible to the public online, was accessed online on the website of the General Directorate of Basic Education in May 2020. It was downloaded from the website of the curriculum and used offline during this study. During the data collection process, the "Objectives and Indicator Evaluation Form" created by the researchers was used. This form contains all the objectives and indicators under the dimensions of the PsC. This form included two columns next to each objective and indicator, and the first column was used to encode the cognitive dimension and the second column was used to encode the knowledge dimension. The form was presented to three academics conducting studies in the preschool field for expert opinion in terms of content validity and positive feedback was received from the experts that it covered all the objectives and indicators. Then, the researchers came together to determine the cognitive processes of the objectives and indicators, and the classifications of all the objectives and indicators was determined by making joint decisions with a panel system. The researchers came together again for the second time and this time, the knowledge dimension of the objectives and indicators was determined jointly with a panel system. The entire data collection process lasted two months.

Data Analysis

The obtained data were analyzed using the content analysis method. Content analysis is a method used to reveal repeatable and valid interpretations from the data content (Krippendorff, 2004). The data were analyzed with a deductive approach. The objectives and indicators were digitized using the form created by the researchers according to the cognitive classifications and knowledge dimensions used in the revised Bloom Taxonomy. In this regard, 241 indicators and 63 objectives were classified according to the cognitive classifications and knowledge dimensions in the Revised Bloom Taxonomy. Then, the distribution frequencies of the objectives and indicators were presented in tables and, at the last stage, these tables were analyzed, and necessary inferences were made.

Results

In this study, 63 objectives and 241 indicators in the MoNE 2013 PsC were evaluated according to the RBT. In the MoNE 2013 PsC, there were 21 objectives and 68 indicators in the cognitive development domain, 12 objectives and 52 indicators in the language development domain, 17 objectives and 50 indicators in the social-emotional development domain, five objectives and 50 indicators in the motor development domain, and eight objectives and 21 indicators in the self-care skills area. The distribution of objectives and indicators were presented in Figure 1.

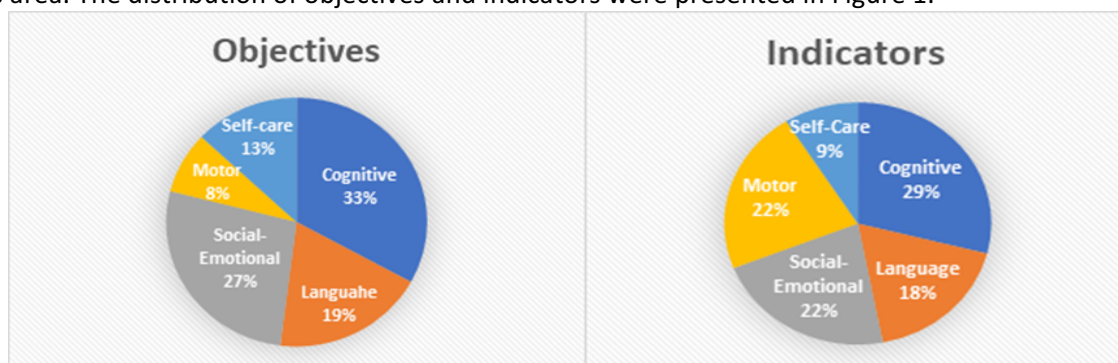


Figure 1. Distribution of objectives and indicators in the MoNE 2013 PsC by development domains

According to Figure 1, 33% of the objectives were related to the cognitive area, 19% was related to the language area, 27% was related to the social-emotional area, 8% was related to the motor area, and 13% was related to the self-care skills. Considering the indicators, 29% was related to the cognitive area, 18% was related to the language area, 22% was related to the social-emotional area, 22% was related to the motor area, and 9% was related to the self-care skills. While the motor development domain had the least objectives (5 objectives) in the curriculum, the cognitive development domain had the most objectives with 21 objectives. It was seen that the objectives and indicators in cognitive, social, and language development domains and self-care skills were proportionally balanced, and the number of objectives was higher than the number of indicators. Considering the motor development domain, it was noteworthy that there were only five objectives while the number of indicators was 50 and that there were many indicators under a limited number of objectives in contrast to other development domains.

Table 1 included the distribution of 21 objectives and 68 indicators in the cognitive development domain according to the cognitive processes and knowledge dimension.

Table 1. Classification of Cognitive Development Objectives and Indicators According to Knowledge Dimension and Cognitive Processes

Cognitive Development		Cognitive Processes						
		Remember	Understand	Apply	Analyze	Evaluate	Create	Total
Knowledge Dimension	Factual	11(4)*	8(2)	-	1(1)	1	-	21(7)
	Conceptual	3	8(1)	3(3)	14(6)	2	-	30(10)
	Procedural	-	-	6(1)	1	-	1	8(1)
	Metacognitive	-	2	2	2	-	1(1)	7(1)
	No category	-	2(2)	-	-	-	-	2(2)
Total		14(4)	20(5)	11(4)	18(7)	3	2(1)	68(21)

*Numbers are in the parentheses indicates objectives

In the analysis made according to the cognitive processes, it was determined that the highest intensity was at the understand process with five objectives and 20 indicators (28.09%) and analyze process with seven objectives and 18 indicators (28.09%). The least intensity was observed at the evaluate process with three indicators (3.37%) and create process with one objective and two indicators (3.37%). Considering the distribution of objectives and indicators by knowledge dimension, it was noteworthy that the most used type of knowledge was conceptual knowledge with 10 objectives and 30 indicators (44.94%). Metacognitive knowledge, on the other hand, was the least common knowledge type with one objective and seven indicators (8.99%). Two objectives and two indicators (4.49%) in the understand process could not be placed at any knowledge dimension. These objectives/indicators were as follows: “Objective 1: Pays attention to object/situation/event”, “Objective 1; Indicator 1: Focuses on the object/situation/event that needs attention.”, “Objective 5: Observes objects or entities”, and, “Objective 19; Indicator 1: Tells the problem”. In these objectives/indicators, the knowledge dimension that can be presented or requested may vary according to the context of the learning process. Therefore, no knowledge dimension was mentioned in these objectives/indicators. Considering the distribution of objectives and indicators in the cognitive development domain, the first striking finding was the intensity of objectives (6) and indicators (14) at the analyze process of the cognitive processes and conceptual knowledge of the knowledge dimension. This was followed by the four objectives and 11 indicators at the remember process and factual knowledge levels.

Table 2 included the distribution of language development objectives and indicators according to the cognitive processes and knowledge dimensions.

Table 2. *Classification of Language Development Objectives and Indicators according to Knowledge Dimension and Cognitive Processes*

Language Development		Cognitive Processes						
		Remember	Understand	Apply	Analyze	Evaluate	Create	Total
Knowledge Dimension	Factual	5	13(4)*	4	5(2)	2	-	29(6)
	Conceptual	-	2(1)	4(2)	1	-	-	7(3)
	Procedural	-	-	5(2)	-	-	-	5(2)
	Metacognitive	-	-	-	1	-	2	3
No category		3	1	4	-	-(1)	-	8(1)
Total		8	16(5)	17(4)	7(2)	2(1)	2	52(12)

*Numbers are in the parentheses indicates objectives

In the analysis made according to the cognitive processes, it was determined that the highest intensity was at the understand process with five objectives and 16 indicators (32.81%) and apply process with four objectives and 17 indicators (32.81%). The least intensity was at the create process of the cognitive processes with two indicators (3.13%). Considering the distribution of objectives and indicators by knowledge dimension, it was noteworthy that the most used type of knowledge was factual knowledge with six objectives and 29 indicators (54.69%). Metacognitive knowledge was the least knowledge type with three indicators (4.69%). One objective and eight indicators (14.06%) in remember (3 indicators), understand (1 indicator), apply (4 indicators), and evaluate of cognitive processes were not classified under any knowledge dimension. Examples of these objectives/indicators were as follows: “Objective 5; Indicator 4: Starts a conversation”, “Objective 5;

Indicator 5: Sustains a conversation". In these objectives/indicators, the knowledge dimension that can be presented or requested may vary according to the context or learning process. Therefore, one objective and eight indicators were could not be placed at any knowledge dimension. Considering the distribution of objectives and indicators in the language development domain, the first striking finding was the intensity of four objectives and 13 indicators at the understand process and at the factual knowledge dimension.

Table 3 included the distribution of 17 objectives and 50 indicators in the social-emotional development domain according to the cognitive processes and knowledge dimension.

Table 3. *Classification of Social-Emotional Development Objectives and Indicators According to Knowledge Dimension and Cognitive Processes*

Social and Emotional Development		Cognitive Processes						
Knowledge Dimension		Remember	Understand	Apply	Analyze	Evaluate	Create	Total
	Factual	7(2)*	9	-(1)	2(1)	3	-	21(4)
	Conceptual	-	-(1)	1(1)	2	1	-	4(2)
	Procedural	-	-	1	-	1(1)	-	2(1)
	Metacognitive	-	-(1)	3(2)	4(2)	8(3)	5(2)	20(10)
	No category	-	-	3	-	-	-	3
Total		7(2)	9(2)	8(4)	8(3)	13(4)	5(2)	50(17)

*Numbers are in the parentheses indicates objectives

In the analysis made according to the cognitive processes, it was determined that the highest intensity was at the evaluate process with 13 objectives and four indicators (25.37%). The least intensity was at the create process with two objectives and five indicators (10.45%). Considering the distribution of objectives and indicators by knowledge dimension, it was noteworthy that the most used type of knowledge was metacognitive knowledge with 20 indicators and 10 objectives (52.63%). Procedural knowledge was the least knowledge type with two indicators and one objective (4.48%). Three of the objectives and indicators (4.48%) could not be placed at any knowledge dimension. Examples of the objectives/indicators were as follows: "Objective 10; Indicator 1: Shows that he/she is willing to take responsibility" and "Objective 11; Indicator 1: Participates in the activities related to Atatürk". As can be seen from the examples above, no knowledge dimensions to be presented or requested were mentioned in these objectives/indicators. The most striking finding regarding social and emotional development was the intensity at the intersection of evaluate process and metacognitive knowledge dimensions.

Table 4 included the distribution of motor development objectives and indicators according to the cognitive processes and knowledge dimensions.

Table 4. *Classification of Motor Development Objectives and Indicators According to Knowledge Dimension and Cognitive Processes*

Motor Development		Cognitive Processes						
		Remember	Understand	Apply	Analyze	Evaluate	Create	Total
Knowledge Dimension	Factual	-	-	-	-	-	-	-
	Conceptual	-	-	-	-	-	-	-
	Procedural	-	-	30(1)*	-	-	-	30(1)
	Metacognitive	-	-	-	-	-	1	1
No category		-	-	18(4)	-	-	1	19(4)
Total		-	-	48(5)	-	-	2	50(5)

*Numbers are in the parentheses indicates objectives

In the analysis made according to the cognitive processes, it was determined that the highest intensity was at the apply process with five objectives and 48 indicators (96.36%). There were no objectives or indicators at the cognitive dimensions while there were only two indicators (3.64%) at the create process. In the analysis made according to the knowledge dimension, it was determined that the highest intensity was at the procedural knowledge with one objective and 30 indicators (56.36%). There was only one indicator (1.82%) in the metacognitive knowledge category. Four objectives and 19 indicators (41.82%) could not be placed at any knowledge dimension. Examples of these objectives/indicators were as follows: "Objective 1; Indicator 12: Rolls at a specified distance." and "Objective 4; Indicator 1: Collects the objects". As can be seen from the examples above, no knowledge dimensions to be presented or requested were mentioned in these objectives/indicators.

Table 5 included the distribution of self-care skills objectives and indicators according to the cognitive processes and knowledge dimensions.

Table 5. *Classification of Self-care Skills Objectives and Indicators According to Knowledge Dimension and Cognitive Processes*

Self-care Skills		Cognitive Processes						
		Remember	Understand	Apply	Analyze	Evaluate	Create	Total
Knowledge Dimension	Factual	4	3(1)*	1	-	-	-	8(1)
	Conceptual	-	-	4(2)	-	-	-	4(2)
	Procedural	-	-	1(1)	-	-	-	1(1)
	Metacognitive	-	-	1(1)	-	5(3)	-	6(4)
	No category	-	-	2	-	-	-	2
Total		4	3(1)	9(4)	-	5(3)	-	21(8)

*Numbers are in the parentheses indicates objectives

In the analysis made according to the cognitive processes, it was determined that the highest intensity was at the apply process with four objectives and nine indicators (44.83%). There were no objectives or indicators at the analyze process and create process. Considering the knowledge

dimension, the highest intensity was at the metacognitive knowledge dimension with four objectives and six indicators (34.48%) while the lowest intensity was at the procedural knowledge dimension with one objective and 1 indicator (6.9%). Two of the indicators of self-care skills (6.9%) could not be placed at any knowledge dimension. These indicators were as follows: “Objective 1; Indicator 1: Combs his/her hair, brushes his/her teeth, washes his/her hands and face, and meets his/her toilet needs.” and “Objective 2; Indicator 1: Takes off and puts on his/her shoes and clothes, opens/closes buttons, and fastens/unfastens his/her shoestrings.” As can be seen here, no knowledge dimensions to be presented or requested were mentioned in these objectives/indicators.

Table 6 included the results of the classification of all objectives (63) and indicators (241) in the MoNE 2013 PsC according to the RBT.

Table 6. *Classification of Objectives and Indicators of All Development Domains According to Knowledge Dimension and Cognitive Processes*

All Areas		Cognitive Processes						
Knowledge Dimension		Remember	Understand	Apply	Analyze	Evaluate	Create	Total
	Factual	27(6)*	33(7)	5(1)	8(4)	6	-	79(18)
	Conceptual	3	10(3)	12(8)	17(6)	3	-	45(17)
	Procedural	-	-	43(5)	1	1(1)	1	46(6)
	Metacognitive	-	2(1)	6(3)	7(2)	13(6)	9(3)	37(15)
	No category	3	3(2)	27(4)	-	-(1)	1	34(7)
Total		33(6)	48(13)	93(21)	33(12)	23(8)	11(3)	241(63)

*Numbers are in the parentheses indicates objectives

In the analysis made according to the cognitive processes, it was determined that the highest intensity was at the apply process with 21 objectives and 93 indicators (37.5%) and create process with three objectives and 11 indicators (4.6%). Considering the distribution of objectives and indicators by knowledge dimension, it was noteworthy that the most used type of knowledge was factual knowledge with 18 objectives and 79 indicators (31.91%). The knowledge types with the least intensity were procedural knowledge with six objectives and 46 indicators (17.1%), and metacognitive knowledge with 15 objectives and 37 indicators (17.1%). seven objectives and 34 indicators (13.49%) in remember (3 indicators), understand (3 indicators and 2 objectives), apply (27 indicators and 4 objectives), evaluate (1 objective), and create (1 indicator) cognitive processes were not classified under any knowledge dimension. Considering the distribution of objectives and indicators in the overall, the first striking finding was the intensity of objectives (5) and indicators (43) at the apply process and procedural knowledge dimension. This was followed by the four objectives and 27 indicators, which could not be classified under any knowledge dimension, in the apply process.

Discussion, Conclusion and Implications

In this study, it was aimed to evaluate 63 objectives and 241 indicators in the MoNE 2013 PsC according to the RBT. Before this evaluation, the PsC objectives and indicators were examined in terms of their distribution in development domains. It was determined that the densities of objectives and indicators in the development domains were respectively cognitive, social-emotional, language, self-care, and motor development domains. When this order was evaluated proportionally, it was seen that the objectives in the field of cognitive development constituted one-third of all objectives and

indicators in the curriculum. Therefore, it can be concluded that this curriculum has a cognitive development dominated structure. Preschool Curriculum book included the following expressions: "This curriculum is a 'developmental' curriculum based on the developmental levels and characteristics of children and, in this sense, the development of all development domains... Developmental curricula deal with the social and emotional, motor, cognitive, language development domains, and self-care skills of the child with a holistic approach" (MoNE, 2013). Similarly, focusing on all development domains of the child with a holistic child approach is among the indicators of an effective curriculum in terms of international standards (National Association for the Education of Young Children, 2009). It is important that the PsC, which is a developmental curriculum, can support all development domains of the child with a holistic perspective and a balanced distribution of objectives-indicators.

According to Anderson et al. (2001), the objectives of an effective teaching curriculum should be at least at the understand process of the cognitive processes. Mayer (2002) states that meaningful learning can be achieved by including the objectives related to the apply, analyze, evaluate, and create processes for the transfer of learned knowledge. In this study, it was determined that the objectives and indicators in the cognitive area were at understand and analyze processes the most and at evaluate and create processes the least. This result suggests that the curriculum constitutes the basis for the realization of meaningful learning and supporting the acquisition of high-level cognitive skills. However, the objectives and indicators in the cognitive area should be structured in a way to support high-level cognitive processes that have an important place in the transfer of learning such as evaluation and creativity (Mayer, 2002). When the objectives and indicators in the cognitive development domain were examined according to the knowledge dimension, it was determined that the highest density was at the conceptual knowledge dimension and the least density was at the metacognitive knowledge dimension. According to Anderson et al. (2001), conceptual knowledge includes the relationships between the knowledge of categories and classifications and the more complex and organized knowledge forms. Çapan (1996) describes cognitive development as children's ability to perceive, store, and use stored information while Senemoğlu (2018) describes it as the development in mental activities that enable the individual to understand and learn the world around him/her. From this perspective, the fact that conceptual knowledge is the most addressed category of knowledge considering the objectives and indicators of the cognitive area can be interpreted as the curriculum can play an effective role in supporting cognitive development. Metacognitive knowledge includes information about cognition and awareness of one's cognition (Krathwohl, 2002). Another remarkable finding in the cognitive development domain was the intensity at the intersection of the analyze process and the conceptual knowledge dimension. The cognitive analyze process aims to divide the object, event, or fact into its parts and to determine how these parts relate to each other and the whole (Amer, 2006). This structuring observed in the cognitive development domain of the curriculum can provide a supportive infrastructure for children to use different information forms and complex cognitive thinking processes in their future learning lives.

The objectives and indicators related to the language development domain of the PsC were at understand and apply processes the most and at creativity process the least. The main purpose of learning activities is to transfer information, events, or facts. The most basic cognitive process category of transfer-based education goals is understand. The apply process includes applying the skill to a known task and using the skill in a suitable new situation (Anderson et al., 2001). Language development, on the other hand, includes not only learning the words but also learning the rules of the word and sentence structure (Senemoğlu, 2018). In this regard, the overlap between the content of understand and apply process and the requirements of language development is remarkable. When the distribution of language development objectives and indicators by knowledge dimension was examined, it was determined that the most used type of knowledge was factual knowledge. According to Amer (2006), factual knowledge includes the basic elements that students need to be familiar with any discipline or to know about solving problems related to the relevant discipline. However, based on

the finding that language development objectives and indicators mostly include understand and apply cognitive processes, it is clear that factual knowledge is not sufficient. According to Ausubel (1960), students understand when they can make connections between the “new” knowledge to be acquired and their prior knowledge. In other words, new information is integrated with the existing cognitive schema and frameworks. Since the concepts serve as the building blocks for schema and frameworks, conceptual knowledge provides the basis for the understanding step. Apply process, which is another cognitive process in the language development domain, is closely related and linked with procedural knowledge (Krathwohl, 2002). Therefore, for language development objectives and indicators to support understand and apply processes effectively, they should also support conceptual and procedural knowledge. Metacognitive knowledge dimension was the least used type of knowledge in the distribution of objectives and indicators. However, metacognitive activities such as consciousness, awareness, self-reflection, self-regulation, and thinking and controlling one’s thinking and learning are closely related to language development and use (Bodrova & Leong, 2017).

Competence in such social skills is one of the most important determinants of both academic skills and the development of positive social behaviors, as well as mental health and adult happiness (Trawick-Smith, 2017). It was determined that the objectives and indicators related to the social-emotional development domain of the PsC were at the evaluate process the most and at the creativity process level the least. Evaluate process is defined as making judgments based on criteria and standards and includes checking and criticizing sub-processes. In this regard, it is clear how important the evaluation step can be in interpreting and evaluating social events and situations, interpersonal relationships, and the emotional states of the individual. However, the preschool child is at a new stage of learning and experiencing social skills and relationships. Therefore, it can be said that it is aimed with the PsC to support the child’s learning social situation and skills with cognitive processes of understand and apply first, and then with high-level skills. In this study, it was also determined that the apply process ranked third while the procedural knowledge dimension, which was closely related to the apply process (Krathwohl, 2002), ranked the last. Preschool children tend to participate in concrete activities to test their competencies (Herbert & Stipek, 2005). Therefore, it is important to organize social-emotional area objectives and indicators in a way to include more practice and interpersonal interaction. The creativity process, which is included at the lowest level among the objectives and indicators related to social-emotional development, is the process of combining parts to create a new and consistent whole or to make an original product (Krathwohl, 2002). Considering the connection of creativity with generating solutions for social problems (Butcher & Niec, 2005), its importance for social-emotional development is obvious. However, considering that the preschool child is just starting to learn social relations and skills, it can be said that this curriculum includes creativity process at the expected level. In this study, the most striking finding regarding the social and emotional development is the intensity at the intersection of evaluate process and metacognitive knowledge dimensions. The child must first comprehend, then apply, and then, analyze social relationships, situations, and skills. Following the hierarchical order, the child must be introduced to the activities suitable for evaluate and create processes.

It was determined that the objectives and indicators in motor development concentrated on the apply process and procedural knowledge dimension. There was no objective or indicator in remember, understand, analyze, and evaluate processes, and factual and conceptual knowledge dimensions. The acquisition of motor skills requires especially practical activities and environment arrangements. When motor development objectives and indicators were evaluated in terms of cognitive processes, it was determined that the apply process that would pave the way for physical activities was dominant. Based on this finding, it can be said that the PsC aims to support the motor development of preschool children with activities based on practice. However, as stated by Anderson et al. (2001), the apply process involves performing and making use of works/procedures to do practice and solve problems. At the “implementing” level, the child performs the work he/she is familiar with by following the necessary

steps. At this level, the apply process serves a supportive function. However, in “executing”, which is another sub-category of the apply process, the child cannot predict what kind of a process he/she will apply to perform a task he/she is not familiar with. At this stage, the child must choose the process to be used. In other words, the child needs the support of understand and create process activities both in interpreting the type of problem he/she faces and in deciding the type of process to follow. Considering the findings of this study, it was striking that among the motor development objectives and indicators, there were no objectives or indicators related to the understand process and there were only a few indicators (2) related to the create process. Considering the knowledge dimension, it was determined that the procedural knowledge dimension was dominant. This finding can be justified by the fact that transactional information is closely related and linked to the apply cognitive dimension (Krathwohl, 2002). However, it was determined that the conceptual and factual knowledge dimensions were not included among the objectives and indicators even at a limited level. As expressed by Anderson et al. (2001), the prerequisite for procedural knowledge is understanding conceptual knowledge. Based on the findings obtained in this study, it can be concluded that this PsC does not include indicators aiming to solve problems, acquire new motor skills, or improve existing skills although it supports the motor skills that the child can already do. To support the child’s development of new motor skills, the restructuring of the curriculum in a way that includes understand, analyze, evaluate, and create cognitive process skills and conceptual and metacognitive knowledge types in a balanced way may produce more effective results.

Basic knowledge and habits related to self-care skills will pave the way for the child to become a healthy, self-sufficient, and self-confident individual and adopt positive social behaviors in the future (Demiriz & Dinçer, 2001). Therefore, PsC is critical for developing self-care skills and acquiring new skills. The acquisition of self-care skills requires practical activities as in motor activities. In the analysis made according to the cognitive processes, it was determined that the objectives and indicators were included at the apply process the most. Based on this finding, it can be said that the PsC aims to support the self-care skills of preschool children with activities based on practice. However, understand process was included on a limited scale while analyze and create processes were not included at all. Therefore, it can be said that the self-care skills objectives and indicators of this PsC focus on improving existing skills, and do not include indicators for learning new skills and transferring known skills to different situations. The results are remarkable when self-care skills objectives and indicators are considered in terms of knowledge dimension. Although the apply process dimension was the most dominant in the self-care skills area, the procedural knowledge closely related to it had the least intensity. The content of procedural knowledge consists of subject-specific skills and knowledge of algorithms, knowledge of techniques and methods, and knowledge of when to use appropriate procedures (Anderson et al., 2001). Therefore, procedural knowledge has special importance to make self-care skills, which is the only skill area in the curriculum, a viable field.

When the whole curriculum was examined according to the cognitive processes, it was determined that the highest intensity was at the apply and understand processes, and the least intensity at the creativity process. Focusing on understand and apply processes facilitates the realization of transfer-based educational goals (Anderson et al., 2001). However, as argued by Mayer (2002), high-level cognitive processes such as assessment and creativity play an important role in the transfer of learning. Although the frequency of using high-level cognitive processes decreases depending on the age of the child when determining educational goals (Krathwohl, 2002), it is important to support children’s creativity in the preschool period when the creative potential is at the highest level (Yaşar & Aral, 2010). Therefore, a balanced structuring of the curriculum by supporting higher-level cognitive processes may produce more effective results. It was determined that the factual knowledge type was included the most in the entire curriculum while the procedural and meta-cognitive knowledge types were included the least. Factual knowledge is necessary but not sufficient to meet the learning needs of the child who learns through concrete experiences and interactive practices. Metacognitive

knowledge, on the other hand, should be further supported due to its role in the development of 21st-century skills such as problem-solving, critical thinking, communication, collaboration, and self-regulation (Pellegrino & Hilton, 2012), and the awareness of the individual about his/her cognition (Pintrich, 2002). When classifying the objectives and indicators according to their knowledge dimensions, 7 objectives and 34 indicators could not be associated with any knowledge dimension. This situation arises from the fact that the knowledge dimension to be presented or requested varies according to the context/learning process and the relevant objectives and indicators consist of general expressions. However, objectives and indicators should clearly express knowledge, skills, abilities, competencies, attitudes, and values in a way that characterizes the basic learning it aims (International Accreditation Council for Business Education [IACBE], 2016). As revealed in a study conducted by Özşirkintı, Akay & Yılmaz-Bolat (2014), clearly writing the objectives and indicators can help the teacher in the successful implementation of the curriculum

2013 PsC is a developmental curriculum that aims to support all development domains of children in a balanced way (MoNE, 2013). However, when the distribution of objectives and indicators by development domains were examined, the results showed that the objectives related to the cognitive development domain constituted one-third of the entire curriculum. This distribution refers that the 2013 PsC is a mainly focusing on cognitive development of children. In early childhood period, a child begins to experience social relationships and skills and for this reason, it may be suggested that social-emotional domain objectives and indicators should be increased and arranged in a way that include more interpersonal interactions. Early childhood period has also a critical importance in the motor development and psychomotor learning of the child. In this respect, restructuring of motor development domain objectives and indicators, based on all cognitive processes and knowledge dimensions through a balanced distribution can support the child's acquisition of new motor skills. The same rearrangement stands out for self-care skills as well. Therefore, arranging all development domains objectives and indicators in close proportions and balanced way can help achieve the goal of holistic development. In addition to this, all indicators can be placed in a hierarchical order from basic to more complex and in a way that measurability of the indicators should be clearer and more observable.

In summary, despite the increasing interest in RBT in our country, there is no evidence that it has been used in curriculum development studies in early childhood field yet. Gökmenoğlu (2014) suggests that curricula assessment should lead to make a judgement about the future of that specific curriculum. In this regard, we suggest that using RBT in preparation of an early childhood curriculum may provide more effective results for planning and objective assessment of teaching practices of early childhood teachers.

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TÜRKÇE GENİŞ ÖZET

2013 Okul Öncesi Eğitim Programı Kazanım ve Göstergelerinin Yenilenmiş Bloom Taksonomisi Çerçevesinde Değerlendirilmesi

Giriş

Okullarda yürütülen eğitim süreçlerinin başarılı olması iyi hazırlanmış bir eğitim programının etkili bir şekilde uygulanması ile mümkün olabilir (Kocayigit & Aykaç, 2019). Eğitim programı, Varış (1996) tarafından bir eğitim kurumunun öğrenenler için sağladığı etkinlikler; Demirel (2020) tarafından ise okulda ve okul dışında yürütülen öğrenme faaliyetleri olarak ifade edilmektedir. Bu bağlamda eğitim programları öğrenenler için planlanan etkinliklerin temelini oluşturan bir çerçeve olup bu çerçevenin öğrenenlerin ihtiyaçlarına cevap verecek nitelikte içeriğe sahip olması önemlidir. Eğitim programlarının dört temel ögesi bulunmaktadır: kazanım, içerik, eğitim durumları ve değerlendirme (Bümen, 2006; Demirel, 2020). Bu öğeler arasında kazanım, eğitim programının uygulamaya geçirilmesi için başlangıç noktasını oluşturmakta ve öğrenene sağlanacak öğrenme deneyimlerinin içeriğini ve öğrenenin sahip olması istenen temel özellikleri işaret etmektedir. Bir eğitim programındaki kazanım ve göstergeler programın uygulanarak sonucunda ulaşılması beklenen hedeflerin somutlaştırılmasını sağlamaktadır (MEB, 2013). Bu nedenle bir eğitim programının kazanımları ve göstergeleri programın sonraki aşamalarının da yönünü belirlediği için farklı boyutlardan değerlendirilmesi ve incelenmesi gereken önemli bir öğedir. Bu çalışma ile Millî Eğitim Bakanlığı Temel Eğitim Genel Müdürlüğü (MEBTEGM) tarafından hazırlanan Okul Öncesi Eğitim Programı'nın (OÖEP) kazanım ve göstergeleri incelenmiştir.

Toplumda yaşanan değişimler ve değişiklikler eğitime de yansımakta ve günün getirdiği yeniliklerin eğitim programlarına yansıtılması zorunluluğu oluşmaktadır. Bu bağlamda 21. yüzyılın getirdiği değişim ve değişimler, yeni becerilerin ortaya çıkmasını ve bu becerilerin okullarda kazandırılması ihtiyacını doğurmuştur. Bu nedenle eğitim programları zaman zaman gözden geçirilerek dönemim gerektirdiği süreçleri kapsayacak şekilde bilimsel yaklaşımlar ışığında yeniden yapılandırılmalı ve uygulamaya konulmalıdır (Girgin, 2011). OÖEP çeşitli zaman dilimlerinde dönemin getirdiği gerekliliklerin yansıtılması bakımından güncellenmiştir. Ülkemizde okul öncesi eğitim alanında 1952, 1989, 1994, 2002, 2006 ve 2013 yıllarında program geliştirme ve gözden geçirme çalışmalarının yapıldığı görülmektedir.

Programların kazanımları ile beklenen program çıktılarının sınıflamaları için çeşitli taksonomiler kullanılmaktadır (Bümen, 2006). Bu taksonomilerden biri olan ve Bloom ile arkadaşları tarafından geliştirilen Bloom Taksonomisi'nin temel fikri, bilinmesi gereken bilgilerin basitten karmaşığa doğru aşamalı bir biçimde belirli bir sıra içinde ve düzenlenebilir olması olarak tanımlanmaktadır. Alan yazında yapılan çalışmalar incelendiğinde farklı taksonomiler kullanılarak farklı programların kazanım ve göstergelerinin değerlendirilmesine yönelik çalışmaların mevcut olduğu görülmektedir. Marzano Taksonomisi'ne göre yapılan çalışmada ilkökul programlarındaki kazanımlar incelenmiştir (Karadağ & Kaya, 2017). SOLO Taksonomisi'ne göre yapılan araştırmalarda ilkökul matematik (Doğan, 2020), 6-8. sınıf Türkçe (Göçer & Kurt, 2016) ve fen bilimleri (Dönmez & Zorluoğlu, 2020) dersleri incelenmiştir.

Yapılan incelemede kazanım ve göstergelerin incelenmesinde en çok Bloom Taksonomisi'nin kullanıldığı görülmüştür. OÖEP'nin öğrenme hedeflerini oluşturan kazanım ve göstergelerin hangi düzeydeki bilişsel becerileri kapsadığının değerlendirilmesinde yeniden düzenlenmiş haliyle Bloom Taksonomisi'nin yol gösterici olabileceği düşünülmektedir. Bu nedenle bu çalışmanın amacı, MEB 2013 OÖEP'de yer alan kazanım ve göstergelerin Bloom'un Yenilenen Bilişsel Taksonomisine göre değerlendirilerek hangi bilgi sürecine ve bilişsel sürece katkı sağladığını ortaya koymaktır. Bu amacı gerçekleştirmek için "Yenilenmiş Bloom Taksonomisi'ne göre MEB OÖEP'nin kazanım ve göstergelerinin bilişsel ve bilgi boyutunda dağılımı nasıldır?" sorusuna yanıt aranmıştır.

Yöntem

Bu çalışmada nitel yöntemlerden durum çalışması yöntemi kullanılmıştır. Doküman incelemesi; çeşitli belgelerin, özellikle basılı ve elektronik malzemelerin sistematik olarak gözden geçirildiği ve değerlendirildiği bir veri toplama metodolojisidir (Bowen, 2009). Bu çalışmada bir kamu kurumu olan Millî Eğitim Bakanlığı Temel Eğitim Genel Müdürlüğü (MEB-TEGM) tarafından üretilen bir doküman olan OÖEP sistematik bir biçimde incelenmiş ve içeriğine dair sonuçlar ortaya konulmuştur. Çalışmada verilerin analizinde içerik analizi yöntemi kullanılmıştır. Veriler tümdengelimci bir yaklaşımla analiz edilmiştir.

Bulgular

MEB 2013 OÖEP'de bilişsel gelişim alanında 21 kazanım ve 68 gösterge, dil gelişim alanında 12 kazanım ve 52 gösterge, sosyal-duygusal gelişim alanında 17 kazanım ve 50 gösterge, motor gelişim alanında beş kazanım ve 50 gösterge, öz-bakım becerileri alanında ise sekiz kazanım ve 21 gösterge yer almaktadır. Bilişsel gelişim alanında yer alan kazanım ve göstergelerin dağılımı genel olarak incelendiğinde ilk dikkati çeken bulgu, analiz bilişsel basamağında ve kavramsal bilgi düzeyindeki kazanımların (6) ve göstergelerin (14) yoğunluğudur. İkinci sırada ise hatırlama düzeyinde ve olgusal bilgi içeren dört kazanım ve 11 gösterge gelmektedir. Dil gelişim alanında yer alan kazanım ve göstergelerin dağılımı genel olarak incelendiğinde ilk dikkati çeken bulgu, anlama bilişsel basamağında ve olgusal bilgi düzeyindeki kazanımların (4) ve göstergelerin (13) yoğunluğudur. Sosyal ve duygusal gelişim alanına yönelik en dikkat çekici bulgu ise değerlendirme ve üstbilişsel bilgi kesişimindeki yoğunluktur. Motor gelişim düzeyinde en dikkat çekici durum ise dört kazanım ve 19 gösterge (%41,82) herhangi bir bilgi düzeyine yerleştirilememesidir. Benzer şekilde öz bakım becerilerindeki iki gösterge (%6,9) herhangi bir bilgi düzeyine yerleştirilememiştir. Programın genelinde yer alan kazanım ve göstergelerin dağılımı incelendiğinde ise ilk dikkati çeken bulgu, uygulama bilişsel basamağındaki ve işlemsel bilgi düzeyindeki kazanımların (5) ve göstergelerin (43) yoğunluğudur. Bu yoğunluğu yine uygulama bilişsel basamağında yer alan fakat herhangi bir bilgi kategorisine yerleştirilememiş dört kazanım ve 27 gösterge takip etmektedir.

Tartışma, Sonuç ve Öneriler

Kazanım ve göstergeler oransal açıdan değerlendirildiğinde bilişsel gelişim alanına yönelik kazanımların, programdaki tüm kazanım ve göstergelerin üçte birini oluşturduğu görülmektedir. Bu nedenle programın, bilişsel gelişim ağırlıklı bir yapıya sahip olduğu söylenebilir. Bu nedenle gelişimsel bir program olan OÖEP'nin, çocuğun tüm gelişim alanlarını, dengeli bir kazanım-gösterge dağılımı ve bütüncül bir bakış açısıyla destekleyebilmesi önemlidir. Mayer (2002) öğrenilen bilgilerin transferi için uygulama, analiz, değerlendirme ve yaratma basamaklarıyla ilgili kazanımlara yer verilmesiyle anlamlı öğrenmenin gerçekleşebileceğini ifade etmektedir. Bilişsel alan kazanım ve göstergelerinde en çok ele alınan bilgi kategorisinin kavramsal bilgi olması, programın bilişsel gelişimi desteklemede etkili bir rol oynayabileceği şeklinde yorumlanabilir. Krathwohl'a (2001) göre kavramsal bilgi, kategoriler ve sınıflamalar bilgisi ile daha karmaşık ve organize edilmiş bilgi formları arasındaki ilişkileri içermektedir.

Dil gelişimi kazanım ve göstergelerinin, anlama ve uygulama basamaklarını etkin bir şekilde destekleyebilmesi için kavramsal ve işlemsel bilgiyi de destekler nitelikte olması gerekmektedir. Sosyal ve duygusal alan kazanım ve göstergelerinin, daha fazla uygulama ve kişiler arası etkileşim içerecek şekilde düzenlenmesi önemlidir. Anderson ve ark. (2001) belirttiği gibi uygulama, alıştırma yapma ile problemleri çözme amacıyla iş/işlemlerin yapılmasını ve yararlanılmasını kapsar. OÖEP'nin, çocuğun halihazırda yapabildiği motor becerilerini desteklerken problem çözmeyi, yeni bir motor beceri edinmeyi ya da mevcut becerilerini geliştirmeyi amaçlayan göstergelere yer vermediği söylenebilir. Öz bakım becerileri alanında uygulama bilişsel süreç düzeyi en baskın düzey olmasına rağmen, onunla yakından ilişkili olan işlemsel bilgi en az yoğunluğa sahiptir. Programın tümü bilişsel düzeye göre incelendiğinde en fazla yoğunluğun uygulama ve anlama, en az yoğunluğun ise yaratıcılık düzeylerinde olduğu görülmüştür. Programın bütününde en fazla olgusal bilgiye yer verilirken en az işlemsel ve üstbilişsel bilgi türlerinin yer aldığı görülmüştür. Oysaki kazanım ve göstergeler; amaçladığı temel öğrenmeyi karakterize edecek şekilde bilgi, beceri, yetenek, yetkinlik, tutum ve değerleri açıkça ifade etmelidir (IACBE, 2016).

Programda yer alan tüm gelişim alanlarının yakın oranlarda kazanım ve gösterge içerecek şekilde düzenlenmesi, bütüncül gelişim amacının gerçekleştirilmesine yardımcı olabilir. Ayrıca tüm göstergeler, kazanımların gözlenebilir hali olarak basitten zora doğru hiyerarşik bir düzende yerleştirilerek öğrenme çıktılarının ölçülebilirliğine katkı sunulabilir.

A Cascade Teacher Training Model in Disaster Education: A Case of Turkey

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Abstract

Individuals' reluctance to take precautions before disasters happen is one of the most critical concerns of the disaster management area. The disaster education given through schools is a critical process in addressing this problem. This paper aims to introduce the teacher training program model and the implementation practices of Turkey's School-Based Disaster Education Project. In Turkey, there are few studies regarding the planning, development, implementation, and evaluation stages of Disaster Risk Reduction education for teachers. The project has been carried out within the framework of the Ministry of National Education and Japan International Cooperation Agency. An at-scale cascade teacher professional development model was implemented. The model reached 135,375 teachers in 67 provinces by the 567 trainer teachers in a relatively short time with the cascade training system. This project has brought a documented nationwide disaster risk reduction training experience for Turkey with its economic and sustainable structure.

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Introduction

In Hyogo Declaration, regarding the first fundamental component, primary strategies and activities are education activities in disaster risk reduction (UNISDR, 2005). It is necessary to systematically, adequately, and professionally inform society and individuals on possible dangers and risks that put their lives in danger. Schools are essential institutions since the outcomes of education programs can get the parents and local community through children (UNDRR, 2006). Besides, children are a more vulnerable population during disasters; thus, making schools more critical in disaster education (Shaw & Kobayashi, 2001). Around 66.5 million children were affected by the devastating consequences of disasters every year until the end of the 20th century (Penrose & Takaki, 2006). Studies on children exposed to disasters show that children do not forget the memories of these painful experiences and their fears for a long time, and they have some problems like post-traumatic stress disorder (Ronan & Towers, 2014). However, some other studies also showed that people who have experienced the disaster demonstrate more motivated behaviors on disaster preparedness (Becker, Paton, Johnston, Ronan, & McClure, 2017; Shaw, Shiwaku, Kobayashi, & Kobayashi, 2004).

Disaster risk reduction (DRR) education is not only about raising the awareness of the public through school-based initiatives in the field of education, but it is also a field that includes family and community learning, adult education, and popular culture (Preston, 2012). This field consists of sub-fields such as (1) human values and attitudes towards disaster risk; (2) understanding of disaster risk and motivation; (3) disaster prevention knowledge and skills both individually and collectively; and (4) emergency response capability (Winarni, 2016). Disaster risk reduction education is not limited to students and school time in supporting these sub-fields. It can be defined as a lifelong learning area (Thayaparan, Malalgodaa, Keraminiyagea, & Amaratungab, 2014). Accordingly, developing the attitudes of students who will work effectively on environmental protection and disaster prevention depends on many factors, but it includes two main components: (1) education process at school and (2) students' relations and communications with their family and community they live in (Bernal, 2019; Paton, Smith, Daly, & Johnston, 2008).

The main purpose of the present study is to develop a sustainable, economic, and effective teacher training program. More specifically, as an exemplar for the other highly populated disaster-prompt countries, this report aimed to provide information on selecting the teacher training program's instructional design model, the implementation practices, and the activities being performed during the second phase. To reach the purpose, the following research questions guided the study:

1. Which instructional design model and teacher training system should be selected to develop the SBDE (School-Based Disaster Education) program?
2. What is the existing situation in Turkey in terms of DRR teacher training?
3. What should necessary knowledge and skills be required for teachers to teach for DRR?
4. What are the statistical outcomes of the applied instructional design model and teacher training system?

Literature Review

The rationale behind the disaster risk reduction programs is "preparing predisaster risk reduction and resiliency building, including 'preparing to respond,' require motivation, knowledge, skills, and DRR-focused behaviors, including planning and practice" (Ronan et al., 2015, p.2). Teachers have the most crucial role in establishing the relationship between school and society via disaster risk reduction education and, by this way, in the enhancement of the resistance of community because students are the most critical communicators between school and society. They carry the knowledge, attitudes, and skills towards disaster risk reduction they gain to the other community members (Izadkhah, Hosseini, & Heshmati, 2012). This view gives a critical mission to children and young people as well as teachers. In "Let Our Children Teach Us!" volume published by The International Strategy for Disaster Reduction (ISDR), Wisdom (2006) emphasized the transformational role of children, thereby education, in the development of innovative and critical strategies, and the changing attitude, knowledge, and behavior of society. Studies also showed that an effective disaster risk reduction education increases awareness, preparedness, and community's resistance together with students (Amri, 2015; Haulle & Rugumamu, 2015; Mitchell & Borchard, 2014; Yu et al., 2017). Over the last decades, studies on educational processes at schools have proven the appropriateness of this strategy. Accordingly, studies indicated that individuals receiving effective training show appropriate behaviors after disasters (Hosseini & Izadkhah, 2006; Muttarak & Potihisiri, 2013; Özmen, 2006; Shaw et al., 2004; Shiwaku et al., 2007). Many recent studies focused mostly on disaster risk reduction (Revet, 2012) showed that effectively developed disaster risk reduction programs increase students' awareness, preparedness, and perception of risk (Mamoni Suba & Son, 2017; Ronan et al., 2010). The common characteristics of these programs are that they use participatory learning techniques, many regular exercises, simulations, reminders of past events, and scenario animation exercises (Benadusi, 2013; Chakrabarty, 2010; Lakoff, 2008; Muzenda-Mudavanhu et al., 2016; Shaw et al., 2011). For effective DRR training of students regarding prevention, management, and response, Selby and Kagawa (2012) suggest six

teaching and learning techniques: interactive, surrogate experiential, field experiential, affective, inquiry, and action. Furthermore, Petal and Izadkhah (2008) also took the attention to informal learning settings in supporting effective DRR education; such as dissemination of written materials; creative educational materials; cultural and performing arts; after school safety clubs, scouting badges, and project activities; projects that bring students into contact with the local community and local government; competitions, awards and commendations; involving parents and local community; community partners; and disaster drills.

Shaw et al.'s work (2004) in Japan concluded that traditional school education could not enhance awareness. After establishing the Environment and Disaster Mitigation course, the significant results on mitigation, preparedness, response, recovery, and understanding of the environment were reported (Shiwaku & Shaw, 2008). A museum-based disaster education in New Zealand was found an effective way of preparing students and teachers for disasters by increasing their knowledge and appropriate behavior (MacDonald, Johnson, Gillies, & Johnston, 2017). The school disaster education program in Nepal showed that lecture-based training might raise the risk perception. Still, unlike the active learning approach, this method did not lead participants to take action for risk reduction (Shiwaku et al., 2007). The studies also explored teacher training as a facilitating factor in the use of disaster preparedness resources in New Zealand (Johnson, 2011; Renwick, 2012). Chinese teachers reported that their disaster education lacks attractiveness and local features, which could not affect the students' awareness and capabilities (Zhu & Zhang, 2017).

Similarly, Apronti et al. (2015) suggested that a low number of teacher training programs in Gana caused weaknesses in transferring the DRR knowledge in the classroom, thus effectively training the students. When teachers' professional development on DRR was examined, the UNICEF (2012) report showed that there were different models in the literature; (1) guide-driven DRR professional development observed in Nicaragua, Egypt, Bangladesh, and Nepal, (2) website-led teacher support in Japan, New Zealand, and Peru, (3) a professional journal with features on best practices and local experiences in DRR teaching in the Russian Federation, (4) at the pilot or pre-scale level in Armenia, Cambodia, Fiji, Lao PDR, the Philippines, Japan, and Costa Rica, (5) at-scale cascade training in Kazakhstan, Turkey, Indonesia, and Madagascar. The forms of delivery in these models differed according to the nature and purposes of the training. In most cases, DRR teacher training lacked aftercare and monitoring.

Context

Teachers undoubtedly assume the most critical task in the education dimension of disaster risk reduction management. Since the teachers are accepted as the fundamental actors in implementing education and training activities as in the whole world, and their success means success in disaster risk reduction, the efforts to improve their competencies are significant. However, prospective teachers do not take any must or elective courses on DRR training at the education faculties in Turkey. The graduates of education faculties have to pass the Public Personnel Selection Examination with high grades to be assigned as a teacher. After assigning to the position, the teacher candidates have to participate in the first year's candidacy training program. This program includes a variety of courses and seminars, including "Disaster Education." This seminar is given to 60 candidates in the conference halls. Instructors of the seminars are generally the school principals, who do not have a certificate on the mastery of disaster training. The course has only four learning objectives without any defined program goals. This theoretical course is generally criticized for insufficient instructor competencies and practical applications' inadequacy about the newly learned topics (Ekinci, Bozan, & Sakız, 2019).

Furthermore, the literature firmly confirms that the main problems are arisen by the implementation and the supervision of the program (İlyas, Coşkun, & Toklucu, 2017; Tunçbilek & Tunay, 2017; Ulubey, 2017). Candidate teachers who participated in the seminars also reported that they did not participate every single hour of the program owing to the lack of supervision and control

(Özçınar & Özkan, 2019). The studies conducted with the teachers in mainstream education indicate that even if teachers are aware of the necessity of disaster education at schools, they lack comprehensive knowledge and practical experience on how to teach concepts of disaster education in the classrooms (Kırıkkaya et al., 2011).

Depending on these findings derived from the literature, the Ministry of National Education (MoNE) decided to fill the gap arisen from the pre-service and candidate teacher education program, which cannot serve congruent and comprehensive programs on disaster education. Therefore, the MoNE had started a project named the "School-Based Disaster Education Project" granted by JICA (Japan International Cooperation Agency). In the first phase, 3600 teachers from pilot provinces have attended training for 18 hours. Nevertheless, these studies' statistical data were not recorded with an appropriate method; evaluation and monitoring of the studies could not be carried out, and phase I could not reach most of the teacher population. To meet this requirement and provide country-wide spread, the continuation of this project, "School-Based Disaster Education Project Phase II" started in 2018. Within the project's scope, it was planned that all teachers would participate in this training program, perform activities in the classroom, and monitor and evaluate the project. However, the project team was expected to develop a more sustainable and economic teacher training model due to the second phase's lack of budget.

Method

A mixed-method research design, which refers to the combination of qualitative and quantitative approaches into the research methodology of this multiphase study including selecting more than one types of research questions, manner, sampling procedures, data collection, analysis methods and conclusions in different phases of the study (Bryman, 2006; Tashakkori & Creswell, 2007; Tashakkori, Teddlie, & Teddlie, 1998; Teddlie & Yu, 2006), was preferred to manage the project. To find answers to the first, second, and third research questions, a series of review studies aim to "synthesize research findings to determine the true state of knowledge in relation to the phenomena in question" (Krathwohl, 1998, p.553), were utilized. Within this frame, the reviews' objective was to compose a clear interpretation of the research for the ministerial policymakers and researchers interested in the current situation of DRR education in Turkey, Turkish teachers' needs, and their in-service training design preferences. Furthermore, to enhance the data's validity, researchers suggest using multiple methods and sources, called triangulation (Mathison, 1988). In this perspective, researchers collected data via survey and interview to explore the current situation and the need to determine the program's content.

The online survey on the existing situation was prepared by researchers and located in the professional development section of the teachers' official web portal of the MoNE. This survey consisted of a five-point Likert scale, structured, multiple-response, and short answer questions. The expert opinions were taken from four academics specialized in curriculum and instruction, social studies education, disaster management, and earthquake engineering departments for both this 30-question survey and interview questions. 29,322 teachers responded to the survey, which included basic questions; such as "Have you ever participated in an in-service training course on DRR education?", "Do you feel ready for a future disaster?" "Has your school prepared for a future disaster?" Descriptive statistical methods were used to analyze the data.

Semi-structured interviews with senior ministry bureaucrats ($N=4$) were conducted. These bureaucrats were responsible for the teachers' professional development and training in the MoNE. The interviews lasted between 10-20 minutes. The participants were asked ten questions on the current situation of the disaster training of teachers, such as "Is there a systematic teacher training program developed before? If yes, is the content of the current program up-to-date? Does the content of the current program address teachers' needs and interests? Are there enough budgets to implement

the newly developed/revised program? Is there a sufficient number of experts and/or trainers who will participate in teachers' training in Turkey? What characteristics do teachers report in-service training programs as effective? What kind of approach does the new Education Vision 2023 suggest about teachers' professional development?" The interviews were recorded, and data were transcribed word by word. After cleaning the data, descriptive analysis was utilized. Each interview was coded using the open coding method, and then themes were created based on the codes that emerged in the data. Four researchers cross-checked the coded themes and categories to ensure the reliability of the data.

The documents of the significant partners and reference institutions or foundations for the Turkish policy system were reviewed to determine the program's content. The selected reports of ADRC, JICA, UNDRR, UNICEF, Sendai Framework, Hyogo Framework, AFAD (Disaster and Emergency Management Presidency), and TRC (Turkish Red Crescent) were examined in terms of overarching purposes, and content that they suggested primarily should be considered in the design of any DRR program.

The project was carried out within the scope of the assignment letter dated 25.12.2019 and numbered 97470333-903.07.01-E.25779087. During the study, the "Law on the Establishment of the Public Servants Ethics Board and Amending Some Laws," "The Code of Ethical Behavior of Public Officials and Application Procedures and Principles," "Ministry of National Education Ethical Commission Working Procedures and Principles" were taken into consideration. The ethical principles have been adhered to throughout the entire process. This study is limited with the disasters often experienced in Turkey since the program was developed for Turkish teachers. The program will be revised in the near future to compensate for this limitation with the content of the program. Furthermore, different measurement and evaluation techniques can be utilized in future research. The budget limitation affected most decisions regarding the duration and schedule of the face-to-face program and the design of remote training.

Results

Situation Analysis and Instructional Design Decisions

To describe the existing situation about DRR teacher training in Turkey, teachers' needs were examined as the first step. The survey results showed that 87.90% of the teachers (25 786) did not participate in DRR education before. Furthermore, among these teachers, 87.46% did not feel ready for a future disaster, 82.47% did not think that their school was prepared for a future disaster, and 82.92% thought their colleagues in the school were not prepared for a future disaster. Nearly half of them also reported they did not know what the possible disasters where they live (48.95%), whether there is a local warning system where they live (85.31%), what to do during a disaster (69.86%), where and how to get help in case of a disaster (65.57%), how to take measures (69.23%), what they need in the first 72 hours (66.53%), what to add to the disaster and emergency bag (58.62%), how to continue teaching after a major disaster (77.86%), and how to support traumatized students (76.29%).

This data was triangulated with the interview data collected from senior ministry bureaucrats. The findings showed that there were some attempts for DRR training of teachers in the past. However, these attempts cannot be called as a comprehensive course or a DRR program. The attempts do not have a written rationale, learning objectives, outcomes, methodology, and philosophical approach. Furthermore, even the project's phase I did not have progress and evaluation reports. The participants' responses revealed no systematic curriculum effort without the disaster education seminar under the candidacy training course. When the seminar's learning objectives are analyzed, it can be confirmly said that the seminar is not a comprehensive one compared with the UNISDR (2005, 2007)'s general framework and strategies proposed for disaster reduction and resilient communities. The definition and the learning objectives of the course follow (MoNE, 2020, Appx 6, p.1):

"This seminar is organized locally in order to increase the knowledge and skills on 'Disaster Education' of the candidate teachers newly appointed to schools/institutions affiliated to our Ministry. Every participant who successfully completed this activity:

- Understands basic disaster knowledge.
- Comprehends the danger hunt.
- Knows the position of teachers in disaster management.
- Knows school disaster and emergency management plan."

Furthermore, since this seminar has been statutory only since 2015, not all teachers have been benefitted. Therefore, it was not possible to speak about comprehensive DRR training for all teachers in the system. The interview participants also confirmed that the budget of the project was consumed in phase I of SBDE. The official statutory documents confirmed this data. There was not a new budget allocated for the second phase. Even if the project's budget was consumed in the first phase, none of the bureaucrats know about the behavioral change of the teachers who participated in the training.

To design the content and materials of the program, it was essential to hire experts. However, phase II did not have a budget to hire experts. The researchers were attempted to examine the archives to reach the available trainer teachers already trained in the first phase. However, there was no statistical data or demographic information about the trainers. Therefore, the project group was composed of only the minister advisors who have Ph.D. degrees in Curriculum and Instruction, Educational Management, Administration and Leadership, Social Studies Education, and Measurement and Evaluation departments. This means that ministerial officers became the researchers simultaneously. The project group call for the volunteer participation of university academicians who had DRR expertise. A small group of ($N=2$) university academicians confirmed voluntarily participating in the content development process by devoting effort to the final revision of the program content document.

Considering the limited number of volunteer experts; not having a comprehensive and updated SBDE program, and the new Education Vision 2023 document demands the learner-centered and efficient learning approaches for teacher training, and no allocation of a budget, it was decided to design a program that would be implemented in a short time, efficient, challenging, and exciting for the teachers, could be related with the learning objectives of the school curricula, support the activity-based and active learning, and give a continuous revision opportunity with a flexible approach. Thus, a blended learning approach, in which theoretical knowledge would be represented with distance learning tools; and practices would be done in face-to-face education situation, was adopted within the cascade teacher training model. A cascade training model or multiplier approach is often preferred to transfer the trainer teachers' knowledge and skills to the local teachers within a limited time (Griffin, 1999). This model is described as a cost-effective professional development model which is generally preferred by the developing countries with high populations (Dichaba and Mokhele, 2012; Kennedy, 2005).

Development of the SBDE

Program outcomes and learning objectives. During the program's development process, one of the most comprehensive phases of the SBDE project was the development of program outcomes and learning objectives based on literature. Because it is impossible to get any findings on the program outcomes and learning objectives of the in-service teacher disaster training programs implemented by the MoNE, the respected national and international literature was examined in detail. The document analysis helped to draw a framework and understanding of the SBDE program. Based on the review, 43 learning objectives and three learning outcomes were developed. The content was divided into six units named (1) Disasters and emergencies- basic concepts, (2) Mitigation and preparedness behaviors, (3) Response behaviors, (4) Post-disaster recovery behaviors, (5) Disasters and emergencies at school, and (6) Psychological first aid.

Materials. The next stage was to develop materials based on the learning objectives. At first, the learning objectives were classified to determine whether they will be given through a face-to-face training or distance training method, or both. Considering the limited budget, it was decided to collaborate with the country's most prominent stakeholders, AFAD, TRC, and TJV (Turkish Japanese Foundation). Firstly, during the content development stage, some of the AFAD animations of their Basic Disaster Awareness for Individuals and Families module and some of the TRC videos were approved to be used in the remote SBDE.

Moreover, to meet the rest of the objectives, the project team wrote storyboards of the animations. Since MoNE allocated no budget to meet all the online program's objectives, an educational technology company developed some of the animations for free of charge; further, the company gave immediate and prompt feedback to the animations developed by the volunteer Computer and Information Technology teachers. Finally, the project team of MoNE prepared the face-to-face training program contents and activities.

The project team wrote two books containing theoretical knowledge and activity/lesson plan samples being performed depending on learning outcomes in all subject areas and all grade levels. The teacher handbook (academic) book content was parallel with the flow of online training content. Books were shared with trainers of trainees in print and were presented to teachers who attend distance training in PDF format from the learning portal. Alternative readings published by the TRC and AFAD were provided to the trainer and local teachers. A triple puzzle and disaster way outdoor play carpet designed by classroom teachers to improve the basic knowledge of the right behaviors before, during, and after disasters was produced and distributed to all the trainers of trainees by the TJV. Trainer teachers used the puzzle and carpet as teaching materials in their local teacher training.

Delivery of the SBDE (Implementation)

Online training program. Distant education module was put into practice for volunteer teachers and school administrators across all subject areas and grade levels from 81 provinces in May 2019. A week was allowed to complete the online program. The number of trainees completing the training was 19,790 in June 2019. (This number changes day by day since the online training program has still been open).

Training the trainer teachers. Volunteer teachers who have a maximum of fifteen years of teaching experience, complete the distance program successfully have attended the face-to-face program to be able to the trainer teachers. The master trainers who had experience in school-based disaster education in Japan (with JICA teacher scholarship program 2018) carried out the face-to-face program courses. The two-day training was completely activity-based, stimulated the cooperative tasks, and followed the experiential learning approach. During the program, simulation techniques were employed in the Bursa Disaster Training Center trip to reach the desired behaviors. Besides, trainees participated in the activities and developed their lesson plans on raising public awareness, constructing disaster preparedness culture, and mitigation after disasters within the next two days. Face-to-face training was implemented in classes designed for 25-30 trainees in the inservice training center of MoNE. 595 teachers from 67 provinces completed the face-to-face training program and certified as a trainer of SBDE.

First dissemination program (Local teacher training). 595 trainers were assigned to the dissemination program in September 2019 to reach all the teachers. The design of these courses was parallel to the program they attended in June 2019. This program was planned to be open until no teacher left behind. The first dissemination of training was practiced between September and December 2019, with the participation of 135,375 teachers from 67 provinces.

Second dissemination program. To reach more provinces, the additional trainer teacher program was held in February 2020 with 117 teachers. With these additional trainers, the program has 712

trainer teachers from 77 provinces in total. The second dissemination program was planned to start in March 2020; however, it had to be postponed to a future date owing to the Coronavirus outbreak.

Attainment of the Program Objectives

Reflection papers and post-training evaluation forms were conducted during and after training. All the works or studies being performed by trainees were received as a portfolio at the end of the training program. The portfolio assessment was conducted to certified trainer teachers at the end of the face-to-face trainer teacher program.

The attainment of the objectives was also examined by the final examination for the remote learning program. This final exam includes 50 questions targeted 43 learning objectives. A table of specifications was prepared to check for the content validity of the test. Table 1 summarized the least attained objectives at the final exam.

Table 1. *The Least Attained Objectives at the Final Exam*

<i>Concepts</i>	<i>Objectives</i>	<i>N</i>	<i>%</i>
Disasters and emergencies- basic concepts	Explain hazard hunting.	59	.29
Behavior patterns (Mitigation and preparedness, response, and post-disaster recovery behaviors)	Explain the types of human and technology-based disasters.	92	.46
Disasters and emergencies at school	(All the objectives were reached.)	-	-
Psychological first aid	Explain psychological first aid after a disaster.	1281	6.47
<i>Total</i>		<i>19,790*</i>	

* The data is from the teachers who participate in the online program in June 2019.

19,790 of 21,000 participants passed the final examination. The rest of the teachers did not complete the program and did not enter the exam. Among 19,790 teachers, only three learning objectives could not be reached: (1) .29% of the teachers could answer the question about hazard hunting; (2) .46% could find the correct answer to biological hazards, and (3) only 6.47% could reach the learning objective on psychological first aid.

Furthermore, the portfolio assessment was made to judge the extent to which the program attained the determined outcomes and objectives of the face-to-face training program. The evaluation process was carried out according to the rubric evaluation criteria, which were prepared before, in which the trainees could get the lowest 0 and the highest 100 points with the benchmark of 70 points. As a result of the evaluation, 567 (76%) of 746 people who participated in the face-to-face training program were successful. The average of the scores obtained by the successful ones from the rubric is 94.72.

Furthermore, since the SBDE is a professional development program, trainers' carrying out local training courses in their provinces was one of the program's expected outcomes. This data set consisted of the information entered into the inservice training module by the coordinators in the provinces. According to the data obtained from 67 provinces, there is an average of 8 trainers per province. Approximately 79 trainings were organized in each province, and an average of 2020 trainees (local teachers) attended. A trainer gave an average of 9 trainings, and the average class size of training is 24. The percentage of trainees among the teachers and school administrators working in the provinces varies between 0.5 and 95.7. 15 percent of teachers in Turkey participated in the training program. The 10 provinces with the highest number of trainers and the statistics with the local training program are included in Table 2.

Table 2. Descriptive Statistics on the Number of Training Courses (First Dissemination)

Province	Number of trainers	%	Number of training	%	Number of trainees	%	Training/Trainer (Average number of training given by a trainer)	Trainee/Training (Average class size of training)
Istanbul	74	13.05	572	10.79	14,339	10.59	7	25
Bursa	45	7.94	438	8.26	12,052	8.90	9	27
Kocaeli	37	6.53	239	4.51	5,581	4.12	6	23
Ankara	34	6.00	99	1.87	2,465	1.82	2	24
Balıkesir	31	5.47	178	3.36	4,032	2.98	5	22
Izmir	25	4.41	335	6.32	8,309	6.14	13	24
Antalya	19	3.35	320	6.04	9,693	7.16	16	30
Sakarya	17	3.00	193	3.64	3,892	2.87	11	20
Isparta	15	2.65	238	4.49	5,571	4.12	15	23
Mersin	14	2.47	288	5.43	6,609	4.88	20	22
Total	67	100	5 302	100	135 375	100	9	24
Provinces								

All the process on the SBDE phase II project is presented in Figure 1.

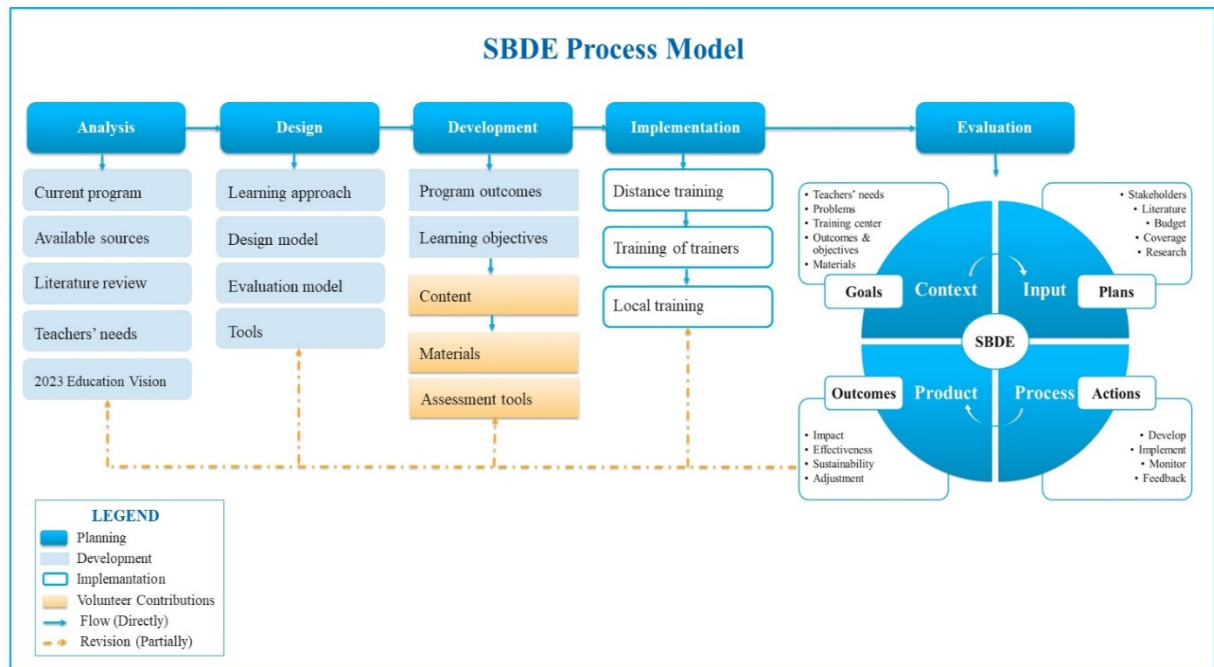


Figure 1. The Model of the SBDE Phase II Project

Discussion, Conclusion, and Implications

Turkey is one of the natural hazard-prone countries. It is assumed that there are approximately 52 types of disasters; around 21 of them took place in Turkey (Isik et al., 2012). While 93% of Turkey's lands are under the earthquake risk, it is seen that 98% of the population (appx. 80 million in total) and industrial enterprises are located in areas of high seismic risk (Union Chambers of Turkish Engineers and Architects [TMMOB], 2012). According to Bahadır and Ucku (2018), between 1923 and 2016, 51% of 313 disasters in Turkey were nature-based, and 48% were technology-induced hazards. More than 200 earthquakes have occurred since the beginning of the 1900s, caused the death of approximately 86,000 people (Altun, 2018).

This paper reports the processes of the SBDE project implemented by Turkish MoNE to support of different volunteer foundations. The primary task of the project was to improve teachers' knowledge and competencies in disaster risk reduction. Two teacher training programs were designed, developed, and implemented by blending the remote and face-to-face training approaches, two books were written, and teaching-learning materials were developed. By employing the cascade teacher training system, the project reached 135,375 teachers within a short time. In this system, master trainers trained the trainer teachers, and then these trainer teachers trained the local teachers. The final expectation is to make local teachers teach their students and parents. Although the size of the dissemination was statistically monitored, there are some limitations to the evaluation of the project quality. First, this report was exploratory in nature, and more research is needed to draw conclusions. Second, this paper reported short-term outcomes and could not gauge the long-term impacts of the program. More research is necessary to identify causal relationships between teachers' training programs and improvements in individual and school disaster resilience. Therefore, the researchers plan to design a mixed methodology curriculum evaluation study, including quasi-experimental one-group pretest-posttest research and qualitative research methods for the second dissemination program. The project team needs to monitor the training impact consisting of the changes in the belief and behaviors on teachers' disaster preparedness and teachers' behavioral change in terms of reflecting these competencies in their classroom teaching practices. The cascade training model is an economical and time-saving way of teacher professional development model. It is highly recommended that MoNE ask, "What is being cascaded in the classrooms?" to understand the merit and the worth of the cascade teacher training program.

Besides these limitations, the project has some strengths. The project team's opening the project on the collaboration of different institutions and organizations working on this subject made SBDE can be called one of the exemplary projects in Turkey. In this way, effective communication and cooperation among institutions were established, and in turn, the MoNE could carry out the project even though the limited budget for the content and material development. Another cost-effective decision was integrating the Computer and Information Technology teachers to develop distance learning materials. Furthermore, instead of hiring academicians or field experts during the content and material development, and the implementation processes, the MoNE assigned its capacity –JICA scholar-master teachers– to each step of the project. This contributed not only to reduce the costs but also make qualified teachers visible and more motivated.

Curriculum cannot be stable; it should be a living document (Alsubaie, 2016). Therefore, programs need to change/revise regularly. These changes should be done on scientific results and consider the users' needs. Only this way, the curriculum can meet learners' needs, society, and subject area (Tyler, 1949). The initial data showed that the teachers could not reach three of 43 objectives. More activities and examples for hazard hunting, biological hazards, and psychological first aid were added for the second dissemination program. When considering the attained 40 learning objectives, the SBDE seems an important way to reduce disaster risk.

In summary, the SBDE project is a significant effort to provide a national disaster risk reduction experience, contributing to the literature on DRR studies in Turkey. This paper reports program development efforts and its preliminary evaluation results. The program seems to help teachers to increase their DRR knowledge. However, this does not mean that improving the teachers' knowledge and skills is enough to ensure their DRR training in the classroom. It is necessary to support teachers in terms of materials and lesson plan ideas for the activities they practice in and out of the classroom. Accordingly, many studies in the literature indicated that course materials, toys, table and garden games, posters, websites, computer, augmented reality application software and mobile apps have a statistically significant effect on DRR education (Mani et al., 2016; Petal, 2007; Winarn and Purwandari, 2018). The MoNE plans to arrange a lesson plan and course materials development and write children's book workshops in the near future. The activities and lesson plans are planned to be developed with an interdisciplinary approach since the disaster risk reduction education is a harmony of the fields like society organization, organizational behavior, sustainable development, environmental management, public health, geography, mathematics, social studies, science, psychology, sociology, public administration, and safe life (Petal, 2007). Considering the year 2020, Turkey faced many hazards based on earthquakes, floods, storms, fires, and virus; the need for developing an institutional base for DRR education has been felt more than ever. To ensure the cascading of the SBDE to students and the school community, the Ministry needs to propose a white paper on DRR education, ultimately focusing on the sustainable development of DRR education in the country. This paper may aim to integrate the policy for systematic planning of the DRR education, to motivate local administrative units to achieve the plans for their schools, to develop curriculum and materials which will not only emphasize the knowledge but also skills and attitudes, to monitor teacher qualifications and practices, to raise awareness of all stakeholders, and to establish a resilient school community by encouraging parent involvement. Without taking such steps, it is impossible to make a sustainable program, and the future of the project efforts will be limited to the term of office of the project coordinators.

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TÜRKÇE GENİŞ ÖZET

Afet Eğitiminde Kademeli Bir Öğretmen Yetiştirme Modeli: Türkiye Örneği

Giriş

Bireylerin ve toplumların hayatlarını tehdit eden afetler karşısında önlem alabilmeleri için sistematik ve profesyonel bir şekilde bilgilendirilmeleri gerekmektedir. Okullar, afet önleme becerilerinin ve kültürünün geliştirilmesi ve afet azaltma eğitimlerinin verilmesi için en uygun yerler olarak görülmektedir (Zhu & Zhang, 2017). Çünkü eğitim programlarının çıktıları çocuklar aracılığıyla velilere ve yerel topluma ulaşabilmektedir (UNISDR, 2006). Bu nedenle okullar afet eğitimi açısından vazgeçilmez kurumlardır. Nitelikli bir afet eğitimi; bireylerde tutum ve davranış değişikliği gerçekleştirmeye, afetlere karşı daha dirençli bir toplum oluşturmaya ve afet riskinin azaltılmasına önemli bir katkı sağlamaktadır (Shiwaku vd., 2007). Ancak Shaw ve diğerlerinin Japonya'daki çalışmaları (2004), geleneksel okul eğitiminin farkındalığı artıramayacağı bulgusuyla sonuçlanmıştır.

Okullar aracılığıyla verilen afet eğitimi, bu endişeyi ortadan kaldırmaya yönelik kritik bir süreç olmasına rağmen ülkemizde, öğretmenlere yönelik afet eğitiminin planlama, geliştirme, uygulama ve değerlendirme aşamalarının tasarımı az sayıda çalışmaya rastlanmaktadır. Türkiye'de Millî Eğitim Bakanlığı ile Japon Uluslararası İşbirliği Ajansı arasında gerçekleştirilen işbirliği protokolü çerçevesinde afet riskinin azaltılması eğitimi konusunda "Okul Tabanlı Afet Eğitimi Projesi" (OTAE) yürütülmektedir. Bu çalışmanın amacı, OTAE II. fazında tasarlanan öğretmen eğitimi kursları ve bu kapsamda gerçekleştirilen faaliyetler hakkında bilgi vermektir. Projede belirlenen temel amaca ulaşmada aşağıdaki araştırma soruları tasarımcıları yönlendirmiştir:

1. OTAE programını geliştirmek için hangi öğretim tasarım modeli ve öğretmen yetiştirme yaklaşımı tercih edilmelidir?
 - a. Afet riski azaltmada öğretmen eğitimi açısından Türkiye'deki mevcut durum nedir?
 - b. Öğretmenlerin afet riski azaltmayı öğretmesi için kazanmaları gereken önemli bilgi ve beceriler neler olmalıdır?
 - c. Uygulanan öğretim tasarımı modeli ve öğretmen yetiştirme sisteminin istatistiksel sonuçları nelerdir?

Yöntem

Proje kapsamında karma yöntem araştırma deseni kullanılmıştır. Buna göre her üç araştırma sorusunun yanıtlanmasında nicel ve nitel araştırma desenlerinden yararlanılmıştır. Mevcut duruma ilişkin çevrimiçi anket araştırmacılar tarafından hazırlanmış ve devlet okullarında görevli öğretmenlere yönelik resmi web portalının mesleki gelişim bölümünde yer almıştır. Bu anket; beşli likert tipi sorular, yapılandırılmış, çoktan seçmeli ve kısa yanıtlı sorulardan oluşmaktadır. Hem 30 soruluk bu anket hem de görüşme soruları için Eğitim programları ve Öğretim, Sosyal Bilgiler Eğitimi, Afet Yönetimi ve Deprem Mühendisliği bölümlerinde uzmanlaşmış dört akademisyenden uzman görüşleri alınmıştır.

Temel soruları içeren ankete 29,322 öğretmen dönüş sağlamıştır. Verilerin analizinde betimleyici istatistiksel yöntemler kullanılmıştır.

Üst düzey bakanlık bürokratlarıyla (N=4) yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Bu bürokratlar, MEB'de öğretmenlerin mesleki gelişiminden ve eğitiminden sorumlu yöneticilerdir. Katılımcılara öğretmenlere yönelik afet eğitiminin mevcut durumu hakkında sorular sorulmuştur. Veriler temizlendikten sonra betimsel analiz yöntemi ile değerlendirilmiştir.

Türk politika sistemi için önemli ortakların ve referans kurumların, derneklerin ve vakıfların belgeleri, programın içeriğini belirlemek için doküman analizi yöntemi ile gözden geçirilmiştir. ADRC, JICA, UNDRR, UNICEF, Sendai Çerçevesi, Hyogo Bildirgesi, AFAD ve Türk Kızılayının raporları kapsayıcı sürdürülebilir program amaçları açısından incelenmiş ve öncelikli olarak önerdikleri içerikler OTAE programının tasarımı dikkate alınmıştır.

Geliştirilen OTAE programının içeriği, Türk öğretmenler için geliştirilmiş olması nedeniyle Türkiye'de sıklıkla karşılaşılan afetlerle sınırlıdır. Bu sınırlamayı telafi etmek için programın içeriği yakın gelecekte revize edilecektir. Ayrıca, gelecekteki araştırmalarda farklı ölçme ve değerlendirme teknikleri kullanılabilir, programın izlemesi yapılabilir. Çalışmanın sınırlılıklarından biri de bütçe kısıtıdır. Bütçe sınırlaması yüz yüze programın süresini, takvimini ve uzaktan eğitimin tasarımına ilişkin kararların çoğunu etkilenmiştir. İleride yürütülecek çalışmalarda bu kısıtların göz önünde bulundurulması yeni çalışmaların verimi açısından önemli hususlardır.

Bulgular

Kurs tasarımının ilk aşamasında öncelikle var olan durumun tespiti yapılmıştır. Bulgular; geliştirilecek OTAE programının proje kapsamında bütçesinin tükendiğini, projede görev alacak gönüllü alan uzmanı ile eğitimci ve formatör sayısının kısıtlı olduğunu, Bakanlık bünyesinde mevcut güncel bir OTAE programının olmadığını, süreçte açılmış olan eğitimlerin yalnızca içerik/akış şeması olarak hazırlandığını ve bu içeriklerin de öğretmenlerin ilgi ve gereksinimlerine yanıt veremeyecek düzeyde olduğunu, Eğitim Vizyonu 2023 Belgesi'nin mesleki gelişimde öğrenen merkezli ve etkin öğrenme yaklaşımlarını işaret ettiğini, öğretmenlerin geleneksel olarak yürütülen hizmet içi eğitim anlayışını etkili bulmadıklarını, öğretmenlerin temel afete hazırlık konusunda yeterince bilgi sahibi olmadıklarını ortaya koymuştur. Bu veri bürokratlarla yapılan yarı yapılandırılmış görüşmeler ile çeşitlenmiştir. Bulgulardan yola çıkılarak kısa zamanda uygulanacak, etkili, öğretmenin ilgisini çekip merak uyandıracak, okulda kazanımlarla ilişkilendirilebilecek, etkinlik temelli ve aktif öğrenmeyi destekleyen, esnek bir yaklaşımla sürekli güncelleme olanağı tanıyan bir programın tasarlanmasına karar verilerek teorik bilgilerin kısa video ve animasyonlarla anlatıldığı, uygulamaların ise yüz yüze eğitim ortamında verileceği harmanlanmış bir eğitim yaklaşımı benimsenmiştir. Formatör eğitimlerine ek olarak bütçe kısıtları göz önünde bulundurulduğunda mahalli eğitimlerin şelale yöntemi olarak da tanımlanan kademeli bir eğitim modeli ile gerçekleştirilmesi kararlaştırılmıştır.

OTAE programının geliştirilme sürecinin en kapsamlı çalışmalarından birini programın alanyazına bağlı olarak çıktı ve kazanımlarının yazılması oluşturmaktadır. Çünkü ülkemizde daha önce uygulanmış olan programlarda kazanımlara dair herhangi bir bulguya ulaşmak mümkün olmamıştır. Bu nedenle uluslararası alanyazın detaylı olarak incelenmiş; Sendai Çerçevesi ve Hyogo Bildirgesi, UN Office for Disaster Risk Reduction raporları ve e-kitapları, UNICEF Child-Centred DRR raporları, AFAD ve Türk Kızılayı içerikleri ve yaygın bir şekilde çalışılmış olan okul güvenliği alan yazını taranmıştır. Ayrıca, konuyla ilgili ülkemizde faaliyet gösteren dernek ve vakıfların da erişilebilir kaynakları (varsa web sayfası, rapor ya da sunuları) incelenmiştir. Bu taramadan hareketle programın çıktıları ve kazanımları belirlenmiştir.

Kazanımlara bağlı olarak içerik ve materyallerin geliştirilmesi bir sonraki adımı oluşturmıştır. Öncelikle, kazanımların uzaktan eğitim ya da yüz yüze eğitim yoluyla verilmesine yönelik bir

sınıflandırma yapılmıştır. Buna göre bazı kazanımların hem uzaktan hem de yüz yüze eğitim ile kazandırılması öngörüldürken bazı kazanımların yalnızca uzaktan veya yalnızca yüz yüze eğitimde yer alması gerektiğine karar verilmiştir.

Program süresince kullanılacak yazılı materyaller olarak teorik bilgileri içeren ve okul programlarının kazanımlarına bağlı olarak uygulanabilecek her branş ve sınıf seviyesine yönelik örnek etkinlikler öneren iki kitap yazılmasına karar verilmiştir. UNESCO ve UNICEF metinleri ile Hyogo Bildirgesi'ndeki içerikler dikkate alınarak eğitim içeriğindeki akışla paralel bir içeriğin hazırlanması planlanmıştır. Bu doğrultuda Okul Tabanlı Afet Eğitimi öğretmen el kitabı ile etkinlik kitabı geliştirilmiştir.

Uzaktan eğitim modülü; Haziran 2019 tarihinde, 81 ildeki her branştan ve her kademededen gönüllü tüm öğretmen ve okul yöneticilerinin kullanımına açılmıştır. 2019 yılında MEBBİS üzerinden uzaktan Okul Tabanlı Afet Eğitimi Kursu'na başvuranlar arasından, portaldan yararlanan ve eğitimi başarı ile tamamlayan katılımcı sayısı 19,790 kişidir. Uzaktan eğitimi başarı ile tamamlayan öğretmen ve okul yöneticileri arasından 1-15 yıl öğretmenlik tecrübesine sahip gönüllüler yüz yüze eğitici eğitimine katılmışlardır. Yüz yüze eğitimler, JICA bursu ile Japonya'da Okul Tabanlı Afet Eğitimi programlarında eğitim görmüş, usta eğitici olarak tanımlanan öğretmen ve okul yöneticilerimiz tarafından yürütülmüştür. İki gün süren eğitimler; tamamen etkinlik temelli, grup çalışmaları ile ilerleyen ve deneyimsel öğrenme yaklaşımına dayanan bir yapıdadır. Kursiyerlerin bu eğitim kapsamında Bursa Afet Eğitim Merkezinde çeşitli afetlerin simülasyonlarına girerek afet sırası doğru davranışı deneyimsel öğrenme yolu ile kazanmaları amaçlanmıştır. Sonuç olarak 67 ilde 595 öğretmen ve okul yöneticisi yüz yüze eğitici eğitimini başarı ile tamamlamıştır.

İllerde mahalli eğitim yolu ile OTAE içeriğinin tüm öğretmen ve okul yöneticilerine yaygınlaştırılması amaçlanarak Eylül 2019'da konu ile ilgili detayları içeren bir talimat ile 595 formatör görevlendirilmiştir. 2019 yılında, OTAE 67 ilde 135,375 öğretmen ve okul yöneticisine ulaşmıştır. Bu çalışmada program değerlendirme yapılırken Stufflebeam'in Bağlam, Girdi, Süreç ve Ürün (CIPP) modelinden yararlanan bir yaklaşım uygulanmıştır.

Tartışma, Sonuç ve Öneriler

Okul Tabanlı Afet Eğitimi projesi gönüllü kişi, kurum ve kuruluşların destekleriyle Millî Eğitim Bakanlığı tarafından yürütülen bir projedir. Bu proje temelde öğretmen eğitimi yolu ile okullarda öğrencilerin ve dolayısıyla velinin afete yönelik hazırlık eğitimini hedeflemektedir. Bu hedef kapsamında uzaktan ve yüz yüze olmak üzere iki öğretmen eğitimi kurs tasarımı gerçekleştirilmiş; iki kitap yazılmış ve oyun materyalleri geliştirilmiştir. Proje içerikleri şelale yöntemi de denilen usta eğitiminin formatör öğretmene eğitim verdiği; formatör öğretmenin diğer öğretmenlere eğitim verdiği; öğretmenlerin sınıflarındaki öğrencilere ve onların velilerine bu bilgileri kazandırdığı bir sistem ile 3 ay gibi kısa bir zaman zarfında 135,375 bin öğretmene yayılmış durumdadır. Her ne kadar bu proje ile öğretmen eğitimlerinin yayılımı istatistiksel olarak takip edilse de bu eğitimlerin kalitesinin sorgulanması bu kadar hızlı olamamaktadır.

OTAE, proje ekibinin Türkiye'de konu ile ilgili çalışan farklı kurum ve kuruluşları iş birliğine davet etmesi bakımından örnek projelerden biridir. Bu yolla, yalnızca kurumlar arası etkin bir iletişimin ve iş birliğinin kurulması sağlanmamış; aynı zamanda içerik ve materyal geliştirme gibi süreçlerde yeni bir çalışma yapılmayarak duplikasyondan kaçınılmış ve Bakanlığa fazladan bir maliyet getirilmemiştir.

Bu proje kapsamında, formatör öğretmen eğitimlerinde akademisyen veya alan uzmanını dışarıdan istihdam ederek Bakanlığa maliyet getirmek yerine Bakanlığın kendi kapasitesinin kullanılması sağlanmıştır. Daha önce Japonya'da yoğun bir afet riskini azaltma eğitimine katılmış JICA bursiyeri öğretmenlerimizden gönüllü olanların usta eğitici olarak bilgi ve deneyimlerinden yararlanılmıştır. Bu maliyetin azaltılmasının yanı sıra eğitimli kalifiye öğretmenlerimizin de görünür hâle getirilmesine katkıda bulunmuştur.

Program durağan olamaz; yaşayan bir belge olmak zorundadır (Alsubaie, 2016). Bu nedenle, programlar sürekli değişime uğrar. Bu değişimler, kullanıcının gereksinimleri ve şartların gerekliliklerinden yola çıkılarak bilimsel bir temelde yapılmalıdır. Ancak bu yolla, program öğrenenin, toplumun ve konu alanının gereksinimlerini karşılar (Tyler, 1949). Okul Tabanlı Afet Eğitimi afet riskini azaltmada önemli bir yol olarak görülmektedir. Pek çok bilim insanı sürekli afet riskini azaltma ve afet yönetimi üzerine araştırmalar yapmakta ve yeni bilgi ve yöntemlere ulaşmaktadır. Bu nedenle, OTAE durağan bir program olmayıp yeni bilgiler ışığında sürekli revizyondan geçmelidir. Bu revizyonların da ilgili alan yazının taranması ve kullanıcı görüş, öneri ve gereksinimlerine bağlı olarak yapılması gerekmektedir. Bakanlık tarafından yürütülen bu projede, süreç içerisinde yapılan tüm değişimler gereksinimlerin bilimsel süreçlerle analizi ve ilgili alan yazın bağlamında yapılmıştır.

Özetle, OTAE Bakanlığımıza önemli bir ulusal Afet Riskini Azaltma Eğitimi proje deneyimi kazandırması ile ülkemizin afet riski azaltma çalışmaları adına alan yazına katkıda bulunan önemli bir çabadır. Ancak bu demek değildir ki öğretmen eğitimi afet riskini azaltma eğitimi için yeterli bir ön koşuldur. Eğitimin yanı sıra öğretmenlerin sınıf içinde ve derslik dışında yapacakları etkinliklerde materyal ve etkinlik fikri bakımından desteklenmeleri etkili olacaktır. Bununla ilişkili olarak alan yazındaki pek çok çalışma; ders araç gereçlerinin, oyuncakların, masa ve bahçe oyunlarının, posterlerin, web sitelerinin, bilgisayar, artırılmış gerçeklik yazılımlarının ve mobil uygulamaların öğrencilerin afet riski azaltma eğitiminde istatistiksel olarak anlamlı sonuçlar gösterdiğini ifade etmektedir (Mani, Cole & Stewart, 2016; Petal, 2007; Winarn, & Purwandari, 2018). Konuyla ilgili olarak Bakanlık yakın gelecekte gerçekleştirilmesi planlanan materyal geliştirme, etkinlik geliştirme ve okuma kitapları yazımı çalıştaylarının ön hazırlığını yapmaktadır. Geliştirilecek olan etkinlik ve ders planlarının disiplinler arası bir yaklaşımla hazırlanması amaçlanmaktadır. Çünkü afet riskini azaltma eğitiminin kökleri, toplum organizasyonu, örgütsel davranış, sürdürülebilir kalkınma, çevresel yönetim, halk sağlığı, coğrafya, matematik, sosyal ve fen bilimleri, psikoloji, sosyoloji, kamu yönetimi ve güvenli yaşam gibi disiplinlere dayanan bir uygulama alanıdır (Petal, 2007).

A Systematic Review of Postgraduate Theses on Curriculum Evaluation

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Abstract

Curriculum evaluation is a process carried out to decide the effectiveness of training programs. In this process, the strengths and aspects of the training programs that are open to improvement are emphasized. Therefore, curriculum evaluation studies are an important part of curriculum development. In this respect, it is important to consider the research studies on curriculum evaluation studies together in order to develop curriculum. This study aims to review the postgraduate theses completed on the evaluation of curricula in Turkey between 2007 and 2019 according to several variables and to determine the research trend in this field. The method of the research was formed by systematic review. In this context, 586 postgraduate theses written on curriculum evaluation were reviewed. It was determined that the theses showed a balanced distribution according to years and were generally at master's level. The postgraduate theses were mainly based on quantitative research methods, and in recent years, there has been a tendency towards qualitative and mixed-method studies. Questionnaires and interviews were used in the theses mostly prepared in accordance with the survey model and the data were collected from teachers and students. In the one-fifth of the theses on the evaluation of curricula which were examined within the scope of this research (105 theses), it was determined that curriculum evaluation models were taken into consideration and that the most preferred model was Stufflebeam's CIPP model. Following this model, Erden's "Element-Oriented Curriculum Evaluation Model" and Tyler's "Objective-Centered Evaluation Model" were also preferred frequently.

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Introduction

To be able to realize educational needs, the characteristics of curricula should be understood well (Yüksel & Sağlam, 2012). Regarding this, determining the quality of curricula, curriculum evaluation is needed. With the evaluation of curricula, not only the curricula, but also the materials, technologies, time, and budget used in the curriculum and many sources employed through the curriculum can be evaluated. The quality of all elements of a curriculum is judged by revealing what kind of process is followed in which content in line with the objectives of the curriculum. Therefore, the evaluation of curricula is the process of systematically describing, acquiring, reporting, and applying the descriptive and judgmental information about the accurateness, practicability, reliability, significance, and equality of the objectives specified (Stufflebeam & Shinkfield, 2007). Curriculum evaluation is an

important element and stage of a curriculum development activity, and constitutes the continuity of the curriculum development process in education. The results or feedback obtained in this process are used to improve or update the curriculum in a healthier way (Varış, 1988). Oliva (2009) stated that the primary purpose of the curriculum evaluation is to determine whether the curriculum aims and objectives are being carried out. Besides, they emphasize that it is also necessary to determine whether the curriculum is functioning while in operation; whether the materials and methods used are appropriate and sufficient; whether the graduates are successful in their next education level and their jobs; whether they can function in daily life and contribute to society; and whether curriculums are cost-effective, and worth the cost.

Curriculum development and evaluation studies in Turkey accelerated with proclamation of the Republic and have continued regularly in parallel with the developments in Turkey and in the world (Özdemir, 2009). Studies that started with the development of curricula mainly for primary education in 1924 appeared also at the secondary education as from 1930. In this context, primary and secondary education curricula were prepared and put into practice in 1924-26, 1931-36-38, 1948-49, 1968-69, 1974-77, 1990-92-98, 2001-05, and 2013-17-18. Taking the dates of curriculum development studies into consideration, as the political and economic situation of the country, the educators who visited Turkey (John Dewey-1924, Alfred Kühne-1925, Berly Parker-1934, Kate Vixon Wofford-1951), the regulations in the education system (Primary Education Law numbered 222, National Education Basic Law numbered 1739-1973, 8-year compulsory education-1998 and 12-year compulsory education-2012), the wars around the world (War of Independence, the First and Second World Wars, Syria Civil War), and finally the technological developments (Sputnik, Computer, Internet) have been effective on the studies over learning and teaching. The first curriculum evaluation studies in Turkey were conducted by the Ministry of National Education (MoNE) in 1944 to define the deficiencies, malfunctions, and problems of the two curricula practiced in five-year urban schools and three-year rural schools and accordingly to develop a new and unique curriculum. For this purpose, in 1944, a questionnaire was applied to teachers and meetings were also held with managers and inspectors by the MoNE Department of Education and Discipline to evaluate both curriculums (Arslan, 2000). Curriculum and evaluation studies took a systematic format in 1952 (Çelenk, Tertemiz, & Kalaycı, 2000). Curriculum development and evaluation studies which were practiced in the MoNE until 1980s also started to be dealt at the universities with the cooperation of the lecturers in these years (Küçükahmet, 1997). In this regard, postgraduate theses started to be written in relation to the development and evaluation of formal and informal education after 1980s (Hazır-Bıkmaz, Aksoy, Tatar, & Atak Altınyüzük, 2013).

In the context of formal and informal education, the availability of different practices in curriculum evaluation process enables the curriculum evaluation studies to be used not only in the field of educational sciences but also in different fields such as social sciences, science and health sciences, and in business and industry sectors (Fitzpatrick, Sanders, & Worthen, 2004, p. 19). Research in Turkey related to curriculum evaluation studies (Aslan & Sağlam, 2017; Dünder & Meriç, 2017; Gökmenoğlu, 2014; Kurt & Erdoğan, 2015; Özudoğlu, 2018; Yetkiner, Acar Erdol, & Ünlü, 2019) are intended to specific areas and have limited samples.

For example, Dünder and Meriç (2017) found that curriculum development and evaluation studies in the context of ESL/EFL are generally aimed at evaluation, based on teacher and student opinions, and questionnaire, interviewing, and document analysis were used in data collection process. Like Dünder and Meriç, Özudoğlu (2018) also handled curriculum evaluation studies in the field of foreign languages and determined that most of the studies focused on the evaluation of elementary school curriculums, language course curriculums and preparatory school curriculums. However, post-graduate degrees, secondary school curriculums and distance foreign language curriculums were evaluated in very few studies.

In her research study, Gökmenoğlu (2014) examined curriculum evaluation studies in only four dimensions - curriculum evaluation models and research approaches, the scope of evaluation studies,

stakeholder participation in studies, and disciplines. In Kurt and Erdoğan's (2015) research, results regarding a narrow sample of only 38 studies were presented. While some studies only deal with theses in the field of curriculum and instruction, others deal with curriculum evaluation theses in a specific field (English education), doctoral dissertations between certain years or, only studies whose title is curriculum evaluation. This situation does not fully reflect the availability of curriculum evaluation in different areas. In this study, the theses made in all institutes and disciplines on curriculum evaluation were handled and it is different from other studies in this respect.

This study aims to analyze the postgraduate theses completed on the evaluation of curricula in Turkey between 2007 and 2019 according to several variables and to determine the research trend in this field. In this context, master's theses and doctoral dissertations on the evaluation of curricula were analyzed in order to determine how curriculum evaluation studies affect the postgraduate education programs in our country. The distribution of the postgraduate theses on the evaluation of curricula according to universities, institutions, departments / disciplines were examined and the method, sample group, data collection tool used in the curriculum evaluation studies and the studies related to the subject evaluated were determined. Thus, general situation regarding the studies in the field of curriculum evaluation was initially revealed.

Curriculum evaluation studies are considered as important in terms of guiding the educational sciences experts in the field of curriculum development. Furthermore, this study is considered to provide essential findings to researchers in terms of providing an overview of topics of interest and research methods in the field of curriculum development in Turkey. It will provide researchers with an idea of what different evaluation processes are carried out on similar curriculums. Especially, carrying out a comprehensive study for the distribution of curriculum evaluation theses according to discipline areas, institutions, and years will guide new studies and postgraduate theses. Within this scope, it is aimed to contribute to different shareholders such as teachers, students, administrators, and experts who work in the education field.

Method

Design

This research study has the feature of systematic review. Postgraduate theses published in the field of curriculum evaluation were scanned with the systematic review method. Then their completion year and whether they were available for access were displayed. The theses encountered for review were synthesized under titles such as method, data collection tool, and sample (Karaçam, 2013).

Systematic review studies are deemed important in terms of presenting more scientific information together. In addition, studies conducted with systematic reviews are among the studies preferred in terms of being repeated cases by different researchers (Hemingway & Brereton, 2009).

A systematic review can be prepared in these stages (Hemingway & Brereton, 2009; Higgins & Green, 2011; Uman, 2011): Identify the review question, define inclusion and exclusion criteria, search for studies, select studies for inclusion based on pre-defined criteria, extract data from included studies and present results and assess the quality of evidence. Systematic analysis within the scope of the research was carried out in line with the following stages:

- Identify the review question: Existing researches were examined to determine the gaps in the field and avoid duplication with similar studies. And then, a clear and well-defined research question was formulated.
- Define inclusion and exclusion criteria: Some criteria were clearly stated for the selection of master's theses and doctoral dissertations. In this context, date ranges, scope and accessibility were taken into consideration.
- Search for studies and select studies for inclusion based on pre-defined criteria: The search was carried out based on the keywords and the years of theses on the official web site of the

National Theses and Dissertation Center and the theses accessed were saved by the researcher. Detailed information is given under the title of *Selection Process of the Theses*.

- Extract data from included studies: The postgraduate theses studied in the research were examined and compared with each other. In this way, categories were created to analyze the documents. Descriptive analysis approach was preferred for analyzing the data.
- Present results and assess the quality of evidence: Findings obtained in accordance with the purpose of the study are presented in tables and interpreted under the title of *Results*. The findings were supported by comparing them with the literature under the title of *Discussion and Conclusion*.

Selection Process of the Theses

Some criteria were taken into consideration in the selection of master's theses and doctoral dissertations. The postgraduate theses were included in the study if they were related to the evaluation of a program, curriculum, system, course or activities (These are concepts “activity evaluation, course evaluation, system evaluation” in thesis titles or keywords.); if their completion dates were between 2007 and 2019; and if they were open to access in the National Thesis and Dissertation Center. Within the scope of the National Thesis and Dissertation Center, 607 postgraduate theses meeting the criteria were determined. Twenty one of those theses were excluded from the scope of this research study since they were not open to access. In the final run, 586 postgraduate theses were accessed and constituted the study's sample.

The postgraduate theses selected were summarized through the tables of specifications that were prepared by the researchers. The tables of specifications were prepared as two-dimensional so as to include the keywords and the years in which the theses were completed. Through the twenty-eight keywords determined in the table of specifications, the postgraduate theses on the evaluation of curricula were classified between 2007 and 2019 and included in the study. The keywords used in order to access the postgraduate theses are in the following: Curriculum evaluation / Curriculum + Evaluation / the evaluation of Curriculum / of Curriculum + the Evaluation / the evaluation of Curricula / of Curricula + the Evaluation / the evaluation of 'Curriculum' / of 'Curriculum' + the Evaluation / the examination of Curriculum / of Curriculum + the Examination / the examination of Curricula / of Curricula + the Examination / the examination of 'Curriculum' / of 'Curriculum' + the Examination / the Evaluation of Syllabus / of Syllabus + the Evaluation / the evaluation of 'Syllabus' / of 'Syllabus' + the Evaluation / the Evaluation of Course / of Course + the Evaluation / the Evaluation of 'Course' / of 'Course' + the Evaluation / the evaluation of System / of System + the Evaluation / the Evaluation of 'System' / of 'System' + the Evaluation / the Evaluation of Activities / of Activities + the Evaluation.

Activity evaluation, system evaluation, and course evaluation studies were carried out in some of the theses on curriculum evaluation. However, it was observed that activities or courses were evaluated in order to evaluate the curriculum in these studies, and curriculum evaluation model was used in some theses. For this reason, these theses, which are thought to be related to curriculum evaluation, have also been included in the research. Keywords have also been added for these theses. In addition, the theses found with this keyword but were not related to curriculum evaluation were not included in the research. As stated, postgraduate theses made for curriculum evaluation purposes were included in this research study.

The postgraduate theses included in the scope of research by the table of specifications were accessed directly through the official web site of the National Thesis and Dissertation Center. The postgraduate theses in the National Thesis and Dissertation Center were saved without any intervention. The two researchers conducting the research independently checked the accuracy and reliability of the theses. Also, in the evaluation of curricula, a specialist outside the research team was asked for opinion in terms of the storage and classification of the theses included in the research in accordance with the table of specifications in the process of data collection. At this stage, the keywords

used in the research study were given to the specialist and asked to search in the theses center. The obtained theses were compared with the theses obtained by the researchers. It has been determined that the theses obtained by the experts and researchers are the same. Then, the theses were classified according to years and the analysis phase was started (Creswell, 2015). When the distribution of the theses in the research according to their levels is examined, it was seen that the sample majorly consisted of studies conducted at Master's thesis level (71.67%, 420 theses). Besides, the number of female postgraduate students (57.33%) who wrote theses on curriculum evaluation were higher than their male counterparts (42.66%).

Data Analysis

In this study descriptive analysis approach was preferred while analyzing the postgraduate theses. At first, a thematic framework was created by examining the literature. Opinions of three curriculum development experts were received regarding the suitability of the determined framework for the research purpose, and the categories (Publication year, university, institution, departments/disciplines, research methods, research models, data collection tools, samples, main subjects, type of curriculum evaluated and curriculum evaluation models of the study) were finalized. Postgraduate theses were examined in line with the thematic framework. The data were organized under certain categories, and frequencies were determined for each category. The total values in the tables presented in findings as a result of document analysis differ from the number of the theses included in the sample in some of the tables. For instance, in thesis studies which include both undergraduates and academicians in the sample group marking is made for both study groups. In this case, the total value differs in the table including the findings for the sample group. These tables are explained in the findings.

Trustworthiness and Transparency

In order to ensure the trustworthiness and transparency in qualitative studies, researchers are expected to select the method in accordance with the research objective and to access the richest data sources by making use of the appropriate data collection tools. In this process, it is also required for researchers to report all their actions in the research process objectively and in detail (Yıldırım & Şimşek, 2013). Concerning this, in the research, the method suitable for the research objective was preferred, access from official sources was realized in the selection of documents, and the data analysis process was reported in detail.

Limitations

This study is limited to the year of completion and accessibility of the postgraduate theses included in this research study. The findings of the research were obtained based on the postgraduate theses written on curriculum evaluation, which were completed between 2007 and 2019 and are open to access at the National Thesis Center. For this reason, different findings can be reached from the theses written in different years or those which were completed between 2007 and 2019 and are inaccessible.

Results

In this part, findings obtained in accordance with the purpose of the study are presented in tables and interpreted.

Distribution of Theses According to the Years

The distribution of postgraduate theses according to the years is presented in Table 1.

Table 1. *The Distribution of Theses in the Research According to the Years*

<i>Year</i>	<i>Number of Theses</i>
2007	50
2008	41
2009	46
2010	45
2011	52
2012	38
2013	41
2014	43
2015	40
2016	44
2017	34
2018	50
2019	62
Total (2007-2019)	586

As it is seen in Table 1, 586 theses in total were examined within the scope of this research. In the distribution of the theses examined, it was concluded that the theses on the evaluation of curricula were generally greater in number in 2019 (62 theses), 2011 (52 theses), 2018 (50 theses), and 2007 (50 theses). The years in which the theses on the evaluation of curricula were completed at least were 2017 (34 theses) and 2012 (38 theses).

Distribution of Theses According to the Universities

The distribution of postgraduate theses according to the universities is presented in Table 2.

Table 2. *The Distribution of Theses in the Research According to the Universities*

<i>Year</i>	<i>University*</i>									
	<i>AKU</i>	<i>AU</i>	<i>ATAU</i>	<i>ADU</i>	<i>ÇOMU</i>	<i>GU</i>	<i>HU</i>	<i>MU</i>	<i>NEU</i>	<i>Other (72 university)</i>
2007	5	-	2	2	3	7	3	2	-	25
2008	-	3	2	-	4	5	1	3	-	22
2009	3	2	2	2	1	3	2	1	-	29
2010	-	2	-	2	2	7	-	-	1	30
2011	3	4	2	-	2	6	-	2	0	31
2012	-	3	1	2	-	3	2	-	1	24
2013	1	2	3	2	-	7	1	1	2	20
2014	1	3	-	1	2	6	4	2	1	20
2015	1	2	1	-	2	7	2	2	1	21
2016	1	2	1	-	3	8	2	-	1	25
2017	-	3	1	-	-	4	1	1	3	19
2018	1	2	1	6	1	8	3	1	1	22
2019	1		1	4	1	12	4	3	4	29
Total	17	28	17	21	21	83	25	18	15	341

* Afyon Kocatepe (AKU), Ankara (AU), Atatürk (ATAU), Aydın Adnan Menderes (ADU), Çanakkale On Sekiz Mart (ÇOMU), Gazi (GU), Hacettepe (HU), Marmara (MU), Necmettin Erbakan University (NEU).

Table 2 shows that the most theses in the field of curriculum evaluation were completed in Gazi University (14.16%). In addition, a significant number of theses were completed in the well-established universities such as Ankara, Hacettepe, and Marmara. In addition, universities with a total number of 14 theses or less were included in other categories. There are 72 universities with 14 or less theses.

From these universities Bolu Abant İzzet Baysal (14 theses), Akdeniz (13 theses), Anadolu (13 theses), Bursa Uludağ (13 theses), Dokuz Eylül (13 theses), Erciyes (13 theses) and Ege (11 theses). In this context, the postgraduate thesis studies on the evaluation of curricula were conducted in 81 universities in total within the scope of research.

Distribution of Theses According to the Institutions

The distribution of postgraduate theses according to the institutions is presented in Table 3.

Table 3. *The Distribution of Theses in the Research According to the Institutions*

Year	Institution						
	Educational Sciences	Social Sciences	Sciences	Health Sciences	Environmental Sciences	Fine Arts	Forensic Sciences
2007	11	35	4	-	-	-	-
2008	10	27	4	-	-	-	-
2009	7	33	5	1	-	-	-
2010	19	21	3	1	-	-	1
2011	26	22	3	-	-	1	-
2012	20	16	1	-	-	1	-
2013	25	15	-	-	1	-	-
2014	27	14	1	1	-	-	-
2015	31	8	-	1	-	-	-
2016	35	8	1	-	-	-	-
2017	23	10	1	-	-	-	-
2018	28	15	1	6	-	-	-
2019	41	18	1	2	-	-	-
Total	303	242	25	12	1	2	1

As it is seen in Table 3, theses in the field of curriculum evaluation were mostly carried out in the educational sciences institute (51.70%) and social sciences institute (41.29%). This case is related to the fact that the institutes of educational sciences have not been established in some of the universities in our country and educational sciences are conducted as affiliated to the institute of social sciences. Additionally, studies for the evaluation of curricula were carried out in the institutes of sciences and health sciences besides the educational sciences institute. The theses in the environmental sciences, fine arts, and forensic sciences institutes also indicates that the curriculum evaluation is benefited in different fields and disciplines.

Distribution of Theses According to the Departments/Disciplines

The distribution of postgraduate theses according to the departments/disciplines is presented in Table 4.

Table 4. *The Distribution of Theses in the Research According to the Departments / Disciplines*

Year	Department*								
	Educational Sciences			Mathematics and Sciences Education	Basic Education			Turkish Language and Social Sciences Education	Other
	ES	CI	EA	SE	BE	PSE	CE	SSE	
2007	2	9	-	3	1	-	11	6	18
2008	1	8	4	2	-	-	4	1	21
2009	-	18	2	2	-	-	4	2	18

Table 4 (Cont.)

2010	1	13	-	1	2	-	1	1	26
2011	4	13	1	1	6	1	4	1	21
2012	4	13	1	-	1	2	2	2	13
2013	1	12	-	1	2	5	2	-	18
2014	-	12	2	-	1	2	5	1	20
2015	-	10	2	2	2	3	3	1	17
2016	4	15	-	2	4	4	1	3	11
2017	6	8	1	-	2	3	1	-	13
2018	3	18	2	1	-	3	2	1	20
2019	8	14	3	2	1	10	3	3	18
Total	34	163	18	17	22	33	43	22	234

* Educational Sciences (ES), Curriculum and Instruction (CI), Educational Administration (EA), Sciences Education (SE), Basic Education (BE), Pre-School Education (PSE), Classroom Education (CE), Social Studies Education (SSE)

Based on Table 4, the theses on curriculum evaluation between 2007 and 2019 were generally completed in Curriculum and Instruction program (23.20%). This is related to the fact that curriculum evaluation is one of the main fields of study within the scope of Curriculum and Instruction discipline. In addition, there are many thesis studies in educational sciences, pre-school, and classroom education. These studies were conducted in a wide range of departments/disciplines such as elementary mathematics teaching (8 theses), psychological counselling and guidance (8 theses), physics education (7 theses), philosophy and science of religion (6 theses) under the title of "other".

Distribution of Theses According to the Research Methods

The distribution of postgraduate theses research according to the research methods is presented in Table 5.

Table 5. *The Distribution of Theses in the Research According to the Research Methods*

Year	Research Method		
	Quantitative	Qualitative	Mixed Method
2007	38	11	1
2008	30	11	-
2009	36	9	1
2010	31	12	2
2011	33	16	3
2012	20	7	11
2013	19	15	7
2014	23	13	7
2015	20	10	10
2016	18	9	17
2017	16	10	8
2018	18	16	16
2019	30	18	14
Total	332	157	97

As it is seen in Table 5, the research methods preferred were in three categories as quantitative, qualitative, and mixed method. Quantitative (56.65%) followed by qualitative (26.79%) and mixed method (16.55%) was preferred as research methods. However, when the distribution of research methods according to years was considered, it was determined that the distribution of quantitative

and qualitative research methods by years was balanced, and mixed method was used far less between 2007 and 2011 and its use increased in general between 2012 and 2019.

Distribution of Theses According to the Research Model

The distribution of postgraduate theses according to the research model/design is presented in Table 6.

Table 6. *The Distribution of Theses in the Research According to the Research Model / Design*

Year	Research Model / Design				
	Survey (Single and Correlational)	Experimental Research	Case Study	Descriptive Research	Other
2007	34	3	2	6	6
2008	26	6	1	5	3
2009	29	6	6	2	3
2010	24	3	3	8	7
2011	39	4	7	10	2
2012	13	13	4	3	5
2013	9	15	3	-	14
2014	13	8	9	7	6
2015	7	11	3	9	10
2016	7	11	6	2	18
2017	6	9	7	3	9
2018	6	11	12	5	16
2019	12	18	14	3	15
Total	214	118	77	63	114

Table 6 shows that the research model or design mostly used in the theses was the survey (36.51%). However, in a considerable part of the theses prepared with survey design, it was not stated whether the research was in the single or correlational survey design, only that the research was realized in general survey model. Another model or design was experimental research (20.13%). In the theses conducted with the experimental design, situations that usually occurred before and after the implementation of any curriculum were generally investigated within the framework of curriculum evaluation. For example, the effect of a technique used in the learning-teaching process on students' achieving goals was investigated. In addition, case study and descriptive research were also preferred mostly in the studies on curriculum evaluation. Explanatory sequential mixed methods design (19 theses), simultaneous mixed methods design (19 theses), content analysis (18 theses), phenomenological (13 theses), embedded mixed methods design (11 thesis) were the other research models and/or designs mostly preferred in the studies.

Distribution of Theses According to the Data Collection Tools

The distribution of postgraduate theses according to the data collection tools is presented in Table 7.

Table 7. *The Distribution of Theses in the Research According to the Data Collection Tools*

Year	Data Collection Tool						Other
	Questionnaire	Attitude Scale	Test (Skill and Achievement)	Observation Form	Interview Form	Document Analysis Form	
2007	29	12	6	2	9	4	1
2008	22	13	2	-	7	6	-
2009	22	13	7	2	12	3	2
2010	29	5	4	1	8	7	1

Table 7 (Cont.)

2011	26	15	1	4	15	6	2
2012	15	7	17	6	21	2	2
2013	16	14	8	4	17	6	3
2014	16	14	7	3	18	8	3
2015	14	19	8	4	20	4	2
2016	15	13	20	12	26	8	3
2017	10	8	9	3	15	4	5
2018	20	17	12	10	28	10	8
2019	20	21	22	4	30	7	5
Total	254	171	123	55	226	75	37

Based on Table 7, data collection tools mostly used in the theses were questionnaires (43.34%) and interview forms (38.56%). This also shows similarity to the findings obtained regarding the research methods used in the theses. Quantitative research methods were more preferred in the theses and this is related to that the attitude scale and tests were often preferred in data collection tools, as well as the questionnaires. It was also found that the use of questionnaire showed a balanced distribution between 2007 and 2019 and that the use of interview form was gradually increasing. The least used data collection tools observation form and document analysis form. Depending on the increasing use of mixed and qualitative research methods, it is supposed that these data collection tools will also be preferred in the coming years. On the other hand, the total number of data collection tools in Table 9 was more than the total number of theses in the research. This shows that more than one data collection tool was used in the theses. Also, even if they were less in number, data collection tools such as inventory (13 theses), individual evaluation forms (11 theses), diary (11 theses), and development file (2 theses) were used in the theses.

Distribution of Theses According to their Samples

The distribution of postgraduate theses according to their samples is presented in Table 8.

Table 8. *The Distribution of Theses in the Research According to their Samples*

Year	Sample*									
	ACD.	UND.	PES1S	PES2S	PES1T	PES2T	SES	SET	Document	Other
2007	2	1	2	7	23	5	2	5	4	13
2008	2	4	2	5	10	7	5	6	4	10
2009	4	3	1	5	12	15	5	2	3	13
2010	7	9	2	2	8	3	2	8	6	12
2011	5	5	1	6	13	18	4	8	4	13
2012	7	7	6	7	8	5	2	2	-	11
2013	3	3	3	9	7	7	2	6	6	13
2014	5	4	2	3	10	9	7	7	6	14
2015	11	6	4	8	7	3	3	5	2	16
2016	4	6	5	6	7	7	4	3	2	16
2017	3	3	2	5	7	11	1	3	1	12
2018	15	11	5	3	6	5	5	9	10	20
2019	7	7	5	9	6	12	5	5	3	21
Total	69	41	75	124	107	47	69	51	184	68

* Academician, Undergraduates, Primary Education Stage 1 Students, Primary Education Stage 2 Students, Primary Education Stage 1 Teachers, Primary Education Stage 2 Teachers, Secondary Education Students, Secondary Education Teachers.

Table 8 shows that documents (31.39%) mostly constituted the samples of the theses completed in the field of curriculum evaluation. The curricula in primary education, secondary education, and higher education, articles and research, institutional reports, and etc. were considered as documents. However, the total number of samples was different from the total number of thesis in the research. This indicates that different sample groups were used simultaneously in one thesis. Especially, based on the preference of documents, it can be interpreted that documents are used in several theses. On the other hand, the samples in the theses consisted mainly of students and teachers. This shows that the opinions of students and teachers were given importance in the process of the evaluation of curricula. In addition, there are also samples consisting of undergraduates and academicians in the theses. The fact that the regulations made in the curricula at higher education level are less when compared to the curricula determined by the MoNE explains the situation in sample distribution.

Distribution of Theses According to the Main Subject

The distribution of postgraduate theses according to the main subject is presented in Table 9.

Table 9. *The Distribution of Theses in the Research According to the Main Subjects*

Year	Main Subject		
	Curriculum Usage	Curriculum Development Process	Outputs of Curriculum
2007	47	2	1
2008	37	2	2
2009	41	3	2
2010	41	2	2
2011	43	7	2
2012	26	7	5
2013	24	13	4
2014	32	9	2
2015	23	9	8
2016	29	11	4
2017	22	8	4
2018	34	11	5
2019	34	9	19
Total	433	93	60

Based on Table 9, when the theses completed in the field of the evaluation of curricula were examined, the theses were written mostly on the curriculum usage (73.89%), and then, on the curriculum development process (15.87%) and outputs of curriculum (10.23%) at the least. Here, it can be said that the theses under the title of curriculum usage are an evaluation for one dimension. In addition, theses completed using the curriculum usage path and curriculum are included under this title. Theses under the title of curriculum development and assessment are studies that deal with the preparation and the processes of the curriculum on a specific subject. In these theses, it is seen that the curriculum development stages are applied and the curriculum is applied at the same time. When the outputs of the curriculum were examined, we discussed the effects of the curriculum with on course success, affective development, and psychomotor behavior. Concerning the distribution of the theses according to the research subjects, it was found that the study for the evaluation of curricula was carried out for a curriculum that was generally existing and implemented in the field of curriculum evaluation. Additionally, there were a significant number of theses within the scope of which a new

curriculum was developed, implemented and assessed. The theses completed in order to evaluate the effect of changes such as method, technique, material, and model, and etc. within the curriculum were also presented under the title of the effect of curriculum.

Distribution of Theses According to the Type of Curriculum Evaluated

The distribution of postgraduate theses according to the type of the curriculum evaluated is presented in Table 10.

Table 10. *The Distribution of Theses in the Research According to the Type of the Curriculum Evaluated*

Year	Curriculum*							
	PS	PES1	PES2	SE	UE	PE	IST	Other
2007	2	24	10	5	2	3	2	4
2008	1	11	10	8	6	1	3	1
2009	1	15	19	5	2	1	2	6
2010	-	10	5	12	9	2	3	6
2011	2	10	17	10	2	2	4	6
2012	2	12	8	5	6	1	4	-
2013	6	7	13	5	2	-	2	5
2014	3	6	9	10	5	4	2	6
2015	3	8	9	5	5	-	1	8
2016	7	7	11	7	8	1	2	3
2017	4	6	12	2	3	3	2	4
2018	5	8	10	6	10	4	1	7
2019	14	12	14	8	6	4	2	4
Total	50	136	147	88	66	26	30	60

* Pre-school, Primary Education Stage 1, Primary Education Stage 2, Secondary Education, Undergraduate Education, Public Education, In-service Training.

In the theses completed in the field of the evaluation of curricula, mostly the curricula for the primary education stage 1 (23.20%) and stage 2 (25.08%) were evaluated. This shows similarity to the findings obtained in the samples of theses completed in curriculum evaluation. Teachers and students at the second stage of primary education and teachers and students at the first stage of primary education were usually included as samples. This was considered as related to that the curricula for the primary education stage 1 and stage 2 were mostly evaluated in the field of curriculum evaluation. Also, the curricula for the first and second stage of the primary education were evaluated more because the arrangements made in the primary education curricula were compared more to the ones made in the curricula for higher education.

Distribution of Theses According to the Curriculum Evaluation Models Used

The distribution of postgraduate theses according to the curriculum evaluation models used is presented in Table 11.

Table 11. *The distribution of Theses in the Research According to the Curriculum Evaluation Models Used*

Year	Curriculum Evaluation Model					
	CIPP Evaluation Model (Stufflebeam)	Element-Oriented Curriculum Evaluation Model (Erden)	Objective Centered Evaluation Model (Tyler)	Congruence-Contingency Evaluation Model (Stake)	Educational Criticism Evaluation Model (Eisner)	Other
2007	2	-	1	2	-	1
2008	2	-	-	-	-	1
2009	2	3	4	-	1	0
2010	2	2	1	-	1	2
2011	3	4	2	-	-	1
2012	3	-	1	2	-	2
2013	2	2	2	-	1	0
2014	4	1	1	-	-	0
2015	4	1	-	-	1	1
2016	7	-	-	-	-	7
2017	2	1	-	1	-	0
2018	6	-	1	1	2	5
2019	5	-	-	1	1	0
Total	44	14	13	7	7	20

When the use of curriculum evaluation models was considered, it was determined that an evaluation model was used only in the 105 (17.91%) of the theses included in the research. However, the Context-Input-Process-Product (CIPP) model developed by Stufflebeam (41.90%) was mostly preferred in the theses curriculum evaluation model was used. The reason why the CIPP curriculum evaluation model was often preferred comparing to the others may be that it is easy to understand and apply. The fact that it also has an application area in different disciplines especially in educational sciences can be seen as another reason for the model to be preferred. Moreover, the use of curriculum evaluation model in theses differed according to the years and there was no proportional increase or decrease. Discrepancy Evaluation Model developed by Provus (3 theses), Four-Level Curriculum Albeit small in number, Evaluation Model by Kirkpatrick (2 theses), Analytical Curriculum Evaluation Model by Demirel (2 theses), Cube Model of Evaluation by Hammond (2 theses) and Responsive Evaluation Model by Stake (2 theses) were the other evaluation models that have been preferred by the researchers.

Discussion and Conclusion

In this study, which aims to examine the postgraduate theses written on curriculum evaluation in Turkey between 2007 and 2019, 586 studies were analyzed. For the analysis, the theses were collected under three main titles as curriculum usage (433 theses), outputs of curriculum (60 theses) and curriculum development process (93 theses). Also, at this point, the trend is towards the evaluation of existing curricula. According to the research by Gömleksiz and Bozpolat (2013), in the postgraduate theses completed in the field of Curriculum and Instruction up until 2013, the subject of curriculum evaluation was addressed at most. Considering the distribution of theses according to years, there is a balanced distribution in general and the number of theses written in 2017 (34 theses) was lowest while it was highest in 2019. In the 2000s, many changes were made in the curricula of both the MoNE and the Council of Higher Education (CoHE). Within the MoNE, new curricula were introduced in line with the extensive studies for curriculum development in both primary and secondary education in 2005, 2013, and 2017. In addition, in 2006, 2009, 2011, and 2015, studies for certain curricula (Religious Culture and Moral Knowledge, Geometry, Science of Life, Elementary Citizenship and Democracy

Education, English Language, Elementary Turkish Language Course) were carried out. Within the CoHE, in 2007, 2009, and 2018, extensive regulations were introduced in teacher training programs. This supports the proportional distribution of the postgraduate theses dealing with the curriculum evaluation which were prepared from 2007 till 2019. Also, similar studies for the research in curriculum development and curriculum evaluation revealed the significant increase in the number of postgraduate theses for the curricula in the 2000s, especially after 2005 (Dündar & Meriç, 2017; Hazır-Bıkmaz et al., 2013; Kurt & Erdoğan, 2015; Schreglmann, 2016). This situation is supported by the increase in the number of institutes at which postgraduate programs are conducted in the field of Curriculum and Instruction in recent years and also the increase in the number of theses approved every passing year (According to the data presented by the CoHE, approximately 53000 postgraduate theses were approved in the academic year 2017-18). Moreover, while this mentioned increase supports the high number of theses in the field of curriculum evaluation, especially the changes made in the curricula of primary, secondary and higher education in the last 15 years can be considered as the sign of the trend towards studies for the evaluation of curricula. A great majority of the postgraduate theses examined in this research study (71.67%) are at master's degree level. These studies are generally for the evaluation of existing curricula or determination of their effect. In the PhD dissertations examined, it is mostly focused on the development of a new curriculum and its evaluation. This is similar to the tendency to research which is to present an easier and short-term result in master's theses and to provide longer-term and authentic product in doctoral dissertations. Then, the evaluation of existing curricula is easier than the evaluation of a new curriculum after being developed, and the former can be realized in a short time. Another reason for this may be that there are more students at master's level and more master's theses have been written. According to the data by the CoHE (2019), nearly 46000 of the 53000 postgraduate theses approved in the academic year 2017-18 are master's theses and 7000 are at the PhD level. When the authors of the postgraduate theses are considered, it can be said that female researchers have completed more thesis studies than males, but the distribution is close to each other. This is similar to the rates of females and males who further their education at postgraduate level in Turkey. Based on the CoHE data for 2019, in Turkey, the number of people continuing postgraduate education is 490.373. 561% of these are men and 43.9% are women.

Considering the distribution of the theses completed in the field of curriculum evaluation according to universities, more theses were written on the evaluation of curricula in the universities such as Ankara, Atatürk, Gazi, Hacettepe, and Marmara. According to the CoHE 2019 data, when the number of postgraduate students of the universities in the last decade was considered, the universities such as Istanbul, Marmara, Ankara, Istanbul Technical, Hacettepe, Gazi, Dokuz Eylül, Yıldız Technical, Sakarya, Ege, and Atatürk ranked among the top ten. This shows that the universities with the high number of postgraduate students and the ones in which the theses for curriculum evaluation are mainly studied are similar. Especially, the number of students in Educational Sciences, Sciences, and Social Sciences Institutes of the universities (Ankara with 14136 students, Atatürk with 7913 students, Gazi with 9844 students, Hacettepe with 10702 students and Marmara with 19112 students) (CoHE, 2019) also explains the high number of theses on curriculum evaluation in these universities. In parallel with this, the theses on curriculum evaluation, included in the research, were written in the institutes of educational sciences ($n = 303$) and social sciences ($n = 242$). Also, in the studies carried out for the postgraduate theses completed in Curriculum and Instruction (CI), it was found that the universities such as Abant İzzet Baysal, Anadolu, Ankara, Atatürk, Fırat, Gazi, Hacettepe, and METU produced more theses in that field in the last fifteen years (Aslan & Sağlam, 2017; Kozikoğlu & Senemoğlu, 2016; Özudoğlu, 2018; Yetkiner et al., 2019).

When the change by years in the distribution of the theses according to institutes was examined, while more theses were written on the curriculum evaluation in the Institutes of Social Sciences between 2007 and 2010, it was determined that more theses were completed in the Institutes of Educational Sciences after 2010. According to the CoHE statistics (YÖK, 2019), the number of Educational Sciences Institute ($n = 41$) and Social Sciences Institute ($n = 138$) that were opened and are

still operating in Turkey is 179. Based on these statistics, the number of Social Sciences Institute is about three times more than the number of Educational Sciences Institute. Of 41 Educational Sciences Institutes, 31 were opened after 2010. In addition, departments and/or disciplines such as Educational Sciences and Basic Education that were previously under the Institute of Social Sciences were assigned to the Institute of Educational Sciences. This explains the tendency in the distribution of theses from Social Sciences towards Educational Sciences after 2010. According to the study by Hazır-Bıkmaz et al. (2013), dealing with the PhD theses completed in the field of CI between 1974 and 2009, 285 of 358 PhD theses were completed in the social sciences and 58 of them in the educational sciences institutes. Moreover, the studies carried out for postgraduate thesis in CI, especially for the ones completed after the 2000s, revealed that there was a significant increase in the theses completed in the institutes of educational sciences (Kurt & Erdoğan, 2015; Özüdoğru, 2018). Regarding the distribution of the theses according to departments, it was revealed that more studies were conducted for curriculum evaluation in Educational Sciences in general, and those studies were mainly realized in the field of Curriculum and Instruction. The main reason for this may be that Curriculum Evaluation in Education is taught as a course under the Department/Discipline of Curriculum and Instruction. It was determined that, after Educational Sciences, thesis for the evaluation of curricula were completed in the field of Basic Education. Aslan and Sağlam (2017) reached a similar result in their research for theses on curriculum evaluation. According to the study, while most of the theses based on curriculum evaluation were completed at educational sciences division, a significant number of them were realized at basic education division.

Considering the research methods used in the theses completed in the field of the evaluation of curricula, quantitative methods were mainly preferred and qualitative and mixed methods were employed subsequently. In terms of the distribution according to years, it can be stated that quantitative research methods were much more preferred especially till 2012, and after 2012, qualitative and mixed methods were used more besides quantitative methods. In addition, the mixed research method which had been selected only seven times until 2012 was used ninety times from that year to 2019. This finding shows that the mixed method started to be selected for the theses on curriculum evaluation. When the postgraduate theses in the fields of CI and educational sciences were examined, it was found that quantitative methods were mainly preferred in general; there was a significant increase in the use of mixed methods especially after 2000, and qualitative methods were relatively less preferred (Eskici & Çayak, 2017; Gökmenoğlu, 2014; Gömleksiz & Bozpolat, 2013; Hazır-Bıkmaz et al., 2013; Yetkiner et al., 2019). Some factors such as quicker data collection through quantitative methods, the ability to determine the limits of variables more clearly, enabling generalizability thanks to the use of tools whose validity and reliability were already proved statistically, and the objectivity of the researcher may constitute the basis for the preference of quantitative research methods in the majority of the research. According to Patton (2014), in quantitative research, the perspectives and experiences of people can be placed into the predetermined answer categories each of which a certain number is assigned to. Thus, the method can measure the reaction of a large number of people on the research subject with a limited number of questions, can enable data to be compared and collected statistically, and provides a generalizable set of findings presented in a brief and concise way. The similarity of findings obtained through quantitative research and the need for reaching in-depth and different information about the same curricula could be the reason for the increase in the use of qualitative and mixed methods in recent years. According to Yıldırım and Şimşek (2013), human behavior can be investigated by a flexible and holistic approach through qualitative research and with this approach, the opinions and experiences of the individuals participating in the research can be reached. By using quantitative and qualitative methods together in mixed research methods, both the weaknesses of these methods can be eliminated and a multi-perspective can be provided to the researcher. In this way, more reliable and detailed information is obtained by gathering both statistics and words (Creswell & Plano Clark, 2015).

It can be said that survey and experimental designs were preferred and case study and descriptive research were also used in the theses on curriculum evaluation. In addition, mixed methods such as

explanatory sequential, simultaneous, embedded, and exploratory sequential were applied. This shows that the preference of research methods in the theses is consistent with the design preference. Considering the research design preferences based on the years, survey designs were preferred mostly until 2012, but from then on, transition to experimental research and case study was realized. Also, after 2012, a significant increase in the use of designs within the scope of mixed methods occurred. Similar studies for the field of CI also revealed that survey (single and correlational) was generally preferred in the postgraduate theses and experimental design was often used as of the 2000s. Also, case study has become another design preferred in recent years (Aslan & Sağlam, 2017; Kozikoğlu & Senemoğlu, 2016; Schreglmann, 2016; Uysal, 2016). Similar trend is also seen in the studies for teacher training and educational sciences (Ayaz, Oral, & Söylemez, 2015; Eğmir, Erdem, & Koçyiğit, 2017; Karakoç, Özpolat, & Kara, 2018). The trend in research designs is in line with the tendency to prefer quantitative, qualitative, and mixed methods. Based on this, it can be said that the reasons for the trend seen in the preference of research designs are similar to the reasons for the tendency in research methods. It was found that questionnaires and interview forms were mostly used in data collection process in the theses included in the research. Attitude scale, skill and achievement tests, and document analysis form were also used as data collection tools in the theses. Regarding the distribution of data collection tools preference by years, questionnaires were mainly preferred especially until 2012. Later on, the trend shifted towards the use of attitude scale, skill and achievement tests, observation, and interview forms. Document analysis form was preferred at a similar rate in each period. When the trend in CI was considered, it was seen that some techniques, particularly questionnaire, such as interview, attitude scale, achievement test, observation, and document analysis were preferred. There has been a decrease in the use of questionnaires in recent years, and especially, interview, observation, and document analysis have also started to be preferred (Gökmenoğlu, 2014; Gömlüksiz & Bozpolat, 2013; Kozikoğlu & Senemoğlu, 2016; Özüdoğru, 2018; Yetkiner et al., 2019). This indicates that questionnaires have an important role as data collection tool in the studies in CI. Additionally, it can be said that data collection tools varied after the 2000s and different tools such as interview, scale, observation, and document analysis were also preferred. The reasons why questionnaires are mainly used in the research studies may be that it takes shorter time and is easier to prepare and evaluate the questionnaire than the other tools and it is possible to apply the questionnaire to larger groups and in different ways (face-to-face, online, via e-mail, and etc.). According to Wolf (1988), questionnaires have specific advantages such as easy preparation, the possibility of applying quickly to much larger groups from different regions, and having lower cost when compared to the other data collection tools such as scales, interviews, and observations (Cited by Büyüköztürk, 2005). In recent years, data collection tools such as interview, observation and document analysis have been used. According to Yıldırım (1999), data collection techniques corresponding to the qualitative approach are more effective in investigating the research problems that require in-depth and comprehensive information.

Based on the sample chosen from the theses on curriculum evaluation, it was determined that both the instructors implementing the curricula and the students at the target group of the curricula were preferred in numbers close to each other. Also, curricula that evaluate in researches are chosen as sample within the scope of document review. In the distribution of the participants included in research sample according to their stages, it was seen that the curriculum evaluated was effective and, in this regard, the teachers and students at Stage 1 in primary education were preferred more. When the studies for postgraduate theses were examined, it was determined that teachers and students (at pre-school, primary, secondary and higher education levels) were preferred in the selection of sample and academicians were also included in the sample (Dündar & Meriç, 2017; Eskici & Çaylak, 2017; Gökmenoğlu, 2014; Küçükoğlu & Ozan, 2013; Özsoy, Bayrak Özmutlu, & Gündüz, 2017; Şahin, Calp, Bulut, & Kuşdemir, 2013). The main factor in preferring mostly teachers and students as sample in research may be related to that the population and sample are larger and more accessible than other groups and they are the primary sharers of the curricula.

Considering the types of curricula evaluated in the theses, it was determined that the curricula for the Primary Education Stage 1 and Stage 2 were particularly dealt, and the curricula for secondary and undergraduate education were also preferred primarily in evaluation. It can be said that a wide range of curriculum-based arrangements made within the MoNE (2005, 2006, 2009, 2011, 2013, 2015, and 2017) and the CoHE (2007, 2009, and 2018) had an effect on the fact that the theses written in the field of curriculum evaluation between 2007 and 2019 focused especially on those fields. It can be said that the curricula of primary, secondary, and undergraduate education are evaluated in similar studies (Akşan & Baki, 2017; Özüdoğru, 2018; Yetkiner et al., 2019). When the postgraduate theses were examined based on the disciplines, it was determined that the curricula of Science and Technology / Sciences, Social Studies, English, Science of Life, and Turkish at the Stage 1 and Mathematics, Science and Technology/Sciences, Social Studies, English, and Turkish at the Stage 2 in Primary Education, and Biology, Physics, Geography, Mathematics, English and Counseling in Secondary Education, and English Preparatory and Elementary School Teaching in Undergraduate Education were evaluated much more than the others. When the postgraduate studies conducted within the field of Curriculum and Instruction were analyzed, it was found that the same courses were addressed (Akşan & Baki, 2017; Aslan & Sağlam, 2017; Kurt & Erdoğan, 2015). In the choice of Science and Technology/Sciences, Social Sciences, English and Turkish Language curricula as the subject in more postgraduate theses, the fact that these courses appeal to wider age groups and can be addressed at many grade levels can be considered as an important factor. Only in one fifth of the curriculum evaluation postgraduate theses examined in the research (105 theses), the curriculum evaluation models were taken as basis. In this regard, the most preferred model is the CIPP (Context, Input, Process, Product) model developed by Stufflebeam. In addition to this, "Element-Oriented Curriculum Evaluation Model" developed by Erden and "Objective-Centered Evaluation Model" developed by Tyler were based on. The important point here is that the curriculum evaluation models have not generally been used in the postgraduate theses based on the curriculum evaluation. Similar results were also reached in different studies for postgraduate theses in the field of the curriculum evaluation. It was found that the CIPP model was the mostly used curriculum evaluation model in the studies and that Tyler's objective-centered evaluation model, Stake's congruence-contingency model and Eisner's educational criticism model was also preferred. However, it was also revealed that any curriculum evaluation model was not benefited in most of the theses (Akşan & Baki, 2017; Aslan & Sağlam, 2017; Gökmenoğlu, 2014; Özüdoğru, 2018). In this respect, it can be stated that curriculum evaluation models were not used in a great part of the curriculum evaluation studies carried out in Turkey in the last thirteen years. The fact that only 197 of the 586 postgraduate theses included in the research scope were written in the field of Educational Sciences and Curriculum and Instruction, the remaining theses were in the fields which do not include a curriculum evaluation course. Therefore, they were written in the fields which do not require specialization in that subject of study can be related to the lack of model use. This can be interpreted in the way that the mentioned theses without an evaluation model may be weaker than the ones in which a model is used.

In conclusion, a significant differentiation arises after 2012 in the research methods, designs, and data collection tools preferred in theses on curriculum evaluation from 2007 to 2019. In this context, there is a trend from quantitative methods to qualitative and mixed methods, from survey to experimental research and case study, from collecting data with questionnaires to collecting data with attitude scales, skill and achievement tests, observation, and interview forms. The curriculums developed by MoNE and CoHE and its' years are influence in the curriculums evaluated. In sample selection, the trend is related to the curriculum subject to the study. In new thesis studies on curriculum evaluation, especially pay attention to the trends in research methods, designs, and data collection tools. By using mixed methods and applying more than one data collection tool, evaluation studies can be multi-dimensional. Besides, curriculum evaluation models preferred very few in the theses on curriculum evaluation. For the more systematic research, using a significant curriculum evaluation model is essential.

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TÜRKÇE GENİŞ ÖZET

Program Değerlendirme Konulu Lisansüstü Tezler Üzerine Bir Sistemik Derleme

Giriş

Eğitim programlarının niteliğini belirleyebilmek için program değerlendirmenin yapılması gereklidir. Program değerlendirme ile yalnızca eğitim programları değil, aynı zamanda programda kullanılan materyallerin, teknolojinin, zamanın, bütçenin ve program boyunca işe koşulan pek çok kaynağın değerlendirilmesi de yapılmaktadır. Eğitim programının hedefleri doğrultusunda hangi içerikte, nasıl bir süreç izlediğini ortaya koyarak programdaki tüm öğelerin niteliği hakkında yargıya varılmaktadır. Bu nedenle program değerlendirme; belirlenen amaçların doğruluğu, uygulanabilirliği, güveni, önemi ve eşitliği hakkındaki tanımlayıcı ve yargısal bilgiyi sistemik bir betimleme, edinme, raporlama ve uygulama sürecidir (Stufflebeam & Shinkfield, 2007). Program değerlendirme süreci temele aldığı felsefe, ideoloji, tasarım ve türlere göre farklı kategorilerde sınıflandırmaktadır. Objektivist (nesnelci) felsefeye dayanan program değerlendirmeleri olduğu gibi sübjektivist (öznelci) felsefeye yönelik sürdürülen program değerlendirmeleri yapılabilmektedir (Aygören & Er, 2018). Program değerlendirme sürecinde farklı uygulamaların olması, program değerlendirme çalışmalarının yalnızca eğitim bilimleri alanında değil aynı zamanda sosyal bilimler, fen bilimleri, sağlık bilimleri gibi farklı sahalarda ve iş ve sanayi sektörlerinde de kullanılmasını sağlamıştır (Fitzpatrick, Sanders, & Worthen, 2004). Program değerlendirme çalışmalarının ülkemizdeki lisansüstü eğitim programlarına nasıl yansıdığını görmek amacıyla gerçekleştirilen bu çalışmada, program değerlendirme konusunda yapılmış yüksek lisans ve doktora tezlerini analiz etmek amaçlanmıştır. Lisansüstü eğitim düzeyinde yapılan program değerlendirme konulu tezlerin üniversitelerde, enstitülerde, anabilim/bilim dallarında nasıl dağılım gösterdiğini belirlemek, bunun yanında program değerlendirme çalışmalarında kullanılan yöntem, örneklem grubu, veri toplama aracı ve değerlendirme yapılan konuya yönelik çalışmaları incelemek hedeflenmiştir. Bu sayede program değerlendirme alanında yapılan çalışmalara ilişkin genel durum ortaya konulmaya çalışılmıştır.

Yöntem

Araştırma sistemik derleme özelliği taşımaktadır. Sistemik derleme yöntemi ile program değerlendirme alanında yayınlanmış lisansüstü tezlere ilişkin kapsamlı bilimsel bilgileri bir arada sunmak amaçlanmıştır. Sistemik derleme ile program değerlendirme alanında tamamlanan tez çalışmalarının detaylı incelemesi gerçekleştirilmiştir. Araştırmada yer alan tezlerin seçiminde bazı ölçütlere dikkat edilmiştir. Lisansüstü tezlerin bir programın, müfredatın, sistemin, dersin ya da etkinliklerin değerlendirilmesiyle ilgili olmasına; 2007-2019 yılları arasında tamamlanmış olmasına ve Ulusal Tez Merkezi'nde erişime açık olmasına dikkat edilmiştir. Ulusal Tez Merkezi kapsamında bu ölçütlere uyan 607 lisansüstü tez belirlenmiştir. Bu tezlerden 21 tanesi erişime kapalı olduğu için araştırma kapsamı dışında bırakılmıştır. Bu doğrultuda ulaşılan 586 lisansüstü tez çalışmada yer almıştır. Araştırma kapsamına alınan lisansüstü tezler, araştırmacılar tarafından hazırlanan belirtke tablolarından yararlanarak toplanmıştır. Hazırlanan belirtke tabloları; anahtar kelimeler ve tezin tamamlandığı yıllar olmak üzere iki değişkenli hazırlanmıştır. Belirtke tablosu ile araştırma kapsamında yer alan lisansüstü tezlere Ulusal Tez Merkezi'nin resmî web sayfasından doğrudan erişim sağlanmıştır.

Ulusal Tez Merkezi'nde yer alan lisansüstü tezler, hiçbir müdahalede bulunulmadan kaydedilmiştir. Araştırmancının iki araştırmacısı da birbirinden bağımsız olarak lisansüstü tezlerin doğruluğunu ve güvenilirliğini kontrol etmiştir. Veri toplama sürecinde araştırmaya dâhil edilen lisansüstü tezlerin saklanması ve belirtke tablosuna uygun şekilde sınıflandırılmasında, araştırmada yer almayan bir program değerlendirme uzmanının görüşüne de başvurulmuştur. Araştırmada toplanan lisansüstü tezlerin incelenmesinde betimsel analizden yararlanılmıştır.

Bulgular

Araştırma kapsamında 586 tezin mevcut programların kullanımı (433 tez), program geliştirme süreci (60 tez) ve programın çıktıları (93 tez) şeklinde üç temel başlık altında toplandığı belirlenmiştir. Tezlerin yıllara göre dağılımı göz önüne alındığında genel itibari ile dengeli bir dağılım olduğu, en düşük sayıda tezin 34 ile 2017 yılında, en yüksek ise 62 ile 2019 yılında yapıldığı görülmektedir. Son yıllarda Eğitim Programları ve Öğretim alanında lisansüstü program yürütülen enstitü sayısında ve aynı şekilde her geçen yıl kabul edilen tez sayısında artış olması program değerlendirme alanındaki tez sayısının yüksekliğini desteklerken, özellikle de son 15 yılda ilköğretim, ortaöğretim ve yükseköğretim programlarında yapılan değişiklikler program değerlendirme çalışmalarına olan yönelimin bir göstergesi olarak kabul edilebilir. Program değerlendirme alanında yazılan tezlerin üniversitelere göre dağılımına bakıldığında Ankara, Atatürk, Gazi, Hacettepe, Marmara gibi köklü üniversitelerde program değerlendirmeye yönelik daha fazla tez yazıldığı görülmektedir. Tezlerin anabilim dallarına göre dağılımı incelendiğinde genellikle Eğitim Bilimleri alanında program değerlendirmeye yönelik daha fazla çalışma yapıldığı, bu çalışmaların da ağırlıklı olarak Eğitim Programları ve Öğretim alanında olduğu ortaya konmuştur.

Tartışma, Sonuç ve Öneriler

Program değerlendirme alanında yazılmış tezlerde kullanılan araştırma yöntemlerine bakıldığında ağırlıklı olarak nicel yöntemlerin tercih edildiği, daha sonra da nitel ve karma yöntemlere başvurulduğu belirlenmiştir. Yıllara göre dağılıma bakıldığında ise özellikle 2012 yılına kadar nicel araştırma yöntemlerinin daha fazla tercih edildiği 2012 yılından sonra ise nicel yöntemlerin yanında nitel ve karma yöntemlere de daha fazla başvurulduğu söylenebilir. Bunun yanında 2012 yılına kadar sadece yedi kez tercih edilen karma araştırma yönteminin bu yıldan itibaren 2019 yılına kadar doksan defa tercih edilmesi de karma yöntem kullanımının program değerlendirme tezlerinde tercih edilmeye başladığını göstermektedir. Program değerlendirme tezlerinde tarama ve deneysel desenlerin tercih edildiği, bunun yanında durum çalışması ve betimsel araştırmanın da kullanıldığı söylenebilir. Ayrıca açıklayıcı sıralı, eş zamanlı, iç içe, keşfedici sıralı gibi karma desenlere de başvurulmuştur. Bu durum tezlerdeki araştırma yöntemleri tercihi ile desen tercihinin tutarlı olduğunu göstermektedir. Çalışma kapsamına alınan tezlerde verilerin toplanmasında ağırlıklı olarak anket ve görüşme formundan yararlanıldığı bunun yanında tutum ölçeği, beceri ve başarı testleri ve doküman inceleme formu kullanılmıştır. Program değerlendirme tezlerinde tercih edilen örneklem bakıldığında hem programları kullanan öğrencilerin hem de programların hedefi olan öğrencilerin birbirine yakın sayıda tercih edildiği söylenebilir.

Tezlerde değerlendirilen program türleri incelendiğinde özellikle ilköğretim I. ve II. kademe programlarının daha fazla ele alındığı, bunun yanında ortaöğretim ve lisans programlarının da değerlendirmede öncelikli olarak tercih edildiği belirlenmiştir. Lisansüstü tezler disiplin bazında incelendiğinde ilköğretim birinci kademedeki Fen ve Teknoloji/Fen Bilimleri, Sosyal Bilimler, İngilizce, Hayat Bilgisi ve Türkçe; ilköğretim ikinci kademedeki Matematik, Fen ve Teknoloji/Fen Bilimleri, Sosyal Bilimler, İngilizce ve Türkçe; ortaöğretimde Biyoloji, Fizik, Coğrafya, Matematik, İngilizce ve Rehberlik; lisansta İngilizce Hazırlık ve Sınıf Öğretmenliği programlarının diğer programlara göre daha fazla değerlendirmeye tabi tutulduğu belirlenmiştir.

Araştırma kapsamında incelenen program değerlendirme tezlerinin sadece beşte birinde (105) program değerlendirme modelleri temel alınmıştır. Bu bağlamda da en fazla tercih edilen model Stufflebeam (2003) tarafından geliştirilmiş olan BGSÜ (Bağlam, Girdi, Süreç, Ürün) modelidir. Bunun yanında Erden (1995) tarafından geliştirilen “Program Öğelerine Dönük Model” ve Tyler (2014) tarafından geliştirilen “Hedefe Dayalı Değerlendirme Modeli” temel alınmıştır. Burada önemli olan nokta ise program değerlendirmeyi temel alan lisansüstü tezlerde program değerlendirme modellerinin genel itibarıyla kullanılmamasıdır.

Evaluation of the Professional Development Program in Digital Material Design According to the Kirkpatrick's Model*

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Abstract

Today's developments have revealed the necessity of using digital materials in educational environments. The digital material design competencies of the teachers on this subject are essential. In this context, it is necessary to develop and evaluate a professional development program. The purpose of the current study is an evaluation of the professional development program developed for the digital material design according to Kirkpatrick's Model. In the current study, a digital materials design professional development program consisting of 10 modules and 21 subjects was developed. Kirkpatrick's Program Evaluation Model was used in the evaluation of the program. In this context, teachers' reactions to the program, their learning levels, their ability to transfer the knowledge they have acquired to the classroom environment, and the target audience's opinions on the practices were determined. "The Digital Materials Design Competences Scale" and "The Scale of Self-Efficacy Perception of Technology Integration" was used to collect quantitative data. Interviews and the observation technique were used to collect qualitative data. According to the findings, it was determined that the teachers expressed positive opinions about the program and that they were satisfied with the program. It was concluded that after the professional development program, the teachers' digital material design competencies and their self-efficacy perceptions of the integration of technology developed. The follow-up evaluation study determined that teachers could transfer the knowledge and skills they gained in the professional development program to the actual classroom environment, and students expressed positive opinions about these practices.

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Introduction

Advocating the idea that "Education is not preparation for life, but life itself," Dewey (2015) draws attention to the effects of social changes on education in his work "School and Society." According to

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him, education must undergo a complete change in order for social changes to have meaning for life. The frequent use of information and communication technologies in searching, organizing, storing, developing information, and solving problems causes every social system to expect educational institutions to train individuals who can use technology (Kurt, 2013). Our world and our society no longer need people who know the information but who produce information and know-how to access information (Çağlar & Reis, 2007). Therefore, in the current information age, individuals are expected to follow science and technology developments and apply them daily. With the transformation that society has undergone, the technological competencies expected from individuals have made the use of technology almost compulsory in educational environments, and the concept of technology integration has gained importance. Van-Melle, Cimellara, and Shulha (2003) defined technology integration as the process of using and disseminating information and communication technologies based on applications in accessing information and communicating to increase learning.

Teachers have a great responsibility in the successful accomplishment of technology integration. The development of teachers' knowledge and skills on this subject is essential in getting the return on investments. In this direction, integrating technology into learning-teaching environments in today's education system is seen as one of the vital teacher competencies (Brush & Saye, 2002). Teachers' preparation of digital materials required by techno-pedagogical education suitable for their lessons and students can be expressed as the first step of this process. Today's students are now described as digital students, and it is stated that these students adopt and use technology to explore, question, and improve their learning and contribute to the knowledge of others (Smaldino, Lowther, Mims, & Russell, 2015). In this connection, it can be said that the materials used for today's learners, in whose lives technology occupies an important place, should be digitized.

In addition to the technological developments experienced today, some critical situations have brought digitalization into education. The pandemic, which has recently affected the world, has significantly affected people's health, psychological, economic, social life, and education. The prominent effect of this in the field of education is that students stay away from the learning environments in their schools and participate in distance education from their homes where they go through the isolation process (Koçoğlu, Ulu Kalın, Tekdal, & Yiğen, 2020). Due to the Coronavirus (Covid-19) pandemic, many countries such as China, the USA, Italy, Spain, France, Korea, Turkey, and Germany were forced to interrupt their face-to-face educational practices. At the global level, open and distance education applications have come to the fore as a fundamental learning resource to find a solution in the face of the failure to implement formal education practices (Can, 2020). The involvement of educators in the distance education process with their students has increased the importance of using digital materials in these environments. In order for the distance education process to continue effectively, it has become necessary for teachers to develop digital materials that they can use in virtual classrooms.

It is stated that learning experiences equipped with digital teaching materials will enable learners to be fast, effective, and willing to have access to information (Yavuz-Konokman, 2019). Teaching materials transmitted through digital media are defined as digital materials, and digital textbooks, applications, and online supplementary resources are shown as examples of these materials (Edson & Thomas, 2016). When it comes to digital material, animations, simulations, presentations, digital texts, and videos come to mind (Taşlıbeyaz & Karaman, 2015). Karademir (2018) defined digital teaching material as any material prepared for teaching purposes through digital media such as computers or mobile devices.

It is stated that the interest in the technology of today's technology-literate students will make it easier for them to be interested in the information provided with digital teaching materials and that learning experiences designed with these materials will contribute to their positive attitude towards learning (Yavuz-Konokman, 2019). However, when the relevant literature is reviewed, it is seen that teachers have various problems in the use of digital materials and digital materials design (Akıncı,

Kurtoğlu, & Seferoğlu, 2012; Dursun, Kuzu, Kurt, Güllüpinar, & Gültekin, 2013; Kaya & Koçak Usluel, 2011; Kayaduman, Sırakaya, & Seferoğlu, 2011; Keleş, Dündar Öksüz, & Bahçekapılı, 2013; Sarıtepeci, Durak, & Seferoğlu, 2016; Soydan, 2018; Yadigaroglu, 2014; Yörük, 2016). In these studies, it has been revealed that;

- Teachers do not have sufficient knowledge and skills in digital material preparation,
- Teachers experience difficulties in obtaining digital materials,
- Teachers' digital material needs are not met sufficiently,
- Teachers use ready-made materials in their teaching processes,
- Preparation of digital materials by teachers is adequate,
- Teachers should be provided with expert support in digital materials design.

In related studies, it is recommended that a professional development program should be given by field experts so that teachers can prepare digital materials. The literature findings show that there is a general need for teachers in this regard. Usluel, Mumcu, and Demiraslan (2007) state that in-service training is an essential requirement on teachers' ability to use instructional technologies. Researches also support this view, and it is stated that teachers need professional development program on issues such as using technology in education, using the internet for educational purposes, and using teaching materials effectively (Gökmenoğlu, 2012; Sarıtepeci, Durak, & Seferoğlu, 2016). In this context, a professional development program was developed to improve teachers' competencies in digital material design, and its effectiveness was evaluated. The evaluation of this professional development program, which was developed as the focus of the research, was taken, and the program was evaluated according to Kirkpatrick's Model. The purpose of the current study is an evaluation of the professional development program developed for the digital material design according to Kirkpatrick's Model. The four-stage model proposed by Kirkpatrick and based on the results is the most frequently mentioned model in the relevant literature in terms of evaluating training programs and is used mainly in adult education and in-service training (Kirkpatrick, 1976). After implementing a model professional development program, involves first determining the positive or negative opinions of the participants about the course or seminar, then evaluating the acquired knowledge and skills, and then determining what changes have occurred in teachers' teaching methods. In this context, it is stated that Kirkpatrick's Model can be used effectively in the evaluation of adult and professional development programs (Sönmez & Alacapınar, 2015).

To this end, answers to the following questions were sought:

1. What are the reactions of the teachers participating in the digital materials design professional development program?
2. Is there a significant difference between the digital materials design competencies pre-test and post-test scores of the teachers participating in the digital materials design professional development program?
3. Is there a significant difference between the self-efficacy towards technology integration pre-test and post-test scores of the teachers participating in the digital materials design professional development program?
4. What level of the teachers participating in the digital materials design professional development program can transfer their knowledge to the classroom environment?
5. What are the students' opinions about the digital materials applications?

The use of digital materials in today's educational environments is an element that will positively affect students' learning and contribute to technology integration in education. Teachers must have

the necessary knowledge and skills in this regard. It is not enough for teachers to use only ready-made digital materials for them to realize techno-pedagogical education. For techno-pedagogical education to be implemented, the teacher is expected to design digital materials suitable for his/her students, course content, and gains. This issue was also mentioned in the "2023 Education Vision Document (Ministry of National Education [MoNE], 2020)", which includes the objectives to be achieved in education in order to raise individuals suitable for the age. The document contains targets for digital content and skill-supported transformation in our country. These goals are explained with the justification that teaching processes require a digital transformation per students' lives. Emphasis is placed on the importance of teachers developing and using digital teaching materials. In line with these developments, it is an actual situation that today's teachers have the skills to prepare and use their digital materials. In the research, a professional development program for digital material design was developed, and it was aimed to contribute to the digital material design competencies of teachers with the program. In this context, it is thought that the research will contribute to the field by developing and evaluating a program for the knowledge and skills needed in today's educational environments.

Method

Research Method

The mixed-method was used in the current study. In the mixed method, quantitative and qualitative research methods are used simultaneously or sequentially (Teddlie & Tashakkori, 2010). Creswell and Plano-Clark (2015) state that mixed-method research will help answer questions that cannot be answered with qualitative or quantitative research methods alone. A multi-stage mixed model was used in the research.

Study Group

In the current study, there are two different study groups. The teachers participating in the professional development program developed with digital materials design constitute the first study group. The maximum variation sampling method was used in the study. Teachers in different branches from primary, middle, and high school levels participated in the professional development program. Demographic features of these teachers are given in Table 1.

Table 1. *Demographic Features of the Teachers Participating in the Professional Development Program*

<i>Demographic Features</i>		<i>n</i>
Gender	Female	17
	Male	3
Education Level	Undergraduate	17
	Graduate	3
School Type	Primary school	2
	Middle school	8
	High school	10
Seniority	1-5 years	2
	6-10 years	2
	11-15 years	1
	16-20 years	7
	21 years and longer	8
Branch	Mathematics	4
	Turkish Language and Literature	3

Science	3
Chemistry	2
Counseling	2
Classroom	1
Philosophy	1
Physics	1
Pre-school	1
English	1
Visual Arts	1

Teachers participating in the professional development program were coded as P1, P2, P3 ... P20. This coding was used to give quotations from interviews with teachers. The second study group in the current study comprises the teachers participating in the follow-up evaluation and their classes. Information about the participants of the follow-up evaluation is given in Table 2.

Table 2. *Information about the Participants of the Follow-up Evaluation*

<i>Teacher Code</i>	<i>Gender</i>	<i>School Type</i>	<i>Branch</i>	<i>Grade Level Observed</i>	<i>The Number of Students</i>	<i>Students Interviewed</i>
A	Female	High school	Mathematics	9	11	AS1, AS2, AS3, AS4, AS5, AS6, AS7
B	Female	Middle school	Science	8	16	BS1, BS2, BS3, BS4, BS5, BS6

As shown in Table 2, one of the teachers participating in the follow-up evaluation is working in a high school while the other is working in a middle school. A math lesson of the high school teacher A delivered to 9th-grade students was analyzed within the follow-up evaluation study. On the other hand, a middle school teacher B delivered to 8th-grade students was included in the follow-up evaluation study. Interviews were conducted with 13 students (7 students from teacher A and six students from teacher B).

Data Collection Tools

In the current study, “The Digital Materials Design Competences Scale (DMDCS)” developed by Göçen Kabaran (2020) and “The Scale of Self-Efficacy Perception of Technology Integration (SSEPTI)” developed by Wang (2004) and adapted to Turkish by Ünal (2003) were used to collect quantitative data.

In the current study, interviews and observation techniques were used to collect qualitative data. Interviews were done with the teachers participating in the professional development program and with the students of the teachers who participated in the follow-up evaluation. The semi-structured interview form prepared by the researchers was used in both interviews. The validity and reliability of the semi-structured interview forms were checked through expert opinion. There are five questions in the form prepared for teachers and four questions prepared for students. During the follow-up evaluation phase, the observation performed in the teachers' classrooms was carried out by one of the researchers. The unstructured observation form prepared by the researchers was used in conducting the observations.

Data Collection and Research Process

Firstly, the professional development program was developed. The literature states that the Taba-Tyler Model and System Approach Model are primarily used to develop in-service training courses (Çam, 2018). In the current study, these two models were used in the development of the professional

development program. Planning, design/development, implementation, and evaluation stages were involved in the program development process. In the planning stage, need assessment studies were conducted; in the design/development stage, program design and pilot application were conducted; in the implementation state, the implementation of the developed program with the participation of teachers and data collection were performed, and in the evaluation stage, analysis of the data was made, and effectiveness of the program was evaluated. The program developed in the current study consists of 10 modules and 21 subjects. The program was implemented face-to-face with the participation of teachers on 24-28 June 2019. The program's content included various subjects that teachers can use in their teaching processes, such as online digital materials, mobile-supported digital materials, digital design, digital games, digital measurement, and evaluation tools. A follow-up evaluation study was conducted with two volunteer teachers who had participated in the professional development program. Kirkpatrick's model was used to evaluate the program in the study. The model has four primary stages: reaction, learning, behavior, and outcome/effect (Kirkpatrick, 1976). Thus, the effect of the professional development program was evaluated following the stages included in Kirkpatrick's Model.

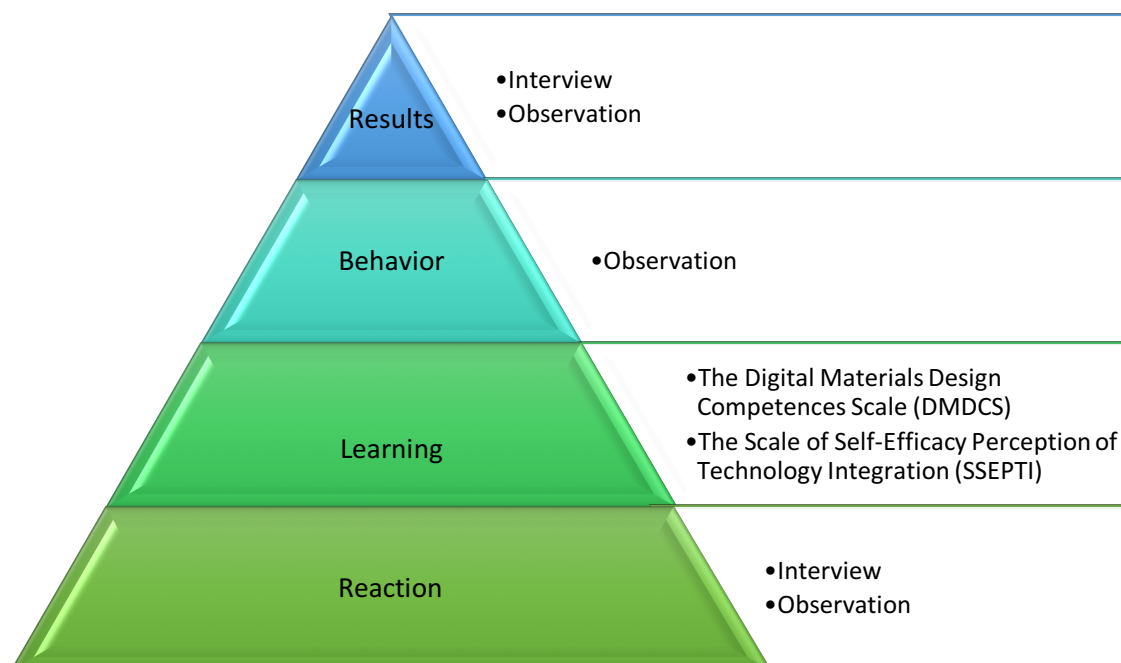


Figure 1. Kirkpatrick's program evaluation model (Modified from Kirkpatrick & Kirkpatrick, 2006).

The quantitative data collection tools used in the study were applied face to face to the teachers at the beginning and the end of the program. At the end of the program, interviews were done with the students at the stage of follow-up evaluation with the teachers. All interviews were conducted as a focus group and face to face. Participatory and non-participatory observations were made during the professional development program and the follow-up evaluation phase.

Data Analysis

In analyzing the data obtained from the scales, the assumptions of normality and homogeneity were primarily checked. It was thought that the Shapiro-Wilk test was suitable for the normality test since the sample size was smaller than 50 ($n = 20$) in the current study (Büyüköztürk, 2018). Along with the normality test, the Skewness and Kurtosis values were also examined. Besides, the results of Levene's Test for Equality of Variances were used to test the homogeneity of the distribution. Then, it was decided to use the dependent samples t-test, one of the parametric tests, to analyze the data

obtained from the scales. To determine the effect size in the current study, the Cohen-d formula, which calculates according to the difference of group means, was used (Pallant, 2016).

Qualitative data obtained in the current study were subjected to descriptive and content analysis. The data obtained in the descriptive analysis are summarized and interpreted according to previously determined themes. The purpose of this analysis is to present the findings to the reader in an organized and interpreted form (Yıldırım & Şimşek, 2016). Content analysis is "revealing the meanings remained hidden in texts or transcripts or the messages desired to be communicated there following a certain system in the form of concepts and categories and then conducting a quantitative and qualitative analysis of these concepts and categories" (Güler, Halıcıoğlu, & Taşğın, 2015, p. 333). For this reason, in the analysis of qualitative data in the current study, these two approaches were used together, and data were analyzed in depth.

In the research, validity and reliability studies were made for quantitative and qualitative dimensions. For the quantitative dimension, expert opinion was received, normality assumptions were met, and the reliability coefficient was calculated. In the qualitative, necessary procedures have been made for credibility, transferability, dependability, and confirmability. For teacher interviews, the percent of agreement value for the coding made by different researchers was calculated as .91, and the percent of the agreement for the coding made by the researcher at different times was calculated as .92. For student interviews, the percentage of agreement for the coding made by different researchers was calculated as .88, and the percent of the agreement for the coding made by the researcher at different times was calculated as .90 for student interviews.

Ethics Committee Approval Information

This study was granted ethically appropriate with the decision of Muğla Sıtkı Koçman University Human Research Ethics Committee, dated 04.03.2019 and issued 27.

Results

Teachers' Reactions to the Program

The reactions of the teachers participating in the program were determined through the data collected from the interviews. The opinions of the teachers were gathered under four themes: "The Positive Aspects of the Program," "The Usability of the Information Learned in the Program," "The Negative Aspects of the Program," and "Suggestions for the Program."

It has been determined that the theme of the positive aspects of the professional development program consists of four categories: digital materials, process, training, personal and professional contribution. The categories and codes related to the theme of the positive aspects of the program are given in Table 3.

Table 3. *Positive Aspects of the Program*

Theme	Category	Code	f
Positive Aspects of Program	Digital Materials	New	14
		Various	12
		Nice	8
		Useful	5
	Process	Meeting expectations	13
		Enjoyable	6
		Useful/Efficient	5
		Conducive to cooperation	4
		Raising awareness	3
		Supplementary resource	5
	Training	Encouraging	3
		Motivating	3
		Helpful	3
		Conducive to the effective delivery of lessons	2
	Personal and Professional Contribution	Design skills	16
		Self-confidence	7
		Professional skills	4

The teachers stated that they did not know the digital materials included in the content of the professional development program before and that digital materials were new, various, pleasant, and valuable. They stated that the implementation process of the professional development program met their expectations, was enjoyable and beneficial, that they worked in collaboration with other participants and were able to raise their awareness. The teachers stated that the professional development program shared helpful resources with them, encouraged and motivated them, helped them cope with their difficulties, and was conducive to the effectiveness of their lesson delivery. The teachers stated that the professional development program they participated in contributed to designing and using digital materials, increasing their self-confidence and competencies to meet students' expectations. Some excerpts taken from the teachers' opinions about the positive aspects of the professional development program are as follows:

P1: "We have seen outstanding applications. We have learned how to form a class with Classdojo and learned some other programs such as a puzzle, Kahoot. We have seen so many applications that we can use in our field, and I enjoyed it...."

P16: "The course was really good and very meaningful, very satisfying. It met my expectations."

P4: "We helped each other, but our teacher helped us a lot. He helped all of us eagerly. He was ready for help whenever we needed help."

P15: "I was awful at everything digital. I could not switch on or off my mobile; I did not have any technological competencies, but I could somehow survive with technology. In this program, I did, and I felt delighted. Now, I have self-confidence."

It has been determined that the theme of usability of the information learned in the professional development program consists of four categories: applicability, intended use, features of digital materials, hardware, and network infrastructure. The categories and codes related to the theme of the usability of the information learned in the program are given in Table 4.

Table 4. *The Usability of the Information Learned in the Program*

Theme	Category	Code	f
The Usability of the Information Learned in the Program	Applicability	Applicable	18
		Inapplicable	2
	Intended Use	Drawing attention	4
		Attending to the student	3
		Effective	6
	Features of Digital Materials	Enjoyable	4
		Easy	4
	Hardware and Network Infrastructure	Smartboard	2
		Internet	1

The high majority of the teachers stated that the digital materials included professional development programs are applicable in teaching processes. They stated that they could use the digital materials learned within the professional development program's scope to attract the students' attention and attend to them. Teachers stated that they could apply the digital materials they learned in the program during the teaching process because they are effective, enjoyable, and accessible. Some teachers stated that they could not apply it because the smartboard in their school is broken and there is a problem with internet access. Some excerpts taken from the teachers' opinions about the usability of the information learned in the professional development program are as follows:

P13: "I am an English teacher in primary school; since my students are young, I need to draw and keep their attention to the smartboard while teaching something; their attention span is also short. I will use most of them and even create variety."

P15: "I can prepare crossword puzzles; I can use a 2D code. Students find philosophy a bit boring; therefore, I need to draw their attention by bringing some excitement to lessons."

P3: "I think Kahoot is very feasible and not difficult to use. Preparing word cloud was very nice; I will use it for sure. The 2D code was wonderful. I will use it at the end of each unit. I want to use 2D code outside the class; when it is summer, children get easily bored, and I also get bored. Therefore, I will use it outside the class."

P14: "In our school, the boards are broken, and there is no internet, so I will not be able to apply them."

It has been determined that the theme of the negative aspects of the professional development program consists of two categories: process and participant characteristics. The categories and codes related to the theme of the negative aspects of the professional development program are given in Table 5.

Table 5. *Negative Aspects of the Program*

<i>Theme</i>	<i>Category</i>	<i>Code</i>	<i>f</i>
Negative Aspects of Program	Process	Implementation time	3
		Lack of time	3
	Participant Characteristics	Lack of foreign language competence	3
		Level differences	2

Teachers stated that the implementation time of the professional development program was the seminar period, but instead of attending the seminar at the school, it was necessary to attend the professional development program throughout the day. The duration of the program was found insufficient by some teachers. Some of the teachers participating in the professional development program had problems with foreign language as some of the applications in the program were in English. However, some teachers stated that technical competence was not considered in selecting the participants, and therefore there were problems in the process due to the level differences. Some excerpts taken from the teachers' opinions about the negative aspects of the professional development program are as follows:

P4: "Coming here from the seminar was tiring for us because there were things we had to do at school, too. Nevertheless, I wish we had always been here...."

P20: "More time could have been allocated to the training program."

P8: "Some of the applications were in English, which was challenging for me."

P5: "There were differences in terms of technological competence. It caused problems from time to time. Some teachers experienced problems in having access to the related sites."

It has been determined that the theme of suggestions for the professional development program consists of two categories: process and participant characteristics. The categories and codes related to the theme of the suggestions for the professional development program are given in Table 6.

Table 6. *Suggestions for the Program*

<i>Theme</i>	<i>Category</i>	<i>Code</i>	<i>f</i>
Suggestions for the Program	Process	Implementation time	5
		Reduction of the content	2
		Distance training	1
	Participant Characteristics	Teachers from the same branches	2
		Levels should be equal	1

Teachers stated that the implementation time of the professional development program should be the seminar period. However, it would be more beneficial to attend this program and not go to school during the seminar period, that the practice should be increased by decreasing the content a little, and that this program could save time if implemented through distance education. They also suggested that groups should be determined considering the level differences and branches of the participants. Some excerpts taken from the teachers' opinions about the suggestions to be made for the professional development program are as follows:

P19: "This program was handy for us. However, in future training programs, teachers can participate in this program instead of going to school during the seminar period. In this way, it will be more useful."

P11: "...In my opinion, content can be reduced. Through assignments, we can do more practice."

P2: "The programs were all very nice. If there are studies to be done by universities through distance education, both participants will be more, and efficiency will be enhanced. It would be nice as I would not always have to come here."

When a general evaluation is made, it can be said that the teachers expressed positive opinions about the content of the professional development program, the digital materials used, the instructor, and the process. During the interviews, teachers stated that they learned new and various digital materials in the professional development program, that the process met their expectations and benefited them, and that their personal and professional competencies improved. Almost all of the teachers stated that the information they attained could be used in teaching processes. Although a few teachers gave negative opinions about the process and participant characteristics, this does not indicate that they are not satisfied with the program. They stated that they offered these opinions as suggestions for making the professional development program more qualified. When these findings obtained from interviews with the teachers are evaluated, it is seen that the teachers' reactions towards the professional development program are generally positive, and they are satisfied with the program.

Changes in the Teachers' Competences of Digital Materials Design

To understand the changes in the participants' competencies of digital materials design, "The Digital Materials Design Competences Scale" was applied to the participants at the beginning, and the end of the training, and their pre-test and post-test scores were calculated. The relevant results are given in Table 7.

Table 7. Results of the Dependent Samples t-Test Conducted on the Digital Materials Design Competences Pre-Test – Post-Test Scores

Dimensions	Score Type	n	$\bar{X}$	sd	df	t	p	d
Design and Development Competence (DDC)	Pre-test	20	2.60	.99	19	-4.903	.000	1.48
	Post-test	20	3.86	.69				
Technical Competence (TC)	Pre-test	20	2.87	1.10	19	-3.506	.002	1.13
	Post-test	20	3.90	.67				
Techno-pedagogical Competence (TPC)	Pre-test	20	3.01	1.05	19	-3.629	.002	1.31
	Post-test	20	4.18	.71				
Application and Evaluation Competence (AEC)	Pre-test	20	3.01	1.05	19	-4.780	.000	1.41
	Post-test	20	4.23	.63				
Digital Materials Design Competence (DMDC)	Pre-test	20	3.01	1.05	19	-4.780	.000	1.43
	Post-test	20	4.23	.63				

When Table 7 is examined, it is seen that there is a statistically significant difference between the participants' pre-test and post-test mean scores of the digital materials design competencies scale sub-

dimensions ($p < .05$). When the mean scores are examined, it is seen that the participants' post-test mean scores are higher than their pre-test mean scores.

Changes in the Teachers' Self-Efficacy Perceptions of Technology Integration

To examine the changes in the participants' self-efficacy perceptions of digital materials design, "The Scale of Self-Efficacy Perception of Technology Integration" was applied to the participants at the beginning. The end of the training and their pre-test and post-test scores were calculated. The relevant results are given in Table 8.

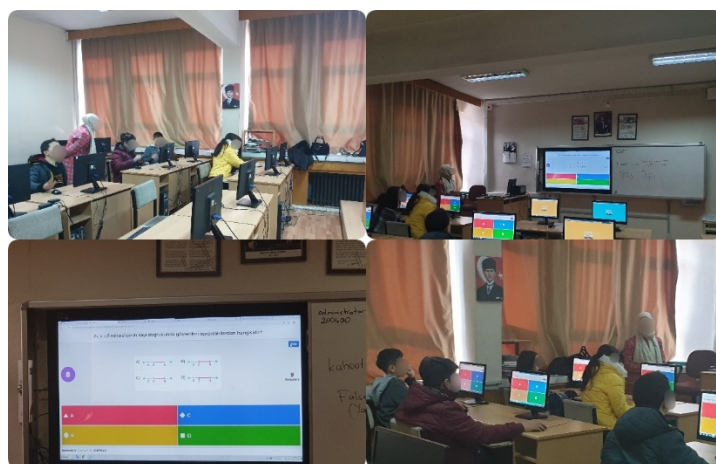
Table 8. Results of the Dependent Samples t-Test Conducted on the Scale of Self-Efficacy Perception of Technology Integration Pre-Test – Post-Test Scores

Score Type	<i>n</i>	$\bar{X}$	<i>sd</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>
Pre-test	20	3.10	.97	19	-3.815	.001	1.12
Post-test	20	4.05	.71				

It is seen from the Table 8 that there is a statistically significant difference between the participants' self-efficacy perception of technology integration pre-test and post-test mean scores ($t = -3.815$; $p < .05$). When the mean scores are compared, it is seen that the participants' post-test mean scores are higher than their pre-test mean scores.

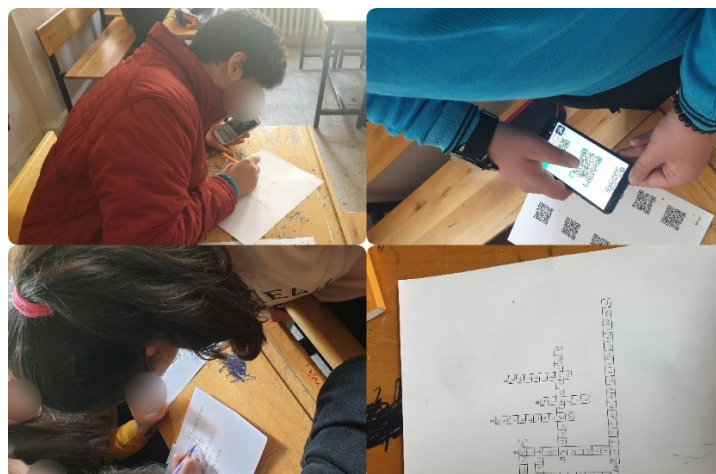
Digital Material Applications that Teachers Perform in the Classroom Environment

In order to examine the extent to which the teachers could transfer the information and skills they had acquired in the professional development program into the classroom, observations were made by the researcher in three lessons. Teacher A designed three different digital materials, which he/she had not known before and learned within the scope of the professional development program (Photograph 2). Since the teacher preferred digital materials that required students to use computers, he/she conducted his/her lessons in the school's computer classroom. Teacher A used Kahoot, a digital questionnaire (Poll Everywhere), and a quiz show (LearningApps) in his/her lessons.



Photograph 2. Digital materials application of the teacher A

Teacher B implemented three different digital materials design applications that he/she had learned in the professional development program (Photograph 3). The teacher performed the digital material applications in his/her classroom. Since applications required students to use mobile phones, the teacher asked them to bring their phones to the lesson before the lessons she would deliver. Teacher B used Kahoot, 2D code, and puzzle applications in his/her lessons.



Photograph 3. *Digital materials applications of the teacher B*

According to the findings obtained from the observation data, it was determined that teachers could use digital materials effectively in the classroom. Besides, when the observation findings were examined, it was seen that the students' reactions were generally positive, and they actively participated in the process. Since the students did not have any problems with the digital materials, they did not receive technical support from the teacher during the process. In light of these findings, it can be argued that teachers A and B could transfer the information and skills they had acquired in the professional development program to the classroom environment.

Students' Opinions about the Digital Materials Applications

In the outcome/effect stage of Kirkpatrick's program evaluation model, the program's effect on the target audience is investigated. In this context, interviews were conducted with students in the two teachers who participated in the follow-up evaluation study. The answers given by the students to the questions were grouped under three themes: "The Teacher's Use of Digital Materials," "Effects of Digital Materials," and "Suggestions for the Use of Digital Materials."

It has been determined that the theme of teacher's use of digital materials consists of two categories: intended use and materials used. The categories and codes related to the teacher's use of digital materials are given in Table 9.

Table 9. *The Teacher's Use of Digital Materials*

Theme	Category	Code	f
The Teacher's Use of Digital Materials	Intended Use	Evaluation	10
		Increasing retention	6
		Drawing attention	3
		Kahoot	13
	Materials Used	Video	12
		Presentation	11
		Puzzle	10
		Game	10
		Competition	9
		Questionnaire	7
		QR Code	6

Students stated that the teachers (A and B) used digital materials for evaluation, reinforcement, and drawing attention. They stated that their teachers (A and B) used digital materials such as Kahoot, video, presentation, puzzle, game, 2D code, questionnaire, and competition. Excerpts from the students' opinions about the teacher's use of digital materials are given below:

AS3: "Our teacher prepares questions about what we have learned at the end of the lesson. He/she asks us about these, and we answer them on the materials. Thus, he/she evaluates us."

BS4: "...Our teacher uses such different applications as they motivate us to listen to the lesson more carefully...."

AS3: "He/she uses materials such as Kahoot, smart boards, games, puzzles, competitions, videos."

BS1: "He/she uses 2D code. We like this a lot. We use Kahoot a lot. We play games on the smartboard...."

It has been determined that the theme of effects of digital materials consists of three categories: affective effects, supporting learning, and encouraging participation in the lesson. The categories and codes related to the theme of effects of digital materials are given in Table 10.

Table 10. *Effects of Digital Materials*

Theme	Category	Code	f
Effects of Digital Materials	Affective Effects	Enjoyable	10
		Motivating	8
		Drawing attention	4
		Arousing excitement	3
		Arousing curiosity	2
	Supporting Learning	Learning by enjoying	12
		Facilitating learning	8
		Increasing retention	4
		Drawing interest	2
		Encouraging creative thinking	1
	Encouraging Participation in the Lesson	Encouraging active participation	8
		Increasing interaction	5
		Increasing willingness to participate in the lesson	4
		Taking responsibility	2

Students stated that digital materials made them enjoy the lesson, aroused excitement in them, attracted their attention, increased their motivation, and made them more curious. They stated that digital materials enabled them to learn by having fun, facilitated learning, increased the retention of information, drew their interest to the lesson, and encouraged them to think creatively. Students stated that digital materials motivated them to participate in the lesson actively, increased their interaction with their teachers and friends, and made them more eager to participate in the lesson and take responsibility for the activities. Excerpts from the students' opinions about the effects of digital materials are given below:

AS7: "Math is too hard. I am already bored; I always sit in the back row in the class. Nevertheless, when there are such activities, I enjoy it."

AS6: "For example, the teacher asks questions to us with Kahoot. After every question, the name of the winner appears on the board. When I am the winner, I feel motivated."

BS3: "When we do such activities, we love the lesson more, and we want to do more of such activities."

BS4: "We have much fun while applying them. We learn more easily"

BS6: "I understand more easily with these materials...."

AS1: "We all participate in the lesson. I think they motivate everyone in the class to participate in the lesson...."

AS3: "When we play/compete as a group, interaction within the classroom increases."

It has been determined that the theme of suggestions for the use of digital materials consists of two categories: the state of use and features of digital materials. The categories and codes related to the theme of suggestions for using digital materials are given in Table 11.

Table 11. *Suggestions for the Use of Digital Materials*

Theme	Category	Code	f
Suggestions for the Use of Digital Materials	The State of Use	They should be used more	10
		They should be used in each class	6
		All teachers should use them	5
	Features of Digital Materials	Game-based	11
		Encouraging cooperation	7
		Interactive	4
		Mobil applications	4

Students suggested that digital materials should be used more, that they should be used in each class, and that all teachers should use them. They suggested using game-based, collaborative, interactive, and mobile digital materials in the teaching process. Excerpts from the students' opinions about the use of digital materials are given below:

AS2: "I think these applications should be used more because the quality of the lessons gets high."

AS6: "I want them to be used in all lessons, not just math."

AS7: "I think we have more fun when we play. Such materials should be used."

BS6: "I think the materials we play with are better. I want it to include games and competitions."

AS3: "There may be things that encourage every student to participate in and help each other...."

Discussion, Conclusion, and Implications

According to the findings, it was concluded that the teachers participating in the professional development program expressed positive opinions about the content of the program, the digital materials used, the trainer, and the process. In the study conducted by Karademir (2018), it was found that the training received to develop digital teaching materials positively affected teachers. When teachers saw that they were successful in the education process, their prejudices and resistance to developing digital teaching materials decreased. In their study, Sánchez-García, Marcos, GuanLin, and Escribano (2013) determined that teachers showed a high level of satisfaction with the program due to their development own teaching skills. In this context, it is seen that the results obtained in the

current study are similar to the results of different studies. Today, designing digital materials that can be used in teaching processes has become necessary for educators, and a training need has arisen on this subject. It can be said that positive reactions were given to the professional development program prepared based on this need, as the program included various digital materials, there was new information and applications in the program, and it allowed teachers to develop themselves and acquire competencies that would contribute to their professional development.

According to the findings obtained in the current study, it was determined that the teachers' digital materials design competencies and scores are taken from the sub-dimensions varied significantly after the professional development program. This result shows that the implemented professional development program contributed to the digital materials design competencies of the teachers. The professional development program contributed to developing the teachers' design competence, technical competence, techno-pedagogical competence, application and evaluation competence, and general digital materials design competencies. Similarly, in the study conducted by Gisbert-Cervera and Lázaro-Cantabrana (2015), it was concluded that a training program with ICT content for the professional development of teachers improved the digital competencies of teachers. Besides, in the literature, it has been determined that the results obtained from the studies carried out in order to foster the professional development of teachers in subjects such as the use of TPACK and ICT contributed positively to teachers' competencies (Guzey & Roehrin, 2009; Harris & Hofer, 2011; Kaleci, 2018; Yadigaroglu, 2014).

According to the study's findings, it was determined that the teachers' perception of self-efficacy towards technology integration significantly varied after the professional development program, and their mean scores at the end of the program were found to be significantly higher. This result shows that the professional development program applied contributed to teachers' perceptions of self-efficacy towards technology integration. Perception of self-efficacy towards technology integration is defined as teachers' self-confidence in using technology effectively in learning environments (Nathan, 2009). The relevant literature states that teachers' characteristics such as perception, attitude, belief, and self-confidence are important in technology integration (Ertmer, 1999; Inan & Lowther, 2010; Kaya & Koçak Usluel, 2011). It is crucial to positively develop teachers' attitudes and thoughts on technology integration in education in this context. In the current study, the development of self-efficacy perceptions of technology integration is seen as a result that will contribute to teachers' ability to transfer the knowledge and skills they have gained in the program to the classroom environment and to integrate technology into teaching processes.

According to the findings obtained from the observations made in the classroom of two teachers who have participated in the professional development program, it was concluded that both teachers were able to transfer the competencies they had acquired in the program to the classroom environment. Both teachers prepared their applications regarding the digital materials they learned in the professional development program without supporting and using them in their classrooms. In the study conducted by Kaleci (2018), the follow-up evaluation of two teachers who have participated in the professional development program was made. It was determined that they could transfer the information they had acquired in the program to the actual classroom environment. Karademir (2018) stated that teachers' basic computer skills and self-efficacy in developing digital teaching materials affect their development. It can be said that the development of digital materials design competencies and self-efficacy perceptions of technology integration of the teachers have participated in the follow-up evaluation after the professional development program has an effect on digital materials design and use in the teaching process. In the professional development program, besides the teachers' acquiring the necessary knowledge and skills in digital materials design, it is thought that the instructor's demonstration of sample practices for the teaching processes of each digital material and the exchange of ideas with the teachers on how to apply digital materials in the classroom contributed to this result observed in the follow-up evaluation.

According to the students of the teachers who participated in the follow-up evaluation study, the teachers used various digital materials that they had learned in the professional development program in the classroom. The students stated that the teachers used these materials for evaluation, increasing retention, and drawing attention. These results show that the teachers used the knowledge and skills they had acquired in the professional development program in their classrooms. Besides, the fact that teachers used digital materials for different purposes shows that they used these materials at different lesson stages. Taşlıbeyaz, Dursun, and Karaman (2018) stated that digital materials are used in educational settings to make more effective and sustainable learning possible. In light of the findings, it is thought that both teachers continue to apply the digital materials they learned in the professional development program in their classes in order to make the teaching process more effective.

It was also concluded in the current study that digital materials had effects such as making the lesson more enjoyable, motivating students, attracting their attention, and arousing their excitement and curiosity. Another finding is that digital materials supported students' learning. A study reported that digital materials increased interest in the lesson, eliminated monotony, appealed to different types of intelligence, and increased self-confidence and motivation (Soydan, 2018). In the study conducted by Yağcı (2017), it was determined that computer-aided instruction, which included digital materials such as video, animation, slide, and computer-based tests, increased the academic achievement of students and the retention of the learned information. In another study, it was concluded that the use of digital teaching materials increased students' positive attitudes towards the course (Yang, Weng, Yang, & Wu, 2014). Karademir-Coşkun and Alper (2019) stated that digital learning materials are effective in focusing attention and concentration. It is thought that digital materials have positive effects on students in terms of addressing more than one sense of students and providing education based on individual differences. Besides, it can be said that students' interest in technology affects their thoughts about these materials.

It was concluded that the students want more digital materials to be used and these applications to be conducted in each lesson. Besides, it was concluded that students want to use digital materials that are game-based, cooperative, interactive, and include mobile applications. The positive effects of digital materials on students can be seen as to why students want these materials to be used more. It is expressed as an expected result that students mostly prefer game-based materials that make learning while having fun possible because students stated that when they learn with fun, the lessons are better for them and what they learn is more permanent. In the study conducted by Özer (2016), it was determined that game-based digital materials had positive effects on students. These materials increased students' interest in the lesson, contributed to cooperative learning, facilitated learning the lesson, and helped the lesson foster active learning. In the study conducted by Kula and Erdem (2005), students stated positive opinions about an instructional computer game and stated the elements in the game such as hint, bonus earning, collecting points, scoring, and facilitators as motivating. It also seems possible that the motivating elements in game-based digital materials are why students prefer these materials more.

The findings obtained within the scope of the research are limited to the data obtained by data collection tools from the teachers in the study group. The research is limited to the activities of the professional development program developed for digital material design. It has been determined that the professional development program developed in line with the results obtained within all these limitations is effective. Krueger, Hansen, and Smaldino (2000) stated that teachers have a crucial role in integrating teaching-learning processes with technology. Schoepp (2005) stated that there is a lack of training on using technology in teachers' teaching process, which is one of the most significant difficulties to be encountered in terms of technology integration in education. In this context, it is thought that the program developed with the research made will contribute to the solution of the problems encountered in the use of technology and digital material design mentioned in the literature.

The research sets an example for professional development programs to develop teachers' digital material design competencies.

In line with the results obtained, it may be suggested to organize professional development programs by experts in digital material design and ensure the continuity of these programs. In the studies, programs with different contents can be prepared to improve teachers' digital material design competencies. Professional development programs can be developed in differ as blogging, website preparation, coding, artificial intelligence. To determine the needs in the studies to be carried out, with questionnaires and interviews, class observations can be carried out to examine the current situation of the teachers in depth. The developments in teachers' proficiency on this subject can be examined in detail by conducting more extended studies.

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TÜRKÇE GENİŞ ÖZET

Dijital Materyal Tasarımına Yönelik Geliştirilen Mesleki Gelişim Programının Kirkpatrick'in Modeline Göre Değerlendirilmesi

Giriş

Günümüzün öğrencileri artık dijital öğrenciler olarak betimlenmekte ve bu öğrencilerin keşfetmek, sorgulamak, kendi kişisel öğrenmelerini geliştirmek ve başkalarının bilgilerine katkı sağlamak için teknolojiyi benimsediği ve kullandığı ifade edilmektedir (Smaldino, Lowther, Mims, & Russell, 2015). Bu doğrultuda yaşantılarının büyük bir kısmında teknoloji olan günümüz öğrenenleri için kullanılan materyallerin artık dijitalleşmesi gerektiği söylenebilir.

Dijital öğretim materyalleri ile donatılmış öğrenme yaşantılarının öğrenenlerin bilgiye ulaşmada hızlı, etkili ve istekli olmasını sağlayacağı belirtilmektedir (Yavuz-Konokman, 2019). Teknoloji okuryazarı olan günümüz öğrencilerinin teknoloji ilgisinin, onların dijital öğretim materyalleriyle sunulan bilgilere de ilgi duymasını kolaylaştıracağı ve bu materyallerle tasarlanan öğrenme yaşantılarının öğrenmeye yönelik olumlu tutum geliştirmelerine katkı sağlayacağı belirtilmektedir (Yavuz-Konokman, 2019). Ancak ilgili literatür incelendiğinde yapılan çalışmalarda öğretmenlerin dijital materyal kullanımı ve dijital materyal tasarımı konularında çeşitli problemler yaşadıkları belirtilmektedir (Akıncı, Kurtoğlu, & Seferoğlu, 2012; Dursun, Kuzu, Kurt, Güllüpinar, & Gültekin, 2013; Kaya & Koçak Usluel, 2011; Kayaduman, Sırakaya, & Seferoğlu, 2011; Keleş, Dünder Öksüz, & Bahçekapılı, 2013; Sarıtepeci, Durak, & Seferoğlu, 2016; Soydan, 2018; Yedigaroğlu, 2014; Yörük, 2016). Araştırmalarda:

- Öğretmenlerin dijital materyal hazırlamada yeterli düzeyde bilgi ve beceriye sahip olmadığı,
- Öğretmenlerin dijital materyal temin etmede sorun yaşadığı,
- Öğretmenlerin dijital materyal ihtiyaçlarının yeteri kadar karşılanmadığı,
- Öğretmenlerin öğretim süreçlerinde hazır materyaller kullandıkları,
- Dijital materyallerin öğretmenler tarafından hazırlanmasının etkili olduğu,
- Dijital materyal tasarımı konusunda öğretmenlere uzman desteği sağlanması gerektiği belirtilmektedir.

İlgili araştırmalarda da öğretmenlere dijital materyaller hazırlayabilmeleri için alan uzmanları tarafından hizmet içi eğitimler verilmesi önerilmektedir. Literatür bulguları öğretmenlerin bu konuda genel bir ihtiyaç durumu olduğunu göstermektedir. Bu doğrultuda araştırmada öğretmenlerin dijital materyal tasarımıya yönelik bir hizmet içi eğitim programı (mesleki gelişim programı) geliştirilmiştir. Araştırmada geliştirilen bu hizmet içi eğitim programının Kirkpatrick'in değerlendirme modeline göre değerlendirilmesi amaçlanmıştır.

Yöntem

Bu araştırmada karma yöntem araştırmalarından çok aşamalı karma yönteme göre gerçekleştirilmiştir. Dijital materyal tasarımıya yönelik geliştirilen hizmet içi eğitim programına katılan 20 öğretmen araştırmancının ilk çalışma grubunu oluşturmaktadır. İzleme değerlendirmesine katılan iki

öğretmen ve bu öğretmenlerin sınıflarında yer alan öğrenciler ise ikinci çalışma grubunu oluşturmuştur. Araştırmada nicel verileri toplamak amacıyla araştırmacı tarafından geliştirilen “Dijital Materyal Tasarımı Yeterlikleri Ölçeği (DMTYÖ)” ile Wang (2004) tarafından geliştirilen ve Ünal (2013) tarafından Türkçeye uyarlanan “Teknoloji Entegrasyonuna Yönelik Öz-Yeterlik Algısı Ölçeği (TEYÖAÖ)” kullanılmıştır. Araştırmada nitel verilerin toplanması amacıyla yarı yapılandırılmış görüşmeler ve gözlem tekniğinden faydalanılmıştır. Araştırmada dijital materyal tasarımına yönelik hizmet içi eğitim programı geliştirilip programın etkililiği değerlendirilmiştir. Araştırmada geliştirilen program 10 modül ve 21 konudan oluşmaktadır. Program içeriğinde çevrim içi dijital materyaller, mobil destekli dijital materyaller, dijital tasarım, dijital oyunlar, dijital ölçme ve değerlendirme araçları gibi öğretmenlerin öğretim süreçlerinde kullanabilecekleri çeşitli konular yer almıştır. Hizmet içi eğitim programının katılan gönüllü iki öğretmen ile izleme değerlendirmesi çalışması yürütülmüştür. Araştırmada programın değerlendirilmesi amacıyla Kirkpatrick’ın Modeli kullanılmıştır. Araştırmada katılımcıların programa ilişkin tepkilerinin belirlenmesi amacıyla görüşme ve gözlem; öğrenmenin değerlendirilmesi amacıyla ölçekler; davranışın değerlendirilmesi amacıyla gözlem; sonucun/etkinin değerlendirilmesi amacıyla da görüşme aracılığıyla elde edilen veriler kullanılmıştır.

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Bulgular

Araştırmada elde edilen bulgular şu şekilde özetlenebilir:

- Hizmet içi eğitim programına katılan öğretmenlerin programının içeriği, kullanılan dijital materyaller, eğitim ve süreç hakkında olumlu görüşler belirttikleri belirlenmiştir.
- Öğretmenlerin hizmet içi eğitim programı sonrasında dijital materyal tasarımı yeterlikleri ve alt boyutları ile teknoloji entegrasyonuna yönelik öz-yeterlik algısı puan ortalamalarının anlamlı bir biçimde farklılaştığı ve program bitiminde sahip oldukları puan ortalamalarının daha yüksek olduğu belirlenmiştir.
- Hizmet içi eğitim programına katılan ve izleme değerlendirmesi çalışmasına katılan iki öğretmenin de programda edindikleri yeterlikleri sınıf ortamına aktarabildikleri belirlenmiştir.
- İzleme değerlendirmesi çalışmasına katılan öğretmenlerin öğrencilerine göre öğretmenlerin hizmet içi eğitim programında öğrendikleri çeşitli dijital materyalleri sınıfta kullandıkları belirlenmiştir.
- Dijital materyallerin öğrencilere dersten keyif alma, motive etme, dikkat çekme, heyecan ve merak uyandırma gibi etkileri olduğu bulgusuna ulaşılmıştır. Bununla birlikte elde edilen bir diğer bulgu da dijital materyallerin öğrencilerin öğrenmelerini desteklemesidir. Öğrenciler dijital materyallerin eğlenerek öğrenmelerini sağladığı, öğrenmelerini kolaylaştırdığı, kalıcılığı sağladığı, ilgilerini topladığı ve yaratıcı düşünmeyi desteklediğine yönelik görüşler belirtmişlerdir.
- Öğrencilerin dijital materyallerin daha çok kullanılmasını ve her derste bu uygulamaların yapılmasını istediği belirlenmiştir.

Tartışma, Sonuç ve Öneriler

Hizmet içi eğitim programında yeni ve çeşitli dijital materyaller öğrenildiği, sürecin beklentileri karşıladığı ve fayda sağladığı, kişisel ve mesleki anlamda öğretmenlerin yeterliklerinin geliştiği, programda elde edilen bilgi ve becerilerin öğretim süreçlerinde kullanılabilir olduğu belirlenerek öğretmenlerin programa ilişkin memnuniyet durumlarının olumlu yönde olduğu tespit edilmiştir. Karademir (2018) tarafından yapılan araştırmada da dijital öğretim materyali geliştirme konusunda alınan eğitimlerin öğretmenleri pozitif yönde etkilediği, öğretmenlerin eğitim sürecinde başarılı olduklarını gördüklerinde dijital öğretim materyali geliştirmeye yönelik ön yargı ve dirençlerinin azaldığı sonuçlarına ulaşılmıştır. Sánchez-García, Marcos, GuanLin ve Escribano (2013), tarafından

yapılan araştırmada geliştirilen programda öğretmenlerin kendi öğretim becerilerinin gelişimine katkı sağladığı için programa karşı yüksek düzeyde memnuniyet gösterdikleri belirlenmiştir.

Uygulanan hizmet içi eğitim programının öğretmenlerin dijital materyal tasarımı yeterliklerine ve teknoloji entegrasyonuna yönelik öz-yeterlik algısına katkı sağladığı belirlenmiştir. Gisbert-Cervera ve Lázaro-Cantabrana (2015) tarafından gerçekleştirilen araştırmada da benzer şekilde öğretmenlerin mesleki gelişimine yönelik BİT içerikli bir eğitim programının öğretmenlerin dijital yeterliklerini geliştirdiği sonucuna ulaşılmıştır.

Hizmet içi eğitim programına katılan iki öğretmenin sınıfında gerçekleştirilen gözlemlerden elde edilen bulgulara göre her iki öğretmenin de programda edindikleri yeterlikleri sınıf ortamına aktarabildikleri sonucuna ulaşılmıştır. Kaleci (2018) tarafından gerçekleştirilen araştırmada da hizmet içi eğitim programına katılan iki öğretmenin izleme değerlendirmesi yapılmış ve kurs kapsamında edindikleri bilgileri gerçek sınıf ortamına aktarabildikleri belirlenmiştir. Karademir (2018), öğretmenlerin dijital materyal geliştirebilmelerinde temel bilgisayar becerileri ve dijital öğretim materyali geliştirme öz-yeterliklerinin etkili olduğunu belirtmiştir.

Öğrenciler; dijital materyallerin eğlenerek öğrenmelerini sağladığı, öğrenmelerini kolaylaştırdığı, kalıcılığı sağladığı, ilgilerini topladığı ve yaratıcı düşünmeyi desteklediğine yönelik görüşler belirtmişlerdir. Öğrenciler ayrıca dijital materyallerin derse aktif katılımı sağladığı, etkileşimi artırdığı, derse katılım isteğini artırdığı ve sorumluluk almayı sağladığını ifade etmişlerdir. Yapılan bir araştırmada da dijital materyallerin derse ilgiyi arttırdığı, sıradanlığı ortadan kaldırdığı, farklı zekâ türlerine hitap ettiği, öz güven ve motivasyonu arttırdığı sonucuna ulaşılmıştır (Soydan, 2018). Yağcı (2017) tarafından gerçekleştirilen araştırmada video, animasyon, slayt ve bilgisayar tabanlı testler gibi dijital materyaller içeren bilgisayar destekli öğretimin öğrencilerin akademik başarılarını ve öğrenilenlerin kalıcılığını artırdığı belirlenmiştir. Bir diğer araştırmada ise dijital öğretim materyali kullanımının öğrencilerin derse yönelik tutumunu artırdığı sonucuna ulaşılmıştır (Yang, Weng, Yang, & Wu, 2014).

Öğretmenlere dijital materyal tasarımı konusunda uzman kişiler tarafından hizmet içi eğitim programlarının düzenlenmesi ve bu programların sürekliliğinin sağlanması önerilebilir. Hazırlanan programların öğretmenlerin uygulamalı çalışmalar yapmalarına katkı sağlayacak ve onların ihtiyacı olan konuları karşılayacak şekilde tasarlanması gerekmektedir. Aynı zamanda verilen bu hizmet içi eğitim programlarının etkililiği değerlendirilmelidir ve öğretmenlerin elde ettikleri bilgileri sınıf ortamına aktarabilme durumları da incelenmelidir.

How Does the Use of the Augmented Reality Technology in Mathematics Education Affect Learning Processes?: A Systematic Review

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Abstract

This study aimed to examine the methodological trends of studies using the Augmented Reality (AR) technology in mathematics education and reveal basic findings obtained from the studies. In this context, a systematic review process was conducted in the Web of Science database and 86 studies obtained as a consequence were reviewed. In this systematic review study, the content analysis method has been used to analyze the data. As a result of analyzing the studies reviewed, it was observed that related studies increased as from 2010, and the qualitative method was the most frequently used. It was determined that materials in the studies were usually designed using the Unity3D and Vuforia platforms. In the studies reviewed, it was seen that the most frequently faced advantages of AR in mathematics education were that it supported learning and motivation and enhanced the spatial abilities of students. Additionally, the most frequent disadvantages of AR in mathematics education were that it caused technical inconveniences and it is difficult to develop materials through AR. Students show resistance against new technology, and it causes health problems in extended use. Finally, recommendations for researchers and practitioners have been presented based on the findings obtained from this systematic review.

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Introduction

Mathematics is a crucial course because of the acquisitions it provides to students to solve their daily life problems and its effects on their academic achievement throughout their education life (Durksen, Way, Bobis, Anderson, Skilling, & Martin, 2017; Lein, Jitendra, Starosta, Dupuis, Hughes-Reid, & Star, 2016). Studies have revealed that mathematical skills are acquired during school years (Koponen, Aunola, & Nurmi, 2019). Yaşar and Papatğa (2015) stated that mathematics lesson, which plays a crucial role in determining students' academic achievement throughout their education life, is among the top courses in which students fail, have anxiety and difficulty, and develop negative attitudes the most. Additionally, many students from all educational levels face problems when learning mathematics and these problems are usually associated with abstract thinking skills (Bishop, 1986). In addition, the self-induced difficulty of mathematics arises from an epistemological reason

and students are likely to have a misconception regarding almost every subject in mathematics (Gürel & Okur, 2016).

Jackson (2008) suggests that negative perceptions related to mathematics and mathematics difficulty affect students' learning. The skill of doing mathematics is primarily influenced by the mathematics learning attitudes of students rather than their cognitive skills. Accordingly, it can be asserted that arousing positive beliefs and emotions in students regarding their competence in mathematics will lead to learning mathematics better (Timmerman, Toll, & Van Luit, 2017). Today, students who fear learning mathematics commonly have feelings such as disliking mathematics, being unwilling to study and even hating mathematics (Aldalalah, Ababneh, Bawaneh, & Alzubi, 2019). These feelings concerning mathematics result from the tension preventing students from solving mathematical problems, reasoning, and being appreciated (Salinas & Pulido, 2017). As a result of these negative feelings, it becomes inevitable for students to fail in a mathematics lesson. To overcome this failure in mathematics, help students objectify their abstract knowledge and predict potential problems, multimedia applications like Augmented Reality (AR) that may enhance students' knowledge are used (Rohendi, Septian, & Sutarno, 2018). Indeed, according to the National Council of Teachers of Mathematics [NCTM] (2015), technology use is essential for developing students' mathematical skills, encouraging them to learn more profoundly and increasing their interest in mathematics. Technology is crucial in the teaching and learning of mathematics (Juhan & Halkias, 2017). Several studies on technology use in mathematics lessons have discussed the beliefs and successes of students and teacher (Aytekin & Isiksal-Bostan, 2019). It is seen that mobile technologies have the power of developing productivity, creativity, and collaboration among students from all age groups alongside learning mathematics, but also build productivity, creativity and collaboration among students from all age groups (Hu & Samuels, 2007; Khaddage, Knezek, & Baker, 2012). There has been an increase in AR technology, the final wave of mobile technologies (Solano, Ugalde, Gómez, & Sánchez, 2017).

AR is an interactive presentation of virtual objects or materials in real environments by being transferred to the virtual environment (Azuma, 1999). When examining the definitions of augmented reality in general, it can be concluded that it is a method in which elements like a virtual object, animation, video, sound, and image are added to the real world via glasses, camera, or 3D screen (Aldalalah et al., 2019). AR is one of the developing technologies used in many fields like medicine, education, architecture, commerce, sports, and entertainment (Gecu-Parmaksiz & Delialioglu, 2019). Various studies have investigated the effects of AR technology on educational processes in different fields. For example, Martín-Gutiérrez et al. (2010) have stated that using augmented reality technology in engineering education positively affects students' spatial ability and satisfaction. As a result of a study conducted by Turan, Meral, and Sahin (2018) examining the effects of AR technology on geography education found that this technology increased student success, decreased their cognitive load level, and positively affected their views.

Studies on the use of AR in mathematics education have suggested that it enables students to display a positive attitude toward learning contents, provides an interesting learning experience, provides a teacher-student collaboration and enhances both geometry and mathematics learnings (Billinghurst & Duenser, 2012; Lin, Chen, & Chang, 2013; Kaufmann & Schmalstieg, 2003).

The AR technology helps students understand complex subjects by providing 3D simulations of invisible situations that are hard to visualize (Cai et al., 2020). In the study conducted by Sun and Chen (2019) on AR technology in mathematics education, they observed that the AR technology positively affected interaction besides encouraging students to participate in learning activities with less cognitive effort and enhance their learning performance. In a study which was conducted using a traditional method and the AR technology for students to learn manipulated and mental rotation questions via image pointers, it was found that the AR technology-facilitated understanding mathematical concepts for students, compared to the traditional method (Nakano, Matsubara,

Okamoto, & Iwane, 2017). Furthermore, in the literature, it is indicated that AR technology can positively affect students' learning levels and motivations (Chang, Chung, & Huang, 2016).

Accordingly, in the study conducted by Estapa and Nadolny (2015) examining the effect of AR technology on the success and motivation of students in a mathematics lesson, they found that AR had a positive impact on the success and motivation of students. In addition, Liao, Yu, and Wu (2015) found that using the AR application, which they developed for students to learn geometry concepts, might build their attitudes in learning geometry and their spatial ability, geometry success, and attitudes toward learning mathematics. Thus, it can be asserted that using the AR technology in mathematics teaching can develop student motivation and both technical and conceptual types of mathematical activity (Estapa & Nadolny, 2015). In another experimental study comparing the effects of the traditional methods and AR applications, it was found that students had a positive learning attitude; their success increased, and their reasoning abilities developed (Cai, 2018). In the light of all these findings, it can be stated that the AR technology has significant potential in mathematics education (Kellems et al. 2020). Consequently, AR is a highly attention-grabbing technology in terms of the learning environments it provides to students due to its visualizing abstract concepts.

Although many studies in which AR technology is used in mathematical education, only a few studies have systematically examined relevant studies on this subject. None, however, have provided a comprehensive analysis (Ahmad & Junaini, 2020). Therefore, examining the studies conducted within the scope of AR technology mathematical subjects is important in determining the current situation (Korucu, Usta, & Yavuzarslan, 2016; Altinpulluk, 2019). Therefore this study, which examines the results of studies in the literature, is important in offering instructive findings to further studies and practitioners. Also, it is thought that this study will guide researchers and contribute to the literature. Accordingly, the purpose of the study is to review scientific studies on the use of AR technology in mathematics education. In line with this purpose, answers were sought to the following research questions:

1. What are the methodological and application-oriented trends of the scientific studies conducted regarding AR technology in mathematics education?

- How is the distribution of the studies according to the types of publication?
- How are the studies distributed based on the years?
- How are the research methods used in the studies distributed?
- How are the studies distributed based on the sample groups?
- How are the studies distributed based on the countries where they are conducted?
- How are the AR technology types used in the studies distributed?
- How is the distribution of studies according to the sub-branches of mathematics?
- How are the variables examined in the studies distributed?
- How are the applications and development kits used in the studies distributed?

2. What are the basic findings obtained from the scientific studies conducted regarding AR technology in mathematics education?

- What are the advantages and disadvantages of using the AR technology in mathematics education?
- Is the use of AR technology in mathematics education effective in students' learning processes?

Method

This study aims to review scientific studies on using AR technology in mathematics education, the systematic review method used. The systematic review method is a comprehensive screening method through evaluating and synthesising studies on a subject (Uman, 2011). A systematic review is a valuable method for creating research results and presenting findings, adding value to discussions in educational research (Bennett, Lubben, Hogarth, & Campbell, 2005). Systematic reviews enhance a study process and outcome using transparent and repeatable procedures (Tranfield, Denyer, & Smart, 2003). The systematic review method usually comprises of three sections: data collection, analysis, synthesis, and each step must be taken cautiously (Crossan & Apaydin, 2010).

Data Collection

In this systematic review, the studies using the AR technology in mathematics education in the Web of Science database screened to determine the studies to be evaluated. The review process completed on 9 July 2020. Keywords used in the review process were as follows: “Augmented reality AND math”, “Augmented reality AND maths”, “Augmented reality AND mathematical”, “Augmented reality AND mathematics”, “Augmented reality AND algebra”, “Augmented reality AND geometry”, “Augmented reality AND trigonometry”, “Augmented reality AND statistics”, “Augmented reality AND calculus”, “Augmented reality AND math learning”, “Augmented reality AND math education” and “Augmented reality AND math teaching”.

Data Analysis

The studies reviewed within the scope of this study were analyzed by one of the researchers. The other researcher also examined the analyses to increase the reliability of the study. For this purpose, a form created in Microsoft Office Word for each study and the content analysis method used for data analysis. This form had sections that answer the research questions. These sections were number, name, database, type, publication year, publication type (journal article/conference proceedings), method, data collection tools, sample, country of the study, platforms where the application developed, type of augmented reality used, field/subject studied, advantages and disadvantages of augmented reality in mathematics education, effectiveness level of augmented reality in mathematics education, and variables examined in the study. The studies included in the present systematic review read carefully, and the form prepared was completed separately for each study. Then, the data in the forms were turned into codes, categories, and graphics using the Microsoft Office Excel program. The data acquired from the studies reviewed presented descriptively.

As a result of the Web of Science database review with the search mentioned above terms, 1077 studies reached totally, as shown in Figure 1. As a result of excluding the repeated copies, a total of 785 studies left. Upon reviewing the 785 studies according to their title and abstract sections, it was determined that 92 studies were not related to AR, 15 studies were not written in English, and 575 studies were not related to mathematics education. These papers excluded. Full texts of the remaining 103 studies reviewed in terms of convenience found that ten studies were not related to mathematics education. Seven studies presented the augmented reality technology; however, they were excluded because they did not focus on AR in the study. As a result of all these reviews, a total of 86 papers have been included in this systematic review.

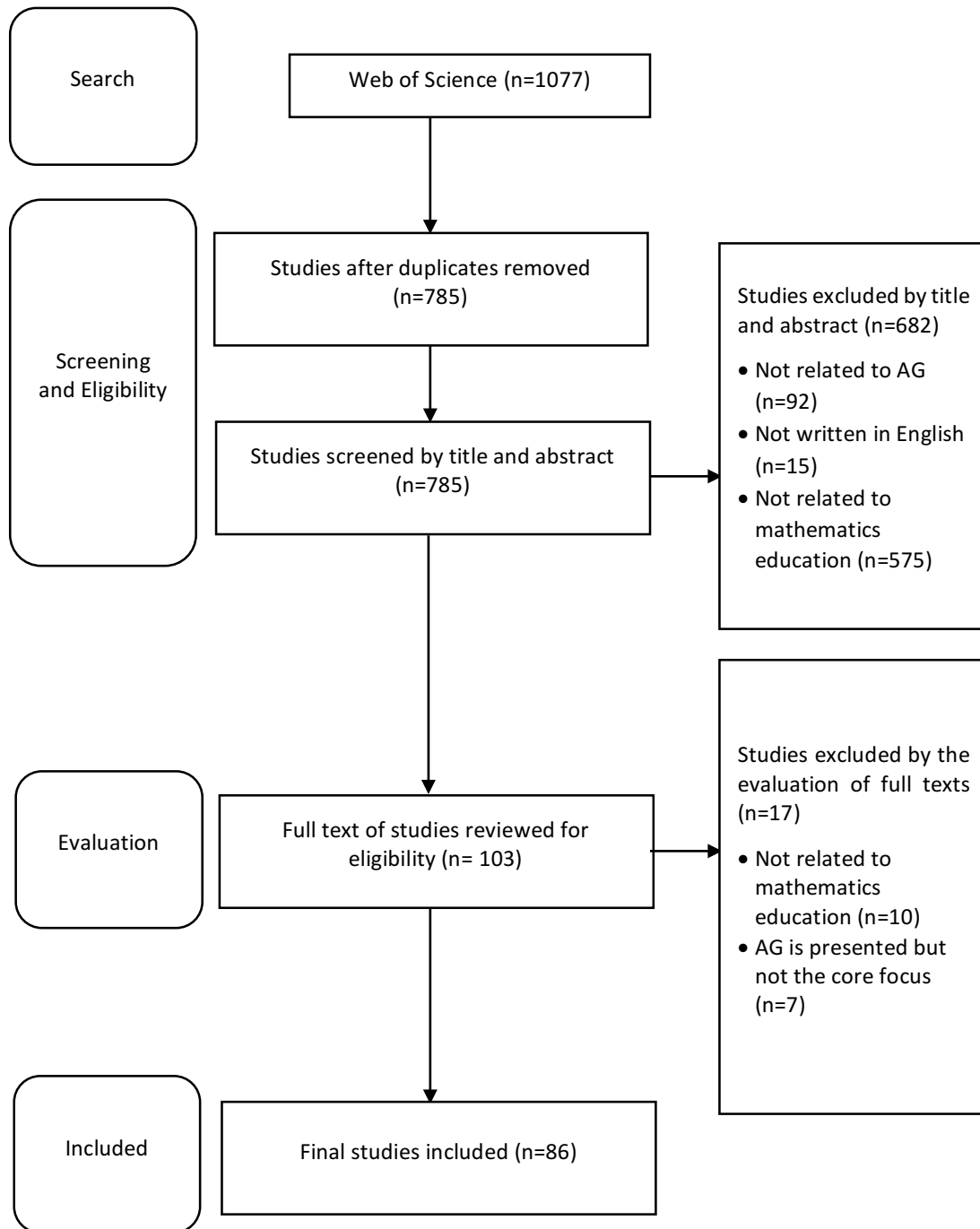


Figure 1. Systematic review process (Liberati et al., 2009)

Results

The studies on AR use in mathematics education, which comprise the study's data, were analyzed, and the findings obtained were presented as follows. The findings presented under two titles as trends in the studies and basic findings.

Trends in Augmented Reality and Mathematics Education Literature

Distribution of the Studies According to Their Types

Figure 2 shows the distribution of the studies on the use of AR in mathematics education based on their types. As seen in Figure 2, the studies using the AR technology in mathematics education were published mostly as conference paper (n=51), and the remaining 35 studies consisted of journal articles.

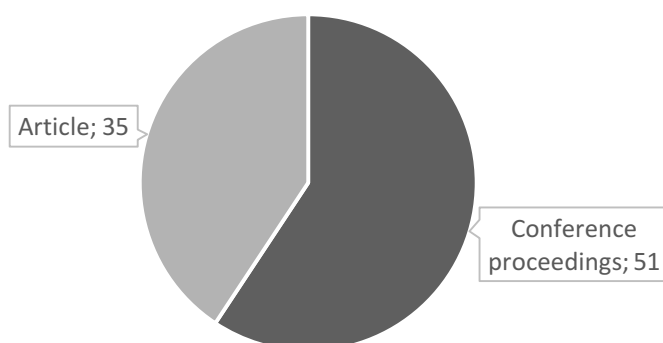


Figure 2. Distribution of the studies based on their types

Distribution of the Studies Based on the Years

Figure 3 shows the distribution of studies by years as articles, conference proceedings and the total number of studies. As shown in Figure 3, the first study on the subject was published in 2003 as a conference proceeding. There has been an increase in the number of related studies since 2010. When considering the studies conducted until 2020, it was observed that the studies conducted mostly in 2019 (n=20).

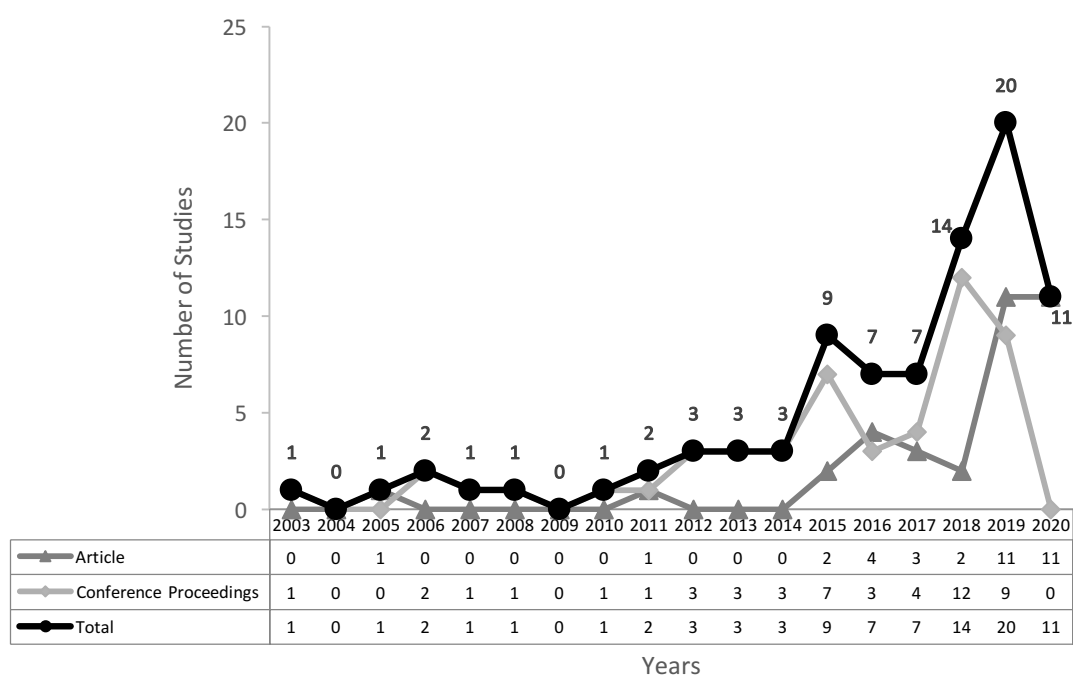


Figure 3. Distribution of the studies based on the years

Distribution of the Methods Used in the Studies

Figure 4 shows the distribution of the methods used in the reviewed studies. As shown in Figure 4, the studies used primarily qualitative (n=47) and mixed (n=29) methods and then quantitative (n=9) and literature review (n=1) methods.

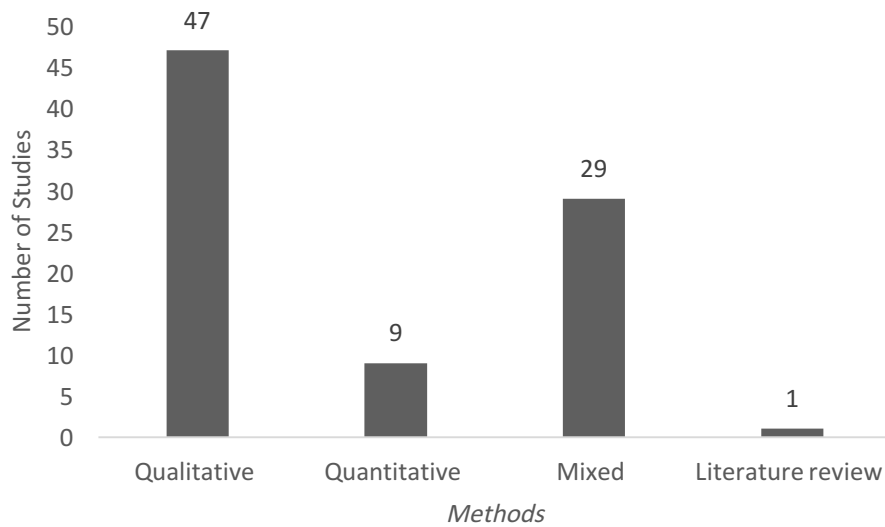


Figure 4. *Distribution of methods used in the studies*

Distribution of the Studies According to the Sample Group

Figure 5 shows the distribution of the studies on the use of AR in mathematics education based on the sample group. As shown in Figure 5, related studies were conducted mostly with secondary school students (n=18) and primary school students (n=18). However, in 18 studies, the sample group was not specified. It was observed that following the secondary and primary school levels, the most studied sample group was university students (n=16).

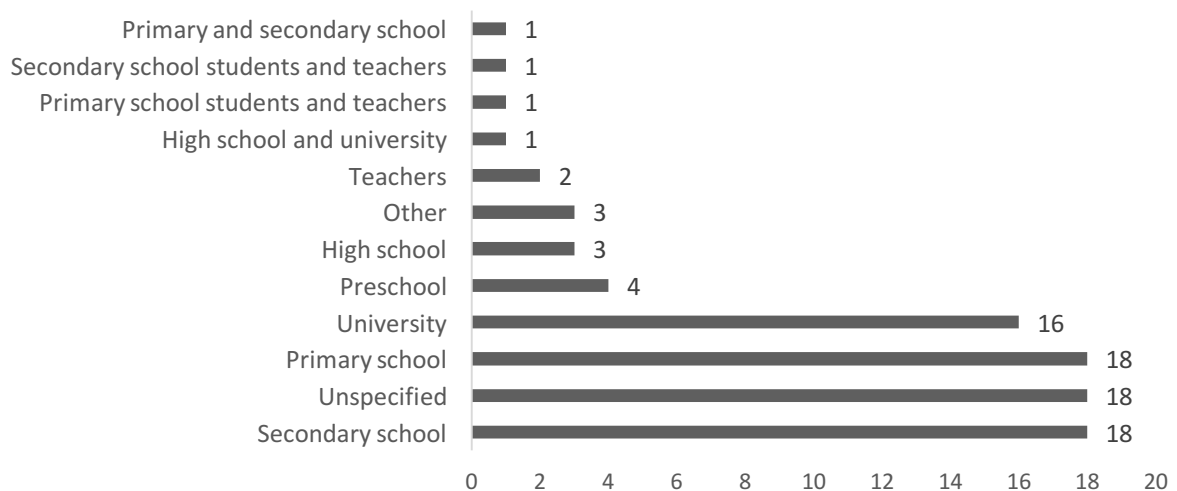


Figure 5. *Distribution of the studies based on the sample group*

Distribution of the Countries Where the Studies Conducted

Figure 6 shows the distribution of the studies on the use of AR in mathematics education based on the countries where they were conducted. As seen in Figure 6, related studies were conducted mainly in Mexico (n=11) and then Taiwan (n=9) and Spain (n=7).

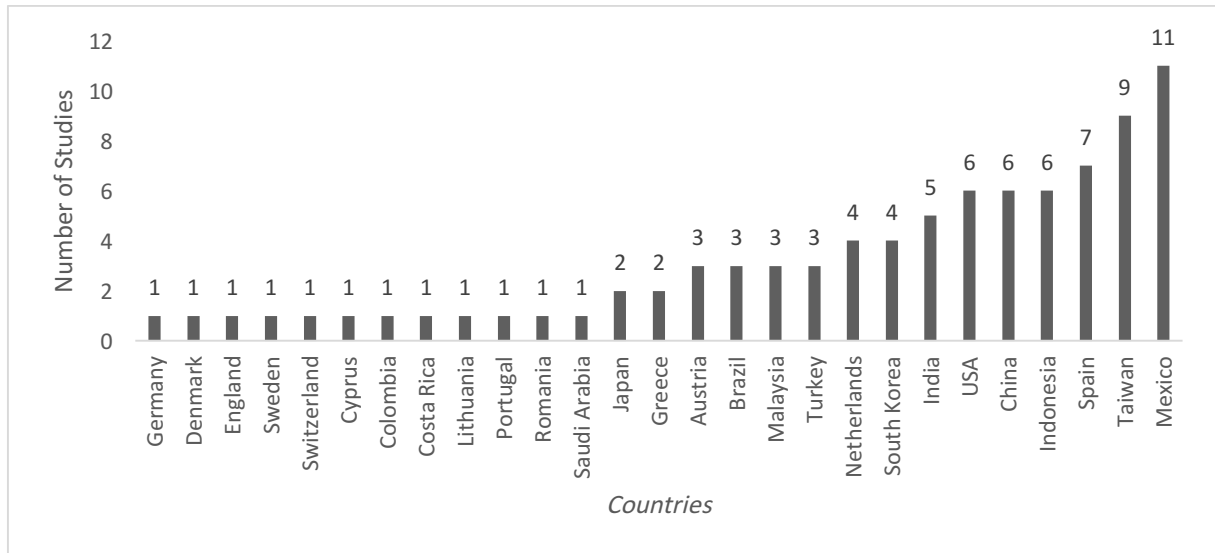


Figure 6. *Distribution of the countries where the studies conducted*

Distribution of the AR Technology Types Used in the Studies

Figure 7 shows the distribution of the AR technology types used in applications developed in the studies on AR in mathematics education. As seen in Figure 7, it can be asserted that the most frequently used AR-type was picture/image-based (n=71).

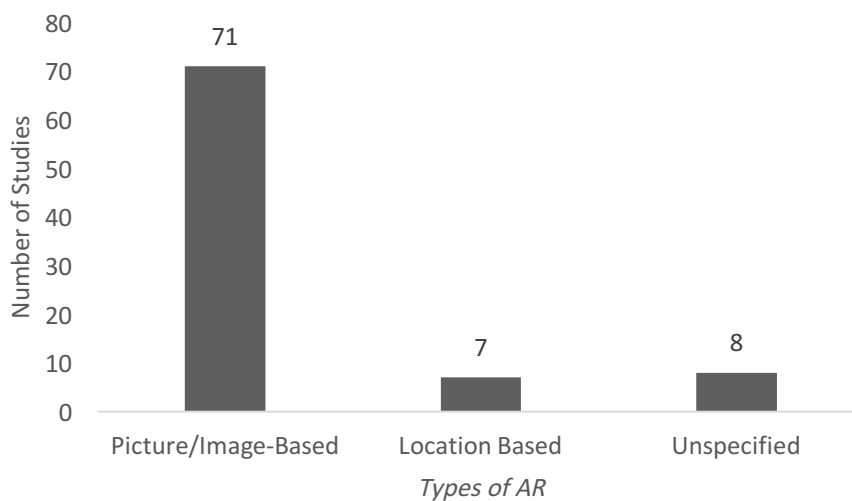


Figure 7. *The AR technology types used in the studies*

Distribution of the Sub-Branches of Mathematics Focused in the Studies

Figure 8 shows the fields and subjects focused in the studies on the use of AR in mathematics education. As seen in Figure 8, the studies were conducted mostly in mathematics (n=52) and geometry (n=31).

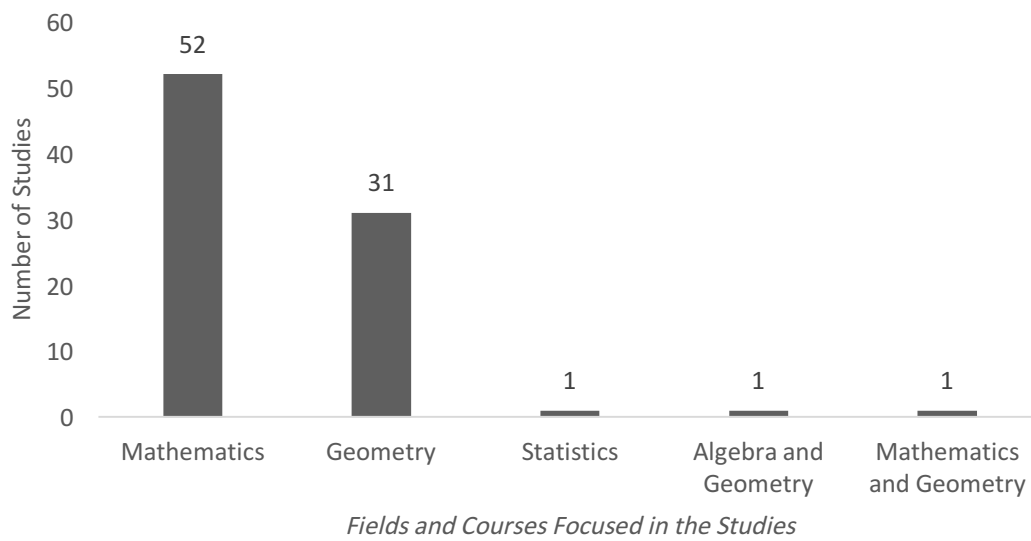


Figure 8. *Fields and courses focused in the studies*

The Variables Examined in the Studies

Figure 9 shows the variables examined in the studies on the use of AR in mathematics education. As seen in Figure 9, the studies investigated primarily cognitive and affective variables (n=29).

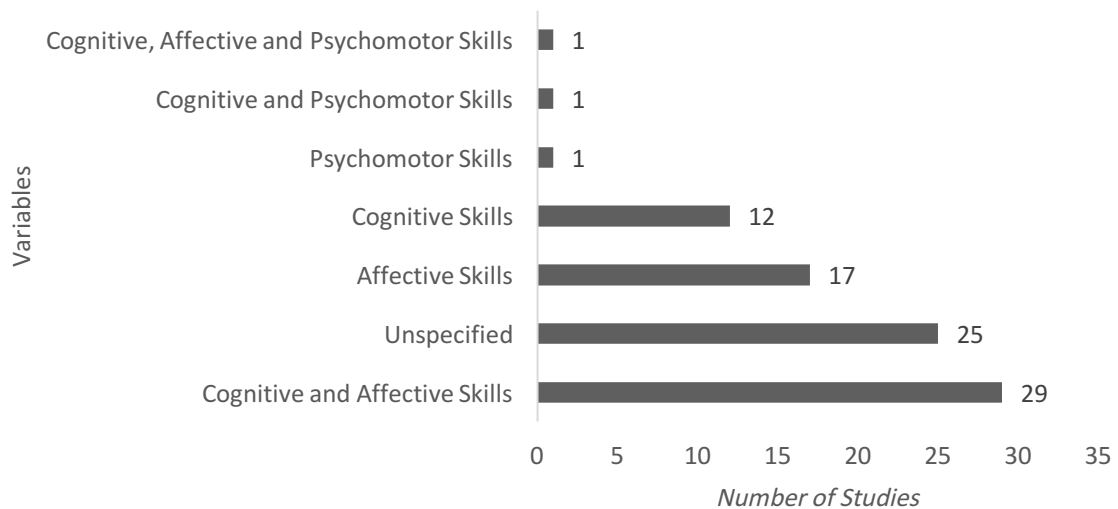


Figure 9. *The variables examined in the studies*

The Applications and Development Kits Used in the Studies

Figure 10 shows the applications used in the development period of AR materials in the reviewed studies. As shown in Figure 10, the most frequently used application was Unity3D (n=23).

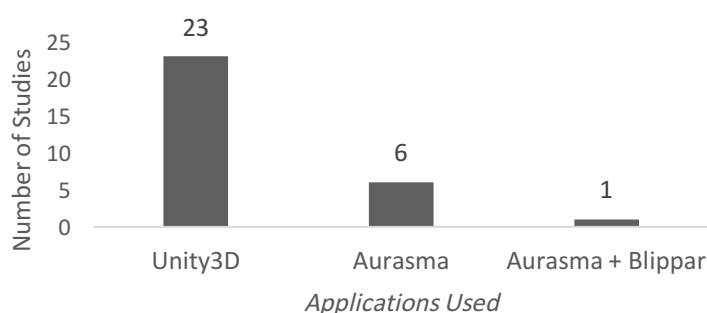


Figure 10. *The applications used in the studies*

Figure 11 shows the development kits used besides software or externally. As seen in Figure 11, the studies on the use of AR in mathematics education used mostly the Vuforia (n=21) development kit.

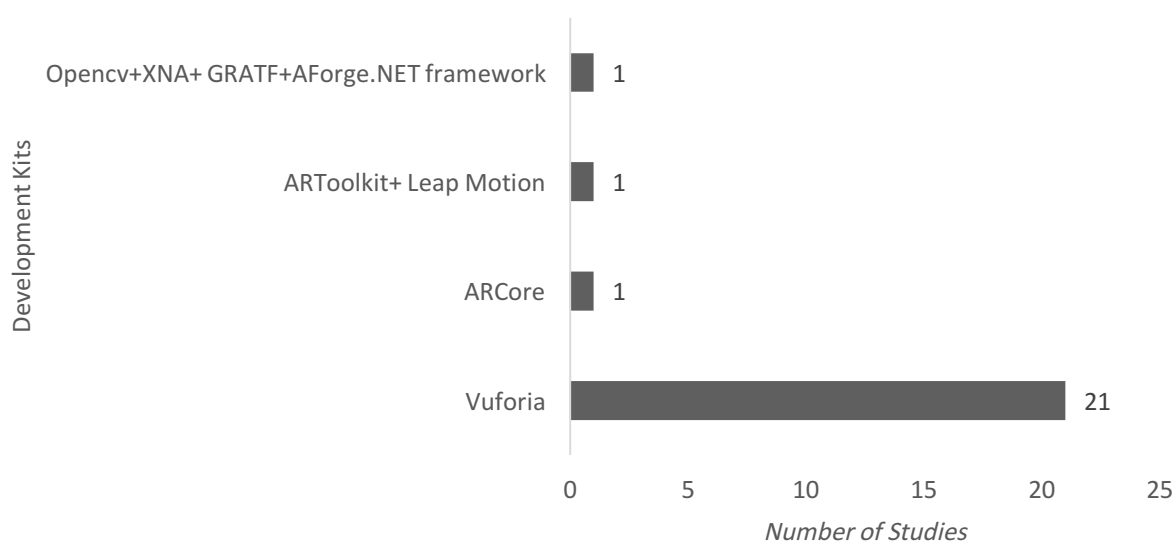


Figure 11. *The development kits used in the studies*

The Main Findings of Augmented Reality and Mathematics Education Literature

The Advantages of AR Mentioned as a Result of the Study

Table 1 shows the advantages of using the AR technology in mathematics education in the studies reviewed within the scope of this systematic review. As shown in Table 1, the studies reviewed mostly mentioned the supportive impact of the augmented reality technology on learning in mathematics education as an advantage (n= 34). The other most specified advantages were that AR motivated students in mathematics lessons (n= 27), developed their spatial ability (n= 16) and enabled them to create positive attitudes (n=11).

Table 1. *Advantages of the use of augmented reality in mathematics education*

<i>Advantages</i>	<i>f</i>	<i>Sample study</i>
Supports learning	34	İbili, Çat, Resnyansky, Şahin and Billinghamurst (2019)
Motivates students	27	Demitriadou, Stavroulia and Lanitis (2019)
Improves students' spatial abilities	16	de Ravé, Jiménez-Hornero, Ariza-Villaverde and Taguas-Ruiz (2016)
Provides a positive learning attitude	11	Lin et al. (2013)
Supports intuitive and interesting learning processes	7	Lin et al. (2016)
Makes learning environments more interactive and enjoyable	7	Correa et al. (2013)
Materials prepared with AR are easy to use	5	Quintero, Salinas, Gonzalez-Mendivil and Ramírez (2015)
Supports collaborative learning	5	Kaufmann, Steinbugl, Dunser and Gluck (2005)
Increases students' engagements	5	Sun and Chen (2019)
Impacts students' views positively	3	Kellems et al. (2020)
Provides the opportunity to explore and learn in-depth the geometric properties of different shapes	2	Le and Kim (2017)
Improves problem-solving skills	1	Demitriadou et al. (2019)
Decreases students' anxiety levels	1	Chen (2019)

The Disadvantages of AR Mentioned as a Result of the Study

Table 2 shows the disadvantages of using the augmented reality technology in mathematics education in the studies reviewed within the scope of this study. As seen in Table 2, the studies mainly mentioned technical problems using the AR applications as a disadvantage (n= 10). Also, the studies said necessities like the higher skill of computer use, money and time to develop the AR applications as disadvantages (n= 3). Other disadvantages were that users rejected and resisted using AR, a new technology (n= 2), and it caused health problems in the long-term use (n= 1).

Table 2. *Disadvantages of the use of augmented reality in mathematics education*

<i>Disadvantages</i>	<i>f</i>	<i>Sample study</i>
Technical problems in the use of AR applications	10	Coimbra, Cardoso, and Mateus (2015)
Production of materials requires a high level of technical skill, money and time	3	Chen (2019)
User resistance to the use of AR as a new technology	2	Barraza Castillo, Cruz Sánchez and Vergara Villegas (2015)
The emergence of health problems (headache, eye strain) in long-term use	1	Kaufmann, Steinbugl, Dunser and Gluck (2005)

Effectiveness of Augmented Reality in Mathematics Education

Table 3 shows the effectiveness levels specified in the experimental studies on AR in mathematics education. It was seen that in 15 out of 16 studies comparing the traditional method and AR, the AR method was more effective in all variables compared to the traditional method. In one study, however, it was observed that some of the variables were not different in the traditional method and the AR method or the AR method was more effective.

Table 3. Findings of the studies about the effectiveness of augmented reality in mathematics education

Findings	f	Studies
AR is more effective	15	Nakano et al. (2017), Cai (2018), Demitriadou et al. (2019), de Ravé et al. (2016), Cheng et al. (2018), Conley, Atkinson, Nguyen and Nelson (2020), Flores-Bascuñana et al. (2020), Alves et al. (2017), Cai et al. (2020), Sarkar, Pillai and Gupta (2018), Arvanitaki and Zaranis (2020), Liao et al. (2015), Sun and Chen (2019), Sun and Chen (2020), Manisha and Mantri (2019)
AR is more effective and/or makes no difference	1	Cai, Liu, Yang and Liang (2019)

Discussion

In this study, 86 studies consisting of conference proceedings and journal articles obtained from the Web of Science database were analyzed in terms of research trends and main findings. Results yielded that a great majority of the studies were published as conference paper. It was concluded that the first AR-relevant study has been carried out in 2003, and the number of studies increased after 2010, in the least. This finding can be explained depending on technological developments and the proliferation of mobile devices and the internet (İçten & Bal, 2017). In the studies reviewed, it was observed that the most frequently used method was the qualitative method. Even though studies are using experimental and quantitative methods to determine the effects of AR in mathematics education, it can be asserted that the studies are still inadequate in number. Accordingly, it can be stated that increasing the number of experimental studies will enable using AR more effectively in mathematics education. In the studies, it was determined that the most frequently preferred sample group was secondary school students. Accordingly, it is possible to assert the necessity of increasing the number of studies conducted, especially with university students who commonly use smartphones and the internet. Conducting studies, especially on engineering faculty students who study mathematics may enable them to understand abstract concepts and develop their spatial thinking ability. When the countries where the studies have been conducted were examined, it was seen that the scientific studies on the use of AR in mathematics education were conducted in 27 countries which is quite limited in scope. It was observed that the country with the highest number of studies was Mexico. Accordingly, it can be asserted that related studies were actually conducted worldwide; however, it is safe to say that they were not enough in number in order to generalize the findings and understand the effects entirely.

It was observed that the studies used mainly the image-based AR type. According to detection techniques, there are two types of AR as image-based and location-based (Cheng & Tsai, 2013). Cheng and Tsai (2013) stated that the image-based AR type is more appropriate for learning spatial ability, conceptual learning and practice skills. The location-based AR is more suitable for inquiry-based scientific activities. Accordingly, the fact that the studies using AR technology in mathematics education used mostly the image-based AR type is not surprising. It was seen that the studies focus mainly on the fields of mathematics and geometry. In addition, the studies primarily examined cognitive and affective skills together. Within this scope, it can be asserted that conducting new studies investigating different skills in different mathematics subjects would be important. Different sample levels will make essential contributions to the field to reach more accurate results regarding AR technology in mathematics education (Aldalalah et al., 2019; Flores-Bascuñana et al., 2020). Furthermore, considering the importance of affective skills in the mathematics learning process, increasing the number of studies aimed at affective skills is essential. The most frequently used application in developing AR applications in mathematics education was Unity3D, and the

development kit was Vuforia. This result confirms the increase in the number of studies on the use of AR in mathematics education. Qualcomm Connected Experiences purchased Vuforia in 2015 and constantly invested and supported the developers in this direction (PTC, 2015). AR technology is beginning to mature (Garzón, Pavón, & Baldiris, 2019). Considering the use of AR technology, especially in mathematics, it is predicted that its potential can expand and more accepted in education (Phon, Ali, & Halim 2014). In the present paper reviewing the studies on the use of AR technology in mathematics education, it was observed that the AR method was more effective than the traditional method. In addition, it can be said that the problems experienced in the traditional method can be reduced with AR (Tosik Gün, & Atasoy, 2017). It can be asserted that AR technology increased visual thinking skills in the mathematics field, made the learning environment interactive and fun and supported to increase students' participation in the learning process (Aldalalah et al., 2019; Sarkar et al. 2018; Sun & Chen, 2019). In short, it can be concluded that AR is a technology that will facilitate access to information and provide effective use (Coimbra et al., 2015).

In the studies on AR applications, it is possible to summarize the advantages of AR as learning/academic achievement, motivation, and attitude in general (Arici, Yildirim, Caliklar, & Yilmaz, 2019; Cahyono et al., 2020). However, the use of AR in mathematics has some disadvantages such as costly application, the resistance of students against using and health problems such as headache and eye strain, especially in AR devices put on the head (Barraza Castillo et al., 2015; Chen, 2019; Kaufmann et al., 2005). Overall, however, AR has a promising trend in mathematics education (Ahmad & Junaini, 2020).

Conclusion, Implications and Limitations

This review showed that the studies published as conference papers were larger in number than articles. AR technology has gained interest in mathematics education in recent years; it can be said that it is more effective than the traditional method on variables such as motivation, academic achievement and attitude. Consequently, the paper reviewing the studies on the use of AR in mathematics is crucial since it is a pioneer in the field and may guide further researchers. This research is limited to the search terms used and the Web of Science database. In addition, the studies included in the research cover mathematics education. Based on the findings of the study, the following recommendations can be made.

Recommendations for further research

- The reviewed studies used qualitative methods commonly, and the sample group was mainly at the secondary school level. It is necessary to conduct extensive studies on AR technology, especially with special education students and those suffering from learning disability, in different sample types based on quantitative and mixed methods, considering other gains in mathematics education.
- In the study, it was determined through content analysis that many studies suggest that the AR technology was more effective than the traditional methods. Meta-analysis studies need to be conducted in the future to quantitatively determine the effects of using AR technology in mathematics education.
- Further studies may examine the materials supported by AR in mathematics education in terms of instructional design.

Recommendations for practitioners

- Considering the better learning of mathematics and its effect on visual thinking skills, AR can integrate into all educational software related to mathematics education. Moreover, interactive AR applications can develop for subjects containing more misconceptions in the mathematics field.

- Mathematics problem-solving books supported by AR can be designed for students to make operations on paper and examine problems in the virtual environment audibly and visually outside the class.
- Since the design of materials supported by AR requires a higher technical skill and disadvantages in terms of time and money opportunities, free Web 2.0 tools can be provided to mathematics teachers to create AR materials easily.

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**TÜRKÇE GENİŞ ÖZET****Matematik Eğitiminde Artırılmış Gerçeklik Teknolojisinin Kullanımı Öğrenme Süreçlerini Nasıl Etkiler?: Sistemik Bir İnceleme****Giriş**

Matematik dersi, öğrencilerin günlük hayatlarında yaşadıkları problemleri çözmeleri konusunda sağladığı kazanımlar ve öğrenim hayatları boyunca akademik başarılarına olan etkileri açısından oldukça önemlidir (Durksen, Way, Bobis, Anderson, Skilling & Martin, 2017; Lein, Jitendra, Starosta, Dupuis, Hughes-Reid & Star, 2016). Alanyazında yer alan araştırmalar matematik becerilerinin okul yıllarında kazanıldığını göstermektedir (Koponen, Aunola & Nurmi, 2019). Yaşar ve Papatğa (2015) öğrencilerin eğitim hayatı boyunca akademik başarılarını belirlemede önemli bir yeri olan matematik dersinin; en çok başarısız olunan, kaygı duyulan, zorlanılan ve en çok olumsuz tutum geliştirilen derslerin başında yer aldığını belirtmiştir. Ayrıca, matematiğin kendinden kaynaklı zor olması epistemolojik bir sebeptir ve matematiğin hemen her konuda öğrencilerin kavram yanlışlığına sahip olmaları da olasıdır (Gürel & Okur, 2016).

Artırılmış Gerçeklik (AG) teknolojisi, görünmeyen ve görselleştirilmesi zor durumların 3D simülasyonlarını sağlayarak öğrencilerin zor bulduğu konuların anlaşılmasına yardımcı olur (Cai vd., 2020). Matematik eğitiminde AG teknolojinin kullanımına yönelik yapılan araştırmalar, öğrencilerin AG destekli öğrenme içeriklerine karşı olumlu bir tutum sergilediklerini, AG'nin ilgi çekici öğrenme deneyimi sağladığını, öğretmen ve öğrenci iş birliği sağladığını, gerek geometri gerekse matematik öğrenmelerini olumlu yönde etkilediğini ortaya koymaktadır (Billinghurst & Duenser, 2012; Lin, Chen & Chang, 2013; Kaufmann & Schmalstieg, 2003).

Sonuç olarak AG, soyut kavramları görselleştirme özellikleriyle öğrenme ortamları açısından oldukça dikkat çekici bir teknolojidir. Bu nedenle alanyazında yer alan çalışmaların sonuçlarının incelendiği bu çalışma hem gelecekte yapılması düşünülen araştırmalara hem de uygulayıcılara yol gösterici bulgular sunmasından dolayı önemlidir. Bu doğrultuda, bu çalışmanın amacı AG teknolojinin matematik eğitiminde kullanımına ilişkin gerçekleştirilen bilimsel çalışmaların incelenmesidir. Bu doğrultuda aşağıdaki araştırma sorularına yanıt aranmıştır:

1. Matematik eğitiminde AG kullanımına ilişkin gerçekleştirilen bilimsel çalışmaların metodolojik ve uygulamaya yönelik eğilimleri nelerdir?

- Çalışmaların yayınlanma türlerine göre dağılımı nasıldır?
- Çalışmaların yıllara göre dağılımı nasıldır?
- Çalışmalarda kullanılan araştırma yöntemlerinin dağılımı nasıldır?
- Çalışmaların örneklem gruplarına göre dağılımı nasıldır?
- Çalışmaların gerçekleştirildiği ülkelere göre dağılımı nasıldır?

- Çalışmalarda kullanılan AG teknoloji türlerine göre dağılımı nasıldır?
 - Çalışmalarda odaklanılan matematik alt branşlarının dağılımı nasıldır?
 - Çalışmalarda incelenen değişkenlerin dağılımı nasıldır?
 - Çalışmalarda kullanılan uygulamaların ve geliştirme kitlerinin dağılımı nasıldır?
2. Matematik eğitiminde AG kullanımına ilişkin gerçekleştirilen bilimsel çalışmalarda elde edilen temel bulgular nelerdir?
- AG teknolojinin matematik eğitiminde kullanımının avantajları ve dezavantajları nelerdir?
 - AG teknolojinin matematik eğitiminde kullanımı öğrencilerin öğrenme süreçleri açısından etkili midir?

Yöntem

Matematik eğitiminde AG teknolojinin kullanımı ile ilgili bilimsel araştırmaların incelenmesini amaçlayan bu çalışmada sistematik inceleme yöntemi kullanılmıştır. Bu sistematik inceleme çalışmasında değerlendirilecek çalışmaları belirlemek amacıyla Web of Science veri tabanında matematik eğitiminde AG teknolojinin kullanıldığı çalışmalar taranmıştır. Tarama işlemi 9 Temmuz 2020 tarihinde bitirilmiştir. Tarama sürecinde anahtar kelime olarak kullanılan terimler şu şekildedir: “Augmented reality AND math”, “Augmented reality AND maths”, “Augmented reality AND mathematical”, “Augmented reality AND mathematics”, “Augmented reality AND algebra”, “Augmented reality AND geometry”, “Augmented reality AND trigonometry”, “Augmented reality AND statistics”, “Augmented reality AND calculus”, “Augmented reality AND math learning”, “Augmented reality AND math education” ve “Augmented reality AND math teaching”.

Bu arama terimleri aracılığıyla Web of Science veri tabanında yapılan tarama sonucunda toplam 1077 çalışmaya ulaşılmıştır. Mükerrer kopyaların çıkarılması sonucunda ise toplam 779 makale elde edilmiştir. Daha sonra 785 makalenin başlık ve özet bölümlerine göre incelenmesi sonucunda 92 çalışmanın AG ile ilgili olmadığı, 15 çalışmanın İngilizce yazılmadığı, 575 çalışmanın ise matematik eğitimi ile ilgili olmadığı tespit edilmiş ve tespit edilen bu çalışmalar elenmiştir. Kalan 103 çalışmanın tam metinleri uygunluk açısından incelenmiş ve yapılan inceleme sonucunda 10 çalışmanın matematik eğitimi ile ilgili olmadığı ve 7 çalışmanın ise AG teknolojisini sunduğu fakat çalışmanın odak noktasını temsil etmemesinden dolayı çıkarılmıştır. Tüm bu incelemeler sonucunda bu sistematik incelemeye nihai olarak 86 çalışma dahil edilmiştir.

Veri analiz yöntemlerinden içerik analizinin kullanıldığı bu çalışmada öncelikle analiz edilecek her bir çalışma için Microsoft Word programında bir form oluşturulmuştur. Bu doğrultuda, sistematik incelemeye dahil edilen çalışmalar dikkatli bir şekilde okunarak hazırlanan form Microsoft Word programında her bir çalışma için ayrı ayrı doldurulmuştur. Ardından formlarda yer alan veriler Microsoft Excel programı kullanılarak kodlar, kategoriler ve grafikler haline getirilmiştir.

Bulgular

Matematik eğitiminde AG kullanımı konusunda yapılan araştırmaların incelendiği bu çalışmada, Web of Science veri tabanından 86 çalışmaya ulaşılmış ve bu çalışmalar analiz edilmiştir. Yapılan incelemeler sonucunda bu çalışmaların büyük bir bölümünün konferans bildirisi şeklinde yayınlandığı görülmüştür. Konu ile ilgili ilk çalışmanın 2003 yılında yapıldığı, 2010 yılından sonra az da olsa çalışma sayılarının arttığı sonucuna ulaşılmıştır. İncelenen çalışmalarda en çok kullanılan yöntemin nitel araştırma yöntemi olduğu görülmüştür. Her ne kadar AG'nin matematik eğitimindeki etkilerini belirlemek amacıyla deneysel yöntemleri kullanan çalışmalar olsa da, bu sayının halen yetersiz olduğu söylenebilir. Bu doğrultuda, deneysel çalışma sayısının artması AG kullanımının daha verimli bir şekilde

matematik eğitiminde kullanılmasını sağlayacağı söylenebilir. Çalışmalarda en çok tercih edilen örneklem grubunun ortaokul öğrencileri olduğu belirlenmiştir. Çalışmaların yapıldığı ülkeler incelendiğinde 27 farklı ülkede matematik eğitiminde AG kullanımına ilişkin bilimsel araştırma yapıldığı görülmüştür. En çok çalışma yapan ülkenin ise Meksika olduğu belirlenmiştir.

Bu araştırmada incelenen çalışmalarda en çok görüntü tabanlı AG türünün kullanıldığı görülmüştür. Çalışmalarda üzerine en çok odaklanılan alanların ise matematik ve geometri olduğu görülmüştür. Ayrıca çalışmalarda en çok bilişsel ve duyuşsal becerilerin birlikte incelendiği görülmüştür.

Matematik eğitiminde AG uygulamalarının geliştirilmesinde en çok kullanılan uygulamanın Unity3D, geliştirme kitinin ise Vuforia olduğu görülmüştür. Matematik eğitiminde AG teknolojisinin kullanıldığı araştırmaların incelendiği bu çalışmada, AG yönteminin geleneksel yöntemle göre daha etkili olduğu görülmüştür. AG'nin matematik eğitiminde kullanımının sağladığı avantajlar genel olarak öğrenme/akademik başarı, motivasyon ve tutum olarak özetlenebilir. Bunun yanında matematik dersinde AG kullanımının bazı dezavantajları da bulunmaktadır. Özellikle AG teknolojisinin geliştirme ve bakım faaliyetlerinin; zaman, para ve beceri bakımından maliyetli olması, kullanımda yaşanan aksaklıklar, kullanıcıların kullanmamak için direnç göstermesi ve özellikle kafaya takılan AG cihazlarında baş ağrısı ve göz yorgunluğu gibi sağlık problemlerinin oluşması dezavantajlar olarak sayılabilir.

Tartışma, Sonuç ve Öneriler

Araştırma sonucunda konferans bildirisi olarak yayınlanan çalışmaların makalelere göre daha fazla tercih edildiği görülmüştür. AG teknolojisine son yıllarda matematik eğitiminde ilginin arttığı; AG'nin motivasyon, akademik başarı ve tutum gibi değişkenler üzerinde geleneksel yöntemle göre daha etkili olduğu söylenebilir. Sonuç olarak matematikte AG kullanımına ilişkin araştırmaların incelendiği bu çalışma alanında bir ilk olması ve gelecekteki araştırmacılara rehber olabilmesi açısından önemlidir. Gelecekte yapılacak olan çalışmalarda matematik eğitiminde AG ile ilgili materyaller öğretim tasarımı açısından incelenebilir. Ayrıca matematikte öğrenme güçlüğü çeken öğrencilere yönelik AG destekli materyallerin etkisini inceleyen çalışmalar yapılabilir.

The Comparison of Turkish and Chinese Primary Math Teacher Education Programs

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Abstract

The aim of this study is to compare Turkey and China in terms of admission to primary math teacher education programs, the content of primary math teacher training programs and appointment to teaching post. Within the scope of this aim, document analysis method was used in the study. As data sources the websites of Ministry of Education, OECD, National Center on Education and Economy and articles on primary Mathematics teacher education systems and teacher education systems in general were used. The documents were examined in terms of conditions of admission to teacher education programs, the content of curriculum and the appointment to teaching post in Turkey and China. While choosing the countries, 2018 PISA Math results of China and Turkey were considered. According to the findings of the study it was concluded that although Turkey and China have some similarities in terms of conditions of admission to teacher education programs, the content of curriculum and the appointment to teaching post, there are also big differences between two countries. Accordingly, some suggestions are proposed especially for the Turkish teacher education system. Some of the suggestions are increasing the hours of practicum, having an interview before they are accepted to education programs, having an interview and a written exam in every five years after they are appointed to a teaching post.

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Introduction

Education is an essential part of human life and individuals have a wide variety of experiences throughout their education life. Moreover, their experiences have contributed to their personal development and also the development of the societies. Accordingly, Özoğlu (2010) stated that societies can only ensure economic development and prosperity and maintain their cultural existence by raising individuals who know their own value, respect different cultures, and renew themselves. To equip individuals with such kind of characteristics can be possible through different disciplines in education system. In this respect, the development of numerical skills that enable individuals to connect with other fields by using problem solving, reasoning, processing skills, numbers and operations among the knowledge, skills and attitudes that individuals should have, is within the field

of mathematics (Baykul, 2014). In this regard, it can be said that in Turkey those skills are tried to be fostered through mathematics curriculum from the first grade of primary to the fourth grade of high school. In other words, when the mathematics curriculum is considered, it is seen that those skills are within the scope of the mathematics course objectives across different grades. Although teaching mathematics has great importance and steps are taken to make math education better, various international reports, based on mathematics achievement of students in Economic Co-operation and Development (OECD) countries show that Turkey's rank is quite low (Ministry of Education [MoNE], 2003, 2005, 2010a, 2010b, 2011, 2014, 2015, 2016, 2017). Accordingly, it can be said that the education system, curriculum, family, teachers, teacher education programs, etc. are among the sources of student success (Malaty, 2006; Sahlberg, 2010; Simola, 2005). When the importance of teachers in students' success is considered, it can be said that teachers have important roles to enable students to have the necessary knowledge, skills, and attitudes and to be trained in the field of math as well. According to Bursalioglu (1994) teachers are the cornerstones of schools as a social system. In this context, teachers have a lot of responsibilities. To fulfill their responsibilities such factors as teachers' lifestyles, habits, and their psychological state have great importance. Besides, these characteristics of teachers have a great influence on students (Erdem, Gezer, & Çokadar, 2005).

In this respect it can be also stated that education of teachers has a great role on students' success as well. Despite education systems show variance from country to country and society to society, their common point is to identify the qualities of teachers. From this point of view, countries need to structure their teacher education and selection processes very well to have qualified teachers. All around the world, countries put great emphasis on the teacher education systems. Especially, in Finland being a teacher is considered to be a respectful profession (Ekinci & Öter, 2010). Similarly, in Holland and Japan in order to be a teacher, people need to have high qualifications (Ergun & Ersoy, 2014; Uçar & Uçar, 2004). According to Şişman (2001) although respectability of being a teacher varies from culture to culture, it is thought to be a sacred profession in all cultures. In Turkey, teaching which was considered to be high respectful profession in the early years of the Republic, started to lose its respectability as the number of teachers increased. Moreover, today, it is seen as a high-status profession for the people with low income; however, it is seen low-status profession for the people with high income (Özoğlu, 2010).

According to Külekçi and Bulut (2010), although there are differences between teacher education systems in societies, the conditions of admission to education faculties, the content of the education programs and the evaluation studies done afterwards should be examined. When the related literature is reviewed, it is seen that there a number of studies related to teacher education and selection system in different countries and there are also different studies related to the comparison of countries in terms of their teacher education and selection systems (Aras & Sözen, 2012; Arslan & Özpınar, 2008; Atanur Başkan, Aydın, & Madden, 2006; Ergun & Avcı, 2013; Sahlberg, 2010; Saylan, 2013). However, there is only one study about comparing primary math teacher education system in Turkey with the system of a country which is very successful at math in international exams (Erbilgin & Boz, 2013). In this respect, the aim of this study is to compare Turkey and China in terms of admission to primary math teacher education programs, the content of primary math teacher education programs, and appointment to a teaching post.

The development of mathematics skills is a phenomenon that should be prioritized by every country, and international exams, in this sense, are important for countries for countries to see their own situation. When 2018 PISA results are considered, China is on the top of the list (MoNE, 2019). On the other hand, Turkey is at the bottom of the list. Also, based on the overall PISA exam results, it can be said that Turkey's system of admitting candidates to teacher education programs and appointment to a teaching post have had some problems up to now. That the admission to teacher education program which is based on a central exam that does not evaluate teacher candidate's subject field is considered as a big problem for the teaching profession (Özoğlu, 2010). Moreover, despite

implementing different teacher education models, the teacher education system is still not as qualified as expected (Aykaç & Şahin, 2018). In this respect, in this study the following questions are answered:

1. What are the similarities/differences between China and Turkey in terms of admission to primary math teacher education programs?
2. What are the similarities/differences between China and Turkey in terms of primary math teacher education program content?
3. What are the similarities/differences between China and Turkey in terms of appointment to a teaching post?

In the light of these questions, to compare China and Turkey in terms of admission to primary mathematics teacher education programs, primary mathematics teacher education program content, and appointment to a teaching post has great importance in terms of improving the educational systems for qualified teachers by revealing their similarities and differences. It is thought that revealing similarities and differences can be a guide for countries where teacher education programs are similar to that of Turkey.

Method

Document analysis method was used in the study. Document analysis is the analysis of written documents about the phenomenon to be investigated (Yıldırım & Şimşek, 2018). In this research study, primary mathematics teacher education programs in China and Turkey were examined according to admission to primary math teacher education programs, primary math teacher education program content, and appointment to teaching post. While choosing the countries, 2018 PISA math results of China and Turkey were considered. According to PISA 2018 mathematics results China is on the top of the list. On the other hand, Turkey is at the bottom of the list (MoNE, 2019).

For document analysis the steps which were proposed by Forster (1995) were followed and they are presented in Table 1. Those are accessing the documents, checking the originality, understanding the documents, analysis, and using the data (cited in Yıldırım & Şimşek, 2018).

Table 1. *Steps for Document Analysis*

<i>Steps</i>	<i>Explanation</i>
1. Accessing the documents	• The websites of Ministry of Turkish Education, OECD, National Center on Education and Economy • Articles on primary Mathematics teacher education systems and teacher education systems in general
2. Checking the originality	• Whether the data are relevant to the research, • Access to primary resources • By whom they are developed
3. Understanding the documents	• Comparative analysis of the documents by considering the questions to be answered
4. Data analysis	• Determination of categories and units of analysis: • Conditions for admission to primary math teacher education programs • Courses being compulsory or elective and their credits for content of primary math teacher education programs • Conditions for appointment to primary math teacher education post
5. Using the data	• Nobody will be harmed or will benefit from the use of documents • Correct interpretation of documents

As it is seen in Table 1, first of all, an answer was sought for the question of whether there is a real need for documents in the research and if necessary, what kind of documents are needed. In this respect, as data sources the websites of Ministry of Turkish Education, OECD, National Center on Education and Economy and articles on primary Mathematics teacher education systems and teacher education systems in general were used. In terms of originality of documents, whether the data covered by the documents are related to the research, whether access to primary sources is provided, by whom they developed it etc. have been taken into account. Then, in terms of understanding and analyzing the data, the documents were analyzed comparatively by taking into account the questions to be answered within a certain system. In the analysis of the data, firstly the categories were determined. Those categories are admission to primary math teacher education programs, content of primary math teacher education programs, and appointment to primary math teacher education post. Then, the analysis unit was determined. Conditions were taken into consideration for admission to primary math teacher education programs. For the content of primary math teacher education programs, whether the courses are compulsory or elective were also taken into consideration. Lastly, the conditions to be appointed a to primary math teacher education post were taken into consideration. In order to provide reliability, data were checked by two researchers. Accordingly, the reliability was calculated according to Miles and Huberman formula (Miles & Huberman, 1994) and it was found .87. In terms of using the data, it has been important that nobody has been harmed or benefited from using the documents and that they are interpreted correctly. In the light of all the steps, teacher education systems in terms of admission to primary math teacher education programs, content of the teacher education programs and appointment to a teaching post in China and Turkey were examined.

Results

Findings Related to Admission to Primary Math Teacher Education Programs in Turkey and China

Findings gathered from conditions of admission to primary math teacher education programs in Turkey and China are presented in Table 2.

Table 2. *Comparisons of Admission to Primary Math Teacher Education Programs in Turkey and China*

<i>Country</i>	<i>Conditions</i>
Turkey	High school graduate
	Basic proficiency test
	Higher Education Institution Exam
China	High school graduate
	National exam
	Conditions show variance according to the parts of China

As it is seen in Table 2, first students need to graduate from high school and then, they need to take a central exam in order to be a primary math teacher in Turkey. On the other hand, although China has a local system, in order to be admitted to a teacher education program, every student needs to graduate from high school and then they need to take a national exam. To be a primary mathematics teacher, conditions show variance according to the parts of China.

Findings Related to Content of Teacher Education Programs

Findings related to content of primary math teacher education programs in Turkey and China are presented Table 3.

Table 3. *Comparisons of Structure of Primary Math Teacher Education Programs in Turkey and China*

Country	Type of school	Courses		Credits
Turkey	Faculty of education	Compulsory courses	Major courses	57
			Education courses	38
			General culture courses	19
		Elective courses	Major elective	12
			Education elective	12
			General culture elective	8
China	Show variance according to the parts of China	Compulsory courses	General course	45
			Major course	88
			Education course	11
		Elective courses	Major elective	21
			General elective	10

According to Table 3, in terms of the curriculum structure of primary Mathematics teacher education program, in Turkey there are 50 compulsory courses and 16 elective courses in the curriculum published in 2018. Both compulsory and elective course are divided into major courses, education courses and general culture courses. Basis of math 1, 2, history of math, analysis 1, 2, abstract math and etc. are the major courses. Educational psychology, educational philosophy, teaching technologies, and etc. are the education courses. Moreover, information technologies, foreign language 1, 2, Turkish, and etc. are the general culture courses. There is also a practicum dimension within the scope of primary mathematics teacher education program. Students are supposed to take those courses to be a teacher at primary level. On the other hand, the curriculum in China is divided into three parts as compulsory courses electives, general culture courses, major courses, education courses, and practicum (Chai, 2001; Chen, 2004). Moreover, compulsory courses are classified as general course, major course, education, and practice course. Elective courses are classified as major elective and general elective courses. English, sports, politics, law, computer, and etc. are compulsory general courses; a number of math course are compulsory major courses; education and pedagogy, psychology, educational technology, and etc. are education courses. For the elective courses school math, using IT for teaching, math, history, and etc. are the major elective courses; art, music and etc. are the general elective courses.

In terms of the credits of the courses in Turkey within the scope of compulsory courses, major courses have 57 credits, education courses have 38 credits, general culture course has 19 credits; as for elective courses, major elective courses have 12 and educational elective courses have 12, and general culture electives have 8 credits. Besides in China, within the scope of compulsory courses general course has 45 credits, major course has 88 credits, education course has 11 credits; as for elective courses major elective course has 21 credits, and general elective course has 10 credits.

Moreover, in Turkey, students need to be admitted to a faculty of education in order to be a primary math teacher. However, in Shanghai, they need to be admitted to a college (National Centre for Entrepreneurship in Education [NCEE], 2015). That is, in Turkey, students need to complete 4-year BA education; on the other hand, in China there are three different teacher education programs to be a teacher at primary or secondary school. These are Junior College, Undergraduate, and Masters. To become a teacher at primary school or junior, students take the courses at Junior College program.

Moreover, in Hong Kong, there are four big institutions serving for teacher education. These institutions present teacher education programs specialized in the field of math and science (Leung, et al., 2015; cited in Barış & Hasan, 2019).

Moreover, the primary math curriculum of Turkey and China has practicum dimensions. In Turkey, this course has 10 credits; however, in China it has 6 credits. Also, In China experimental teaching, teaching at primary schools under observation, conducting educational surveys, and probation are within the scope of teaching practice (Drewitz, 2009). Moreover, in Turkey, the practicum course is offered in the 4th year; it is also offered in the 4th year in China.

Findings Related to Appointment to a Teaching Post

In terms of appointment to a teaching post, in Turkey, students need to take a test called Public Personnel Selection Examination (KPSS). This is a two-staged test. In the first stage, students are supposed to answer multiple choice questions related to basic courses such as Turkish, Math, History, and etc. In the second stage, students are expected to answer questions related to subject matter knowledge. Based on the scores of the KPSS, people are called for interview (Kabaran & Görgen, 2016). On the other hand, in China, there is also a national exam; however, after taking the national exam the appointment to a teaching post shows variance from state to state. For example, in Hong Kong the teachers should apply to Bureau of Education in order to work at a school (NCEE, 2015).

Discussion, Conclusion and Implications

In this research study, Turkish and Chinese primary math teacher education programs were investigated according to their criteria for admission to teacher education programs, the content of the teacher education programs, and appointment to a teaching post. To start with, in Turkey, education faculties are responsible for teacher training. In order to be a primary math teacher, students are supposed to be high school graduates and they need to take the university entrance exam. That is, students in Turkey must take a two staged university entrance exam after they completed their high school education. This exam is held by the Center for Evaluation, Selection, and Placement (ÖSYM). All high school students are supposed to take the first stage which is a basic proficiency test. The students who want to be teachers are supposed to take the second stage of the exam which is called Higher Education Institutions Exam (Council of Higher Education [YÖK], 2018). This exam is the only criteria to be accepted to the programs in faculty of education in each university. However, in China, the conditions of being a primary math teacher shows difference according to each state. The common condition in all states is that there is a national exam which each student needs to take. Moreover, students need to graduate from high school successfully. Except these conditions, educational institutions can conduct their own exams. When both countries conditions are considered, it can be said that there are similarities between the conditions; however, for example, in Hong Kong, in order to be admitted to a teacher education program, students are supposed to take different exams which are practical in different subjects. Besides they need to have an interview to evaluate both their English and Chinese fluency and also their ability of teaching technique. On the other hand, in Shanghai, students need to graduate from high school successfully and take some exams as well. Their language skills are also tested. Moreover, Shanghai students need to attend an interview (Orakçı, 2015). This helps choose students who are more suitable for teaching to be enrolled in teacher education programs. The study conducted by Delibaş (2007) revealed that in Turkey, selection of teacher candidates is a narrow-scoped process compared to England, German, and Finland biology teacher education programs. It is further suggested that the teacher candidates should be interviewed and take psychiatric tests and attitude scales before they are admitted to a faculty of education. Contrary to Delibaş (2007), Erarslan (2009) stated that as the number of students who take university entrance exam is high in Turkey, it is not practical to implement interviews or such kind of techniques.

Another important point for this study is the structure of primary math programs. Both in Turkey and in China, there are education courses, major courses, and general courses. However, their credits differ from each other. The credits of the major courses in China ($N = 88$) are higher than the credits of them in Turkey ($N = 57$). For education courses, the credits in Turkey are higher ($N = 38$) than in China ($N = 11$). As for, general courses in China the credits are higher ($N = 45$) than in Turkey ($N = 19$). As for elective courses in Turkey ($N = 12$) the number of credits for major elective courses are less than in China ($N = 21$). On the other hand, the credits of education electives in Turkey ($N = 12$) are higher than in China ($N = 10$). Also, different from China, in Turkey there are general elective courses that have 8 credits. Considering the differences between the credits of two countries, it can be said that the focus in the program is more on major courses and general courses contrary to Turkey. However, in Turkey the focus is more on education courses. This difference might depend on the conditions of admission to teacher education programs. That is, in China, before students are admitted to the teacher education programs, their characteristics are also evaluated during the interviews. This means that, to what extent they are suitable for the job is evaluated - which is related to education knowledge. However, in some studies, it was found out that the most necessary knowledge for a candidate teacher is pedagogical knowledge (Even, 1993; Hill Ball, & Schilling, 2008). Moreover, in a study about math programs, it was found that the number of pedagogical courses is less (Erbilgin & Boz, 2013). Also, in a different study about the math teacher education program in Finland, it is suggested that the courses about how math is thought should be increased (Malaty, 2008).

Practicum courses are also a crucial part for all teacher education programs. When Turkey and China are compared in terms of practicum credits, it is seen that in Turkey ($N = 10$), its credits are more than in China ($N = 6$). Considering the practicum courses in both countries it can be said that the credits spared for this course are not enough. It is important for teachers to implement what they learn into the classroom environment. Hence, the more time spared for the practicum, the more chance the teacher candidates have practice their teaching skills. Moreover, in both countries, teacher candidates take this course only in their last year. However, the study of Erarslan (2009) suggested that courses like practicum should be across different years in the undergraduate education. This can be seen as a disadvantage for both countries.

The appointment to a teaching position in Turkey and China also differs. The procedures to be appointed to a teaching post are the same in all parts of Turkey. However, in China, they differ from state to state but all teacher candidates need to take a national exam. KPSS exam is the first criteria in Turkey. To be a primary math teacher candidate, he/she is supposed to get the required score from the exam and they take an interview. The candidates called for the interview need to get 60 points to be appointed to a teaching position. In China, there is a national exam; however, the procedures also show variance state to state. There is a separate exam for pre-school, primary, secondary, and vocational schools (OECD, 2016). However, based on the state, they also need to have other qualifications to be appointed to a position. For example, in Hong Kong, the teachers should apply to Bureau of Education in order to work at a school (NCEE, 2015). These teachers have teaching qualification at the end of teacher education program. Moreover, *permitted teachers* are the ones who meet the minimum education requirements but do not have formal education become teachers. When the permitted teachers complete their in-service training, they become registered teachers (NCEE, 2015). Moreover, in China, there is a renewal process of teachers' qualification certificate. Every primary math teacher as other primary and secondary school teachers should re-register for qualification certificate in every five years (OECD, 2016). Otherwise, the teacher cannot maintain the teaching position. Considering the differences, it can be said that the content of national exam in China show variance according to the level that the teacher teaches. However, in Turkey all teacher candidates who teach different levels take the same exam.

To sum up, it was concluded that Chinese system is prominent in terms of admission to an education faculty in order to be a primary math teacher. It can be said that being fluent in English and Chinese as

criterion to be accepted to a faculty of education is a strength of Chinese system. As communication skills are really important, in teaching people who are good at communication should choose this profession. Moreover, being fluent in English helps teacher candidates to be a math teacher all around the world easily as English is the common language in most of the countries. Moreover, as the credits of major courses are less in Turkey, and the focus is on major courses in China, the teacher candidates are more equipped with their subject field. Therefore, it can be said that they are more qualified and knowledgeable and this can also be seen as a prominent part of the Chinese system.

Moreover, the content of the exam shows difference based on the grade that a teacher teaches. So, it is better to have more qualified teachers as they are evaluated according to their level of teaching. Also, the renewal process in China can be evaluated as lifelong learning. That is, teachers should always improve themselves to maintain in their positions. However, in Turkey after teachers are appointed to a school, there is nothing to force them to improve themselves. To sum up, although there are some similarities between Turkey and China, they show great difference especially in terms of appointment to a teaching position and admission to a teacher education institution. It can be said that the differences which has significant advantages for a more qualified system in China can be taken as model in Turkey.

This study is limited to the comparison of Turkish and Chinese primary math teaching programs in terms of admission to a teacher education institution, appointment to a teaching post, and content of primary math teaching programs. Moreover, it is also limited to the websites of Ministry of Turkish Education, OECD, National Center on Education and Economy and articles on primary Mathematics teacher education systems and teacher education systems in general. In the light of findings of this study, some suggestions were proposed. Firstly, as an admission criterion to a teacher education institution, interviews can be made with the students besides the national exam in Turkey. This way, students who are more suitable for the teaching profession can be accepted. Moreover, the hours of practicum courses can be increased and offered not only during the 4th year but also across different years in the program so that the students can have a chance to practice their profession more before they graduate. Also, the content of the KPSS exam can differ according to the level at which the teacher candidates teach. This way, the scores of the students can be more reliable and they can be appointed to a teaching position. Furthermore, there can be a renewal process of teachers' qualification certificates in Turkey as well by using written exams and interviews. Moreover, in order to express themselves in international context and work in abroad, having a high level of English proficiency can be advantageous for teacher candidates. Accordingly, the qualifications of primary math teachers can always be improved, and this can also increase the success of the students.

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**TÜRKÇE GENİŞ ÖZET****Türkiye ve Çin'in İlköğretim Matematik Öğretmen Eğitimi Programlarının Karşılaştırılması****Giriş**

Eğitim, insan hayatının vazgeçilmez bir parçasıdır. Bireyler eğitim hayatları boyunca çok çeşitli yaşantılar edinmektedir. Bireylerin bu yaşantıları kazanmalarında öğretmenler önemli bir role sahiptir. Özoğlu'na (2010) göre toplumlar ekonomik kalkınmayı, refahı ve kültürel varlıklarını devam ettirmeyi ancak kendi değerini bilen, farklı kültürlerle saygılı ve kendini yenileyen bireyler yetiştirerek sağlayabilmektedir. Bireylere bu gibi farklı ve gerekli özellikler kazandırmak ise eğitim sistemimiz içerisinde farklı disiplinler yoluyla sağlanmaktadır. Bu bağlamda bireylerin sahip olmaları gereken bilgi, beceri ve tutumlar arasında yer alan problem çözme, akıl yürütme, işlem becerisi, sayı ve işlemleri kullanarak diğer alanlarla da bağını kurmayı sağlayan sayısal becerilerin geliştirilmesi matematiğin alanına girmektedir (Baykul, 2014). Bu duruma bağlı olarak Türkiye'de bu becerilerin ilköğretim birinci sınıftan lise dördüncü sınıfa kadar matematik dersi programlarıyla geliştirilmeye çalışıldığı söylenebilir. Başka bir ifadeyle, matematik dersi programları düşünüldüğünde bu becerilerin farklı sınıflarda matematik dersi hedefleri kapsamında yer aldığı görülmektedir (Millî Eğitim Bakanlığı [MEB], 2018). Matematik programlarını geliştirmeye yönelik farklı adımlar atılmasına rağmen, çeşitli uluslararası raporlar, Türkiye'deki öğrencilerin matematik başarılarının İktisadi İşbirliği ve Geliştirme Teşkilatı (Economic Co-operation and Development [OECD]) ülkelerine göre oldukça düşük olduğunu ortaya koymaktadır (MEB, 2003, 2005, 2010a, 2010b, 2011, 2014, 2015, 2016, 2017).

Öğrenci başarısının kaynakları göz önünde bulundurulduğunda eğitim sistemi, öğretim programı, aile, öğretmen vb. faktörlerin (Eraslan, 2009) yanı sıra öğretmen yetiştirme programının da büyük öneme sahip olduğu görülmektedir (Malaty, 2006; Sahlberg; 2010, Simola, 2005). Öğretmenler sosyal bir sistem olan okulların en temel taşıdır (Bursalıoğlu, 1994) ve öğrencilere gerekli olan bilgi ve becerileri kazandırmada öğretmenlere büyük görevler düşmektedir. Bu bağlamda, öğretmenlerin mesleklerini iyi bir şekilde yerine getirebilmelerinde yaşam şekilleri, alışkanlıkları, psikolojileri, düşünceleri gibi faktörler büyük önem taşımaktadır. Ayrıca öğretmenlerin bu özellikleri öğrencileri de önemli ölçüde etkilemektedir (Erdem, Gezer, & Çokadar, 2005). Bu bağlamda öğretmenlerin ne kadar iyi eğitildiğinin de öğrencilerin başarısı üzerinde etkili olduğu söylenebilir. Her ne kadar eğitim sistemleri toplumdan topluma farklılıklar gösterse de tüm sistemlerin ortak olarak paylaştıkları noktanın öğretmen niteliklerini belirlemek olduğu söylenebilir. Buradan hareketle toplumların nitelikli öğretmen yetiştirebilmeleri için öğretmen yetiştirme ve seçme sistemlerini çok iyi yapılandırmaları gerekmektedir. Dünyada birçok ülke öğretmen yetiştirmeye büyük önem vermektedir. Özellikle Finlandiya'da öğretmenlik, yüksek yeterlilikler gerektiren saygın bir meslek olarak görülmektedir (Ekinci & Öter, 2010). Benzer şekilde Japonya ve Hollanda gibi ülkelerde öğretmenlik yüksek yeterliliklerin yerine getirilmesiyle edinilen bir meslektir (Uçar & Uçar, 2004; Ergun & Ersoy, 2014). Şişman'a (2001) göre öğretmenlik mesleğinin saygınlığı kültürden kültüre göre değişse de tüm kültürlerde öğretmenlik kutsal bir meslek olarak görülmüştür. Fakat ülkemizde Cumhuriyetin ilk yıllarında statüsü yüksek bir meslek olarak görülen öğretmenlik, zaman içerisinde öğretmen sayısı

arttıkça statüsünü kaybetmeye başlamıştır. Günümüzde öğretmenlik mesleği alt gelir düzeyine sahip insanlar için yüksek statülü, üst gelir düzeyine sahip insanlar için ise düşük statülü bir meslek olarak görülmektedir (Özoğlu, 2010). Külekçi ve Bulut'a (2010) göre toplumlardaki öğretmen yetiştirme sistemleri farklılıklar göstermekle birlikte; eğitim fakültelerine kabul şartları, eğitim programlarının içeriği ve öğretmenliğe atanmaya yönelik çalışmaların incelenmesi gerekmektedir. Bu bağlamda, alan yazında farklı ülkelerdeki öğretmen seçme ve yerleştirme sistemlerini inceleyen ve ülkelerin sistemleri arasında karşılaştırma yapan birçok araştırmaya rastlanmıştır (Aras & Sözen, 2012; Arslan & Özpınar, 2008; Atanur Başkan, Aydın, & Madden, 2006; Sahlberg, 2010; Saylan, 2013). Fakat ilköğretim matematik alanı özelinde Türkiye'deki öğretmen seçme ve yerleştirme sistemini uluslararası sınavlarda matematik başarıları yüksek olan ülkelerdeki öğretmen seçme ve yerleştirme sistemiyle kıyaslayan tek bir çalışmaya rastlanmıştır (Erbilgin ve Boz, 2013).

Matematik becerilerinin geliştirilmesi, her ülkenin ön planda tutması gereken bir olgu olup uluslararası sınavlar da ülkelerin kendi durumlarını görmeleri bağlamında önem arz etmektedir. PISA için düşünüldüğünde ise Çin PISA 2018 matematik alanı sonuçlarına göre başarı anlamında listenin en üst sırasında yer alırken Türkiye matematik başarıları anlamında listenin alt sıralarında yer almıştır. Türkiye'nin genel olarak PISA sınav sonuçları sıralamasında da geride kalmasının önemli nedenlerinden birinin de öğretmen seçme ve yetiştirme sistemimizdeki bazı sorunlardan kaynaklı olduğu söylenebilir. Bu bağlamda bu çalışmada aşağıdaki sorulara cevap aranmıştır:

1. İlköğretim matematik öğretmen eğitimi programlarına kabul koşulları açısından Türkiye ve Çin'deki benzerlik ve farklılıklar nelerdir?
2. İlköğretim matematik öğretmenliği lisans programı içerikleri açısından Türkiye ve Çin'deki benzerlik ve farklılıklar nelerdir?
3. İlköğretim matematik öğretmenliğine atanma koşulları açısından Türkiye ve Çin'deki benzerlik ve farklılıklar nelerdir?

Bu sorular ışığında, listenin en başında yer alan ülke olan Çin ve listenin alt sıralarında yer alan Türkiye'nin Matematik öğretmeni yetiştirme programları açısından karşılaştırılması; benzerlik ve farklılıklarının ortaya konulması öğretmen yetiştirme sistemimizin iyileştirilmesi açısından büyük öneme sahip olarak görülmektedir. Benzerlik ve farklılıkların ortaya konmasının, öneriler geliştirme bağlamında, öğretmen eğitimi programları Türkiye'dekine benzer olan ülkeler için de yol gösterici olabileceği düşünülmektedir.

Yöntem

Araştırmada doküman analizinden yararlanılmıştır. Doküman analizi, araştırılacak olguyla ilgili yazılı belgelerin analizi olarak tanımlanmaktadır (Yıldırım & Şimşek, 2018). Bu bağlamda bu çalışmada Forster (1995) tarafından doküman incelemesi için ortaya konan dokümanlara ulaşma, orijinalliyi kontrol etme, dokümanları anlama, veriyi analiz etme ve veriyi kullanma adımları izlenmiştir (akt., Yıldırım & Şimşek, 2018). Bu bağlamda öncelikle araştırmada gerçekten dokümanlara ihtiyaç olup olmadığı ve gerekiyorsa ne tür dokümanlara ihtiyaç duyulduğu sorusuna yanıt aranmış ve Türkiye Millî Eğitim Bakanlığı, OECD, Ulusal Eğitim ve Ekonomi Merkezi web siteleri, ilköğretim matematik öğretmen yetiştirme sistemleri ve genel olarak öğretmen yetiştirme sistemleri hakkındaki makalelerden kullanılmıştır. Dokümanlarının orijinalliyi bağlamında ise dokümanların kapsadıkları verilerin araştırmayla ilgili olup olmadığı, birincil kaynaklara erişimin sağlanıp sağlanmadığı, kimler tarafından geliştirdikleri vb. dikkate alınmıştır. Ardından dokümanların anlaşılıp çözümlenmesi bağlamında dokümanların anlaşılması aşamasına gelinmiştir. Dokümanlar belirli bir sistem dâhilinde cevap aranacak soruları dikkate alarak karşılaştırılmalı olarak çözümlenmiştir. Verilerin analizi aşamasında ise öncelikle kategoriler belirlenmiştir. Bu kategoriler, öğretmen yetiştirme programlarına kabul koşulları, program içeriği ve öğretmenliğe atanma koşullarıdır. Ardından analiz biriminin saptanması gerçekleştirilmiş ve ilköğretim matematik öğretmenliği lisans programına kabul koşulları dikkate alınmıştır. Derslerin içeriği bağlamında ise seçmeli ya da zorunlu olmaları göz önünde

bulundurulmuştur. Son olarak da öğretmenliğe atanma koşulları dikkate alınmıştır. Verilerin kullanılması bağlamında da dokümanları kullanmaktan kimsenin zarar/çıkar görmemesi ve doğru yorumlanması önemli olmuştur.

Bulgular

Araştırmadan elde edilen bulgulara göre, ilköğretim matematik öğretmenlik programlarına kabul açısından Türkiye’de öğrencilerin liseyi bitirmeleri ve ardından Öğrenci Seçme ve Yerleştirme Merkezi tarafından uygulanan iki aşamalı bir sınava girmeleri gerekmektedir. Çin’de de benzer şekilde öğrencilerin başarılı bir şekilde liseden mezun olmaları ve ardından ulusal bir sınava girmeleri gerekmektedir. Öte yandan, Çin’de Türkiye’den farklı olarak öğretmenlik programlarına kabul eyaletten eyalete farklılık göstermektedir ve öğretmenlik programlarının ulusal sınav ile lise mezuniyet şartı dışında, mülakat gibi farklı kabul koşulları bulunmaktadır. Ayrıca tüm öğrenciler İngilizce ve Çince iletişim becerileri açısından da test edilmektedir. Öğretmenlik programlarının içeriği açısından iki ülke karşılaştırıldığında ise, her iki ülkenin programında da meslek bilgisi, alan bilgisi ve genel kültür bilgisi derslerinin olduğu görülmektedir. Bu dersler dışında yine her iki ülkenin programında seçmeli dersler yer almaktadır. Öğretmenlik uygulama dersleri açısından bakıldığında ise, her iki ülkede de öğrencilerin son sınıfta uygulama dersini aldıkları göze çarpmaktadır. Krediler açısından bakıldığında ise, Türkiye’de uygulama derslerine ayrılan kredi 10 iken; Çin’de ayrılan kredinin 6 olduğu görülmektedir. Öğretmenliğe atanma koşulları açısından da Türkiye’de lisans eğitimini bitiren öğretmen adaylarının Kamu Personeli Seçme ve Yerleştirme sınavına girip ilköğretim matematik öğretmeni olabilmek için gerekli puanı almaları ve ardından mülakata girmeleri gerekmektedir. Öte yandan, Çin’deki öğretmen atama sistemine bakıldığında ise öğretmen adaylarının ulusal bir sınava girme zorunluluğu olduğu görülmektedir. Ulusal sınava giren öğretmen adayları ardından eyaletlere göre değişen öğretmen atama ölçütlerini karşılayarak öğretmenlik mesleğine atanmaktadır. Bununla birlikte öğretmenlerin mesleklerine devam edebilmeleri için her beş yılda bir öğretmenlik sertifikalarını yenilemeleri gerekmektedir.

Tartışma, Sonuç ve Öneriler

Bu araştırmada Türkiye ve Çin’deki ilköğretim matematik öğretmenliği lisans programına kabul koşulları, program içerikleri ve öğretmenliğe atanma ölçütleri incelenmiş ve bu doğrultuda şu sonuçlara varılmıştır. Öncelikle, Türkiye’de öğretmen yetiştirmekten sorumlu kurumlar üniversiteler bünyesindeki eğitim fakülteleridir. Öğretmenlik fakültelerine kabul koşulları açısından, ilköğretim matematik öğretmeni olabilmek için öğrencilerin lise mezunu olmaları ve üniversiteye giriş sınavına girmeleri gerekmektedir. Ancak Çin’de ilköğretim matematik öğretmeni olmanın koşulları her eyalete göre farklılık göstermektedir. Tüm eyaletlerdeki ortak koşul, her öğrencinin girmesi gereken ulusal bir sınav olması ve liseden başarıyla mezun olmaları gerekliliğidir. Bu koşullar dışında Çin’de eğitim kurumları kendi sınavlarını yapabilmektedir ve öğrenciler öğretim yöntemleri ve dil becerileri açısından da değerlendirilmektedir. Bu bağlamda, iletişim becerilerinin öğretmenlik mesleği açısından önemli olması ve iletişimde iyi olan, İngilizce ve Çinceyi akıcı bir şekilde konuşan kişilerin bu mesleğe daha uygun görülmesi Çin öğretmen yetiştirme sisteminin güçlü yönüdür. Dahası, İngilizceyi akıcı bir şekilde bilmeleri, öğretmen adaylarının dünyanın her yerinde kolayca matematik öğretmeni olarak iş bulmalarına yardımcı olabilir. Türkiye’ye göre bu tür farklılıklar öğretmenlik mesleğine daha uygun öğrencilerin öğretmen yetiştirme programlarını seçmelerine yardımcı olmaktadır. Delibaş (2007) tarafından yapılan araştırma, Türkiye’de öğretmen yetiştirme sürecinin İngiltere, Almanya, Finlandiya biyoloji öğretmeni yetiştirme programlarına göre daha dar kapsamlı olduğunu ortaya koymuştur. Ayrıca Delibaş (2007), öğretmen adaylarının eğitim fakültesine kabul edilmeden önce görüşme, psikiyatrik testler ve tutum ölçekleri yoluyla da değerlendirilmesini önermiştir. Delibaş’ın (2007) aksine Erarslan (2009), Türkiye’de üniversite giriş sınavına giren öğrenci sayısının fazla olması nedeniyle mülakat ya da benzeri tekniklerin uygulanmasının pratik olmadığını belirtmiştir.

Araştırmada vurgulanan bir diğer önemli nokta ise matematik programlarının içeriğidir. Her iki ülkedeki matematik öğretmenliği programında genel kültür, alan bilgisi, meslek bilgisi ve seçmeli dersler yer almasına rağmen, ders kredileri bağlamında farklılıklar olduğu sonucuna ulaşılmıştır. Başka bir ifadeyle, Türkiye’deki ilköğretim matematik programında meslek bilgisi dersleri daha fazla krediye sahipken, Çin’de alan bilgisi ve genel kültür derslerinin kredilerinin daha fazla olduğu görülmüştür. Çin’de alan bilgisi daha fazla derslerine odaklanması, konu alanı anlamında aday öğretmenlerin daha donanımlı yetiştiklerinin bir göstergesi olarak ele alınabilir. Fakat öğretmen eğitimiyle ilgili yapılan bazı çalışmalar öğretmen adayları için en gerekli olan bilginin meslek bilgisi dersleri olduğunu ortaya koymaktadır (Even, 1993; Hill, Ball, & Schilling, 2008). Türkiye’deki matematik öğretmenliği programına yönelik yapılan bir çalışmada ise programdaki pedagoji derslerinin yeterli olmadığı sonucuna varılmıştır (Erbilgin ve Boz, 2013). Uygulama derslerinin öğretmen yetiştirme programlarındaki en önemli dersler olduğu düşünüldüğünde her iki ülkede de uygulama derslerinin sadece son sınıf öğrencileri tarafından alınması her iki programın da bir eksiği olarak ele alınabilir. Bu bağlamda, öğretmenliğin sınıf ortamında deneyimlenerek ilerlenen bir meslek olduğu düşünülürse uygulama derslerinin, farklı sınıf kademelerinde ve programda daha fazla yer ayrılarak yürütülmesi gerektiği söylenebilir.

Öğretmenliğe atanma koşulları açısından ise her iki ülkede benzer olduğu kadar farklı uygulamalar olduğu göze çarpmaktadır. Türkiye’de matematik öğretmeni olarak atanmak için öğretmen adaylarının ilk olarak kamu personeli sınavına girdikleri, sınavda yüksek sıralamaya sahip oldukları takdirde ise mülakata tabi tutuldukları görülmektedir. Mülakattan 60 ve üzeri alan öğretmen adayları ise puanlarına göre atandıkları şehirlerde öğretmenlik mesleğine başlamaktadır. Çin’de ise benzer şekilde tüm öğretmenlerin girmesi gereken ulusal bir sınav vardır. Türkiye’deki sınavdan farklı olarak öğretmen adayları, ilköğretim matematik öğretmenliğine yönelik bir sınava tabi tutulmaktadır (OECD, 2016). Aynı zamanda, Çin’de ulusal bir sınav olmasına rağmen öğretmenlerin mesleğe başlayabilmeleri için eyaletler arasında başvurdıkları kurumlara girebilmeleri için farklı ölçütleri de karşılamaları gerekmektedir. Ayrıca yine Türkiye’den farklı olarak mesleğe devam edebilmeleri için her beş yılda bir öğretmenlik sertifikalarını yenilemeleri gerekmektedir (OECD, 2016). Bu durumun öğretmenlerin profesyonel gelişimleri açısından büyük öneme sahip olduğu söylenebilir.

Tüm bu bulgular ve sonuçlar ışığında Türkiye’de daha nitelikli matematik öğretmeni yetiştirme için bazı öneriler geliştirilmiştir. Öncelikle öğretmenliğe kabul koşulları açısından ulusal olarak yapılan sınava ek olarak öğrencilerin öğretmenlik mesleğine ne ölçüde uygun olduklarını değerlendiren bir mülakat yapılabilir. Bu sayede mesleğe daha uygun kişilerin bu mesleğe yönelmesi sağlanabilir. Ayrıca uygulama derslerinin sayısı arttırılarak ve lisans eğitimi boyunca her dönem öğrencilerin uygulama dersi almaları sağlanarak öğrencilere mezun olmadan önce mesleklerini daha fazla deneyimleme fırsatı verilebilir. Bununla birlikte KPSS sınavının içeriği öğretmen adaylarının alanlarına ve ders verecekleri sınıf seviyesine göre farklılık gösterebilir. Çin’dekine benzer olarak öğretmenler her beş yılda bir yeterliliklerini göstermeleri için alanları ile ilgili sözlü ve yazılı olarak değerlendirilebilirler. Ayrıca öğretmen adaylarının kendilerini uluslararası bağlamda ifade edebilmeleri ve yurt dışında da iş bulabilmeleri için yüksek seviyede İngilizce yeterliliğe sahip olmaları onlara büyük avantaj sağlayabilir.



Examining Teachers' Perceptions on Empowerment According to Various Variables*

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Abstract

The purpose of the study was to determine the perceptions of teachers regarding their empowerment and whether these perceptions differ significantly depending on their gender, age, branch, professional seniority, length of service at their school, education status, union membership, and the size of the number of students present at the school. In this study, teacher empowerment was considered to ensure teachers' professional development, increase their status, ensure their trust in their organizations, and increase cooperation among organization members. Four hundred forty-one teachers working in the public secondary schools in Denizli Merkezefendi and Pamukkale district participated in this quantitative study carried out during the 2019-2020 academic year. The data of the research were collected with the "Teacher Empowerment Scale." The survey results showed that teachers' perceptions of teacher empowerment, status, trust, and cooperation were high, and their perception of professional development was very high. Accordingly, teachers perceive their status as lower than other dimensions of teacher empowerment. There was no statistically significant difference in the teachers' perceptions regarding their empowerment according to their gender, branch, educational status, and union membership. The age of the teachers was between 31-40 and 6-15 years of teaching experience.

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Introduction

Empowerment in the literature started to emerge towards the 1980s (Edwards, Green, & Lyons, 2002). While empowerment was used together with the concepts of employee participation, participatory decision making, and self-management in the 1980s, it was considered as a tool to liberate employees, encourage them to be more innovative, and make them happier and more

* This study is based on Yeliz Özkan Hıdıroğlu's Doctoral thesis titled: "The effect of powering teachers on organizational commitment, professional commitment and organizational citizenship in schools" at Pamukkale University, Department of Educational Sciences, under the supervision of Prof. Dr. Abdurrahman Tanrıöğen.

productive individuals after the 1990s (Davidson & Martinsons, 2002). Therefore, teacher empowerment can be considered a new field of study. With the beginning of determining the necessary skills in the 21st century, it becomes crucial to determine the necessary skills to empower and empower the teachers in this age and eliminate their deficiencies.

In this study, teacher empowerment was considered to ensure teachers' professional development, increase their status, ensure their trust in their organizations, and increase cooperation among organization members. Along with the developing and changing conditions, teachers' opportunity structures, powers, and psychologies should be guided in line with changes. For this reason, teacher empowerment is an issue that requires research and is thought to be up to date as long as there is change.

The complete changes in education continue to occur in the 21st century. Teachers are one of the essential factors in such changes (Fandiño, 2010). Teachers have significant responsibilities in protecting civilization, developing culture, transferring it to young generations, strengthening society's beliefs and value judgments, gaining awareness of development and development as social awareness, and establishing the democratic social order. In the 2023 Education Vision Program of the Ministry of National Education, it is planning to carry out initiating the teaching profession specialization program in order to support and empower teachers, structuring the horizontal and vertical career steps of teachers, structuring graduate professional development programs for teachers, restructuring pre-service education at universities, supporting teachers with physical and digital materials, improving wages of paid teachers, preparatory work on the establishment of an incentive mechanism for teachers and school administrators who work under unfavorable conditions and the enactment of a teaching profession law. Empowering teachers, ensuring their managerial progress, and continued promotion are essential for their performance in school. It is crucial to determine teachers' perceptions of empowerment and their demographic characteristics.

The results of empirical research show that teacher empowerment generally plays a positive role in educational settings. For example, researchers state that teacher empowerment can increase teachers' job satisfaction (Rice & Schneider, 1994; Rinehart & Short, 1994), professional commitment and organizational citizenship behaviors (Bogler & Somech, 2004), organizational commitment (Somech, 2005), sense of professionalism and self-confidence (Dee, Henkin, & Duemer, 2003), and reduce teachers' professional burnout (Dee et al., 2003). Based on the findings of these studies, it can be argued that empowering teachers affects many organizational behaviors positively. Empowerment of teachers has many benefits, such as increasing teachers' performance, productivity, and morale, improving their content and pedagogy knowledge, and as a result, increasing students' motivation and success (Keiser & Shen, 2000). Empowered teachers believe in their knowledge, skills, and abilities related to their work and have confidence in themselves (Ahmad et al., 2014). Empowered teachers are ready to support common school goals and take more responsibility (Racciah, 2009). An empowered workforce will ultimately focus on organizational goals and make extra efforts to exhibit more extra-role behaviors (Ahmad et al., 2014). In formulating such policies, organizations should understand that schools are social places and should pay attention to quality social change (Ahmad et al., 2014).

Different reasons make this research original. When the studies on teacher empowerment are examined, the teacher empowerment scale developed by Short and Rinehart (1992) is encountered. In addition, this scale was adapted to Turkish by Baloğlu, Karadağ, and Gavuz (2009) and named as "School Stakeholder Empowerment Scale." Genç (2007) stated a comprehensive delegation of authority in empowerment, but the understanding in empowerment is different from authority transfer. The manager is responsible for the delegation of authority, and if he deems necessary, he transfers his authority to subordinates temporarily. In empowerment, the person is like the job owner and can see the opportunities about the job and make his own decision.

For this reason, it is difficult to say that empowerment and delegation of authority exactly coincide. Apart from this, there are also studies in which structural empowerment scales and psychological empowerment scales are used separately. A more comprehensive, practical, valid, and reliable scale about teacher empowerment developed by the researchers was used in this study. Özkan Hıdıroğlu and Tanrıöğen (2020) determined that the relational scanning model is used extensively in research on teacher empowerment. One of the reasons that make this research original is that this research is a descriptive survey model. In this sense, the research is thought to contribute to the literature.

The purpose of the study is to determine the perceptions of teachers regarding their empowerment and whether these perceptions differ significantly depending on their gender, age, branch, professional seniority, length of service at their school, education status, union membership, and the size of the number of students present at the school. Following this purpose, the following sub-problems were tried to be answered:

- a) What are the perceptions of teachers about their empowerment?
- b) Do teachers' perceptions of their empowerment differ significantly according to their gender, age, branch, professional seniority, length of service at their school, education status, union membership, and the size of the number of students present at the school?

Method

Research Design

This research is based on a descriptive survey design, since teachers' perceptions about empowerment are conveyed in this study. It is a research design that aims to describe the event or situation that is the subject of the study as it exists (Fraenkel & Wallen, 2006; Karasar, 2007).

Population and Sample of the Study

The research population consists of 2276 teachers working in the public secondary schools in Denizli's Merkezefendi (1159) and Pamukkale (1117) districts in the 2019-2020 academic year. These data were obtained from the Denizli Provincial Directorate of National Education. A convenience method was used in this study. The study sample was chosen from among volunteer teachers working in public secondary schools in both districts. The following formula suggested by Şahin (2014) was used for the number of samples to represent the universe (Şahin, 2014):

$$n = \frac{\frac{t^2 \cdot (PQ)}{d^2}}{1 + \frac{1}{N} \cdot \frac{t^2 \cdot (PQ)}{d^2}}$$

N= Population size, n= Sample size, d= degree of freedom, t= Table value of the degree of freedom (t: 1.96)

PQ= (.50).(.50)=,25 The sample percentage for maximum sample size

According to the formula, reaching a sample of 329 people is considered sufficient for a population of 2276 people. This research was conducted with 473 volunteer teachers. Forms filled in from different provinces (10 forms), different school levels (12 forms), forms filled by school principals (7 forms), and forms filled by associate degree graduates (3 forms) were not included in the study, and the study was carried out through 441 teachers. The demographic characteristics of the teachers in the study are given in Table 1.

Table 1. *The Demographic Characteristics of Teachers*

Demographic characteristics	<i>N</i>	<i>%</i>
<i>Gender</i>		
Female	262	59.4
Male	179	40.6
<i>Total</i>	<i>441</i>	<i>100</i>
<i>School type</i>		
Secondary	413	93.7
Primary-Secondary	28	6.3
<i>Total</i>	<i>441</i>	<i>100</i>
<i>Age</i>		
20-30	34	7.7
31-40	228	51.7
41-50	141	32
51 and above	38	8.6
<i>Total</i>	<i>441</i>	<i>100</i>
<i>Branch</i>		
Sciences	185	42
Social sciences	151	34.2
Fine Arts	25	5.7
Sport	26	5.9
Foreign language	54	12.2
<i>Total</i>	<i>441</i>	<i>100</i>
<i>Seniority</i>		
0-5 years	22	5
6-10 years	76	17.2
11-15 years	127	28.8
16-20 years	106	24
21 years and above	110	25
<i>Total</i>	<i>441</i>	<i>100</i>
<i>Working time at the same school</i>		
0-2 years	138	31.3
3-5 years	123	27.9
Six years and above	180	40.8
<i>Total</i>	<i>441</i>	<i>100</i>
<i>Educational status</i>		
Undergraduate	393	89.1
Graduate	48	10.9
<i>Total</i>	<i>441</i>	<i>100</i>
<i>Union membership</i>		
Yes	324	73.5
No	117	26.5
<i>Total</i>	<i>441</i>	<i>100</i>
<i>Graduated faculty</i>		
Faculty of Education	366	83
Others	75	17
<i>Total</i>	<i>441</i>	<i>100</i>

Table 1 (Cont.)

<i>Number of students at school</i>		
0-500 students	100	22.7
501-1000 students	213	48.3
1001 students and above	128	29
<i>Total</i>	<i>441</i>	<i>100</i>
<i>Frequency of attending in-service training</i>		
Never	10	2.3
Seldom	274	62.1
Frequently	146	33.1
Always	11	2.5
<i>Total</i>	<i>441</i>	<i>100</i>
<i>District where the school is located</i>		
Merkezefendi	250	56.7
Pamukkale	191	43.3
<i>Total</i>	<i>441</i>	<i>100</i>

Data Collection Instruments

The data collection instruments of the study are "*Personal Information Form*" and "*Teacher Empowerment Scale*" developed by Özkan Hıdıroğlu and Tanrıöğen (2020). There are questions related to gender, branch, age, professional seniority, working time at their school, union membership, and educational status in the personal information form. Teacher Empowerment Scale consists of 4 dimensions (professional development, status, trust, cooperation) and 37 items.

Cronbach Alpha and McDonald's Omega values were calculated in order to determine the reliability of the Teacher Empowerment Scale. Büyüköztürk (2006) and Seğer (2017) stated that when the Cronbach Alpha value was 0.70 and above, the scale will be considered reliable. Dunn, Baguley, and Brunsden (2014) suggested calculating McDonald's Omega reliability in addition to Cronbach Alpha. Cronbach Alpha and McDonald's Omega reliability coefficients for the Teacher Empowerment Scale are given in Table 2.

Tablo 2. *The Reliability Coefficients for the Teacher Empowerment Scale*

<i>Dimensions</i>	<i>Cronbach's Alpha</i>	<i>McDonald's Omega</i>	<i>Cronbach Alpha in this research</i>
Professional Development	.956	.957	.950
Trust	.970	.971	.969
Status	.944	.945	.933
Cooperation	.946	.946	.938
Total Scale	.973	.974	.967

CR (Composite Reliability) and AVE (Average Subtracted Variance) values were calculated for convergent and divergent validity in the scale (See Table 3). The acceptable value of CR and AVE is 0.70 and above (Fornell & Larcker, 1981). Also, the CR value should be greater than the AVE value (Gouveia & Soares, 2015; Raykov, 1997). The Excel program calculated CR and AVE values. In this way, convergent and discriminating validities of the scale are provided.

Table 3. *CR and AVE Values*

<i>Dimension of Teacher Empowerment Scale</i>	<i>CR</i>	<i>AVE</i>
Professional Development	.999	.948
Trust	.996	.949
Status	.994	.946
Cooperation	.990	.944
Total Scale	.999	.948

In addition, the skewness and kurtosis coefficients of the scale items were examined. According to Karagöz (2016) and Darren and Mallery (2016), the skewness and kurtosis values should be between -2 and +2 in order for the data to show a normal distribution. The values for the four dimensions and the whole scale in this study are shown in Table 4. All dimensions in the teacher empowerment scale and the total scale show normal distribution.

Table 4. *Skewness and Kurtosis Values about Teacher Empowerment Scale and Its Dimensions*

<i>Dimensions</i>	<i>Skewness</i>	<i>Kurtosis</i>	<i>Distribution</i>
Professional Development	-1.013	1.009	Normal
Trust	-.967	1.049	Normal
Status	-.024	-.498	Normal
Cooperation	-.733	1.043	Normal
Teacher Empowerment	-.735	1.014	Normal

Data Analysis

In order to find an answer to the first sub-problem of the study, descriptive statistics and to find an answer to the second sub-problem, the independent statistical techniques (Independent Sample T-test, One Way ANOVA) were employed. The Independent Sample t-test was used to determine whether there is a significant difference in teachers' perceptions regarding their empowerment according to the variables of gender, union membership, and educational status. One-way ANOVA was used to determine whether there was a significant difference according to the variables of the branch, age, professional seniority, and the duration of work in their school.

Results

The first sub-problem of the study was determined as "*What are the perception level of teachers about their empowerment?*" In order to find an answer to this sub-problem, the data obtained from the sample was analyzed by descriptive statistical techniques, and the findings reached are given in Table 5.

Table 5. *Teachers' Perceptions on Teacher Empowerment*

<i>Dimensions</i>	<i>N</i>	<i>$\bar{X}$</i>	<i>df</i>	<i>Participation</i>	<i>Participation Level</i>
Professional Development	441	4.22	0.671	Completely Agree	Very High
Trust	441	3.51	0.822	Agree	High
Status	441	4.08	0.791	Agree	High
Cooperation	441	4.06	0.746	Agree	High
Teacher Empowerment	441	3.99	0.608	Agree	High

It is seen that teachers have a very high level of perception in the "*professional development*" dimension ($\bar{X}=4.22$), a high level of perceptions in the "*status*" ($\bar{X}=3.51$), "*trust*" ($\bar{X}=4.08$) and "*cooperation*" ($\bar{X}=4.06$) dimensions regarding their empowerment. According to teachers' perceptions, current conditions contribute the most to teacher empowerment's "*professional development*" dimension while contributing the least to the "*status*" dimension. Professional development refers to the perception that schools provide teachers with opportunities to develop professionally, continue learning, and improve their educational skills during their studies at school (Short, 1994). Accordingly, it can be said that teachers perceive their schools as supportive of their professional development. Although teachers generally have a high level of perception of their empowerment, it is seen that they have a lower perception in the "*status*" dimension than other dimensions. Statistical findings obtained from the scale items to determine teachers' perceptions about teacher empowerment are given in Table 6.

Table 6. *The Highest Level of Teacher Empowerment Behaviors, Arithmetic Means, Standard Deviations, Participation Status, and Empowerment Levels According to*

	<i>N</i>	$\bar{X}$	<i>df</i>	<i>Participation</i>	<i>Level</i>
2)The school administration does not prevent two to participate in any training related to my branch	441	4.49	0.726	Completely Agree	Very High
1)Participation in seminars/conferences of essential people in my profession is not prevented by the school administration.		4.46	0.756	Completely Agree	Very High
3)Attending personal development courses (drama, diction, personal development, practical communicable items by the school management.		4.37	0.734	Completely Agree	Very High
5)It is supported by the school administration to receive training on educational technology.		4.28	0.763	Completely Agree	Very High
8)It is supported by the school administration to participate in scientific training in my environment.		4.24	0.793	Completely Agree	Very High

In Table 6, the items with the highest mean, where the teachers stated "*I completely agree,*" are given. When these eight items with the highest mean are examined, it is seen that the first five items (items 2, 1, 3, 5, and 8) belong to the "*professional development*" dimension. According to teachers' perceptions, school administrations support the teachers' professional development and provide opportunities for teachers to improve themselves in their profession. Statistical information about the items with the lowest means to determine teachers' perceptions about teacher empowerment is given in Table 7.

Table 7. *The Lowest Level of Teacher Empowerment Behaviors, Arithmetic Mean, Standard Deviation, Participation Status, and Empowerment Levels According to Teacher Perceptions*

<i>Items</i>	<i>N</i>	$\bar{X}$	<i>df</i>	<i>Participation</i>	<i>Level</i>
13)I think I have a profession with a high social status	441	3.39	1.131	Partially Agree	Average
16)The attitudes of people around me towards teachers make me strong.	441	3.39	1.012	Partially Agree	Average
18)The teaching profession gives me dignity.	441	3.40	1.038	Partially Agree	Average

The second sub-problem of the study was determined as "*Do teachers' perceptions of empowerment differ significantly according to their gender, age, branch, professional seniority, duration of work at their school, their education status, their status of being a union member, and the*

size of the number of students in the school?". Teacher empowerment and its dimensions show normal distribution (see Table 4). In order to respond to this sub-problem, the data collected analyzed by inferential statistical techniques (Independent Sample t-test, One Way ANOVA), and the findings are presented with the tables.

- a) Gender: The results obtained in the analysis to determine whether there is a significant difference between teachers' perceptions of different gender regarding teacher empowerment are given in Table 8.

Table 8. Teachers' Perceptions of Teacher Empowerment According to Their Gender

Variable	Dimension	Groups	N	$\bar{X}$	Sd	t	p	Difference
Gender	Teacher Empowerment	Female	262	3.95	0.585	-1.884	0.060	none
		Male	179	4.06	0.636			

A statistically significant difference was not found regarding teacher empowerment in teachers' perceptions according to their gender ($p > .05$).

- b) Age: The results obtained from the analysis to determine whether there is a significant difference between teachers' perceptions in different age groups regarding teacher empowerment is given in Table 9.

Table 9. Teachers' Perceptions towards Teacher Empowerment According to Their Ages

Variable	Dimension	Groups	N	$\bar{X}$	Sd	F	p	Difference
Age	Teacher Empowerment	20-30	34	3.92	0.644	5.182	0.002	2-3
		31-40	228	3.90	0.617			
		41-50	141	4.13	0.589			
		51 and above	38	4.14	0.475			

It has been determined that there are statistically significant differences between teachers' perceptions in different age groups regarding teacher empowerment ($p < .05$). Levene test was applied to figure out the source of this difference and test the equality of variances, and the variance equality of the groups was tested. Variances in teacher empowerment show a homogeneous distribution. Therefore, the Post Hoc procedure suggested by Bonferroni was carried out. At the end of the Post Hoc process, it is seen that teachers aged 51 and over have higher perceptions of teacher empowerment than other teachers. Teachers in the age group of 31-40 have a lower perception of teacher empowerment than other teachers.

- c) Branch: The results obtained in the analysis to determine whether there is a significant difference between teachers' perceptions in different branches regarding teacher empowerment are given in Table 10.

Table 10. Teachers' Perceptions of Teacher Empowerment According to Their Branches

Variable	Dimension	Groups	N	$\bar{X}$	Sd	F	p	Difference
Branch	Teacher Empowerment	Science	185	3.95	0.615	0.837	0.502	none
		Social	151	4.02	0.611			
		Fine Arts	23	4.07	0.628			
		Sport	26	3.92	0.680			
		Foreign Language	54	4.08	0.520			

According to their branches, there is no statistically significant difference in teachers' perceptions of teacher empowerment ($p>.05$).

- d) Professional seniority: The results obtained in the analysis to determine whether there is a significant difference between teachers' perceptions in different seniority groups regarding teacher empowerment is given in Table 11.

Table 11. *Teachers' Perceptions of Teacher Empowerment According to the Professional Seniority*

Variable	Dimension	Groups	N	$\bar{X}$	Sd	F	p	Difference
Professional Seniority	Teacher Empowerment	0-5 years	22	4.03	0.530	4.488	0.001	
		6-10 years	75	3.85	0.708			2-4
		11-15 years	127	3.88	0.627			2-5
		16-20 years	106	4.11	0.535			3-4
		21 years and above	110	4.12	0.556			3-5

Statistically significant differences were determined in teachers' perceptions of teacher empowerment according to their branches ($p<.05$). In order to determine the difference between the groups, the Levene test was applied first, and the equality of variances was tested. It was determined that teacher empowerment ($p=.070$) showed a homogeneous distribution. For this reason, the Post Hoc procedure recommended by Bonferroni was carried out. At the end of the Post Hoc process, teachers with seniority between 6-15 years ($\bar{X}=3.85$; $\bar{X}=3.88$) had a lower perception of teachers' empowerment than teachers with seniority of 16 years or more ($\bar{X}=4.11$; $\bar{X}=4.12$).

- e) Working time at their schools: The results obtained in the analysis conducted to determine whether there is a significant difference between teachers' perceptions who have different working years in their school about teacher empowerment are given in Table 12.

Table 12. *Teachers' Perceptions of Teacher Empowerment according to Their Working Time*

Variable	Dimension	Groups	N	$\bar{X}$	df	F	p	Difference
Working time at their schools	Teacher Empowerment	0-2 years	138	3.98	0.637	3.458	0.032	
		3-5 years	123	3.90	0.638			2-3
		Six years and above	180	4.08	0.553			

Statistically significant differences were determined in teachers' perceptions regarding teacher empowerment according to their working time in their schools ($p<.05$). In order to determine the difference between the groups, the Levene test was applied first, and the equality of variances was tested. The distribution of variances in teacher empowerment is homogeneous ($p>.05$). For this reason, the Post Hoc procedure recommended by Tukey was carried out. It has been revealed that teachers working at a school where they have six years or more towards teacher empowerment ($\bar{X}=4.08$) have a higher perception than teachers working in a school where they are between 3-5 years ($\bar{X}=3.90$).

- e) Educational status: The results obtained in the analysis conducted to determine whether there is a significant difference between the perceptions of undergraduate and graduate teachers regarding teacher empowerment is given in Table 13.

Table 13. *Teachers' Perceptions of Teacher Empowerment According to their Educational Status*

Variable	Dimension	Groups	N	$\bar{X}$	Sd	t	P	Difference
Educational status	Teacher Empowerment	Undergraduate	393	4.00	0.598	0.611	0.542	none
		Graduate	48	3.95	0.691			

A statistically significant difference was not found in teachers' perceptions regarding teacher empowerment according to their educational status ($p>.05$).

f) Union Status: The results obtained in the analysis to determine whether there is a significant difference between the perceptions of unionized teachers and not related to teacher empowerment are given in Table 14.

Table 14. *Teachers' Perceptions of Teacher Empowerment According to Their Union Status*

Variable	Dimension	Groups	N	$\bar{X}$	Sd	t	P	Difference
Union Status	Teacher Empowerment	Unionized	324	3.97	0.625	-1.550	0.122	none
		Non-unionized	117	4.07	0.555			

A statistically significant difference was not found in teachers' perceptions regarding teacher empowerment according to their union membership status ($p>.05$).

f) Number of students in the school: The results obtained in the analysis conducted to determine whether there is a significant difference between the perceptions of teachers with different numbers of students in their schools regarding teacher empowerment are given in Table 15.

Table 15. *Teachers' Perceptions of Teacher Empowerment According to the Size of the Current Number of Students in Their Schools*

Variable	Dimension	Groups	N	$\bar{X}$	Sd	F	p	Difference
Number of students in the school	Teacher Empowerment	0-500 students	100	4.03	0.640	4.288	0.014	2-3
		501-1000 students	213	3.92	0.612			
		1001 students and above	128	4.11	0.558			

It has been determined that there are statistically significant differences between teachers' perceptions working for the schools with different numbers of students regarding teacher empowerment ($p<.05$). Levene test was applied to investigate the source of this difference and test the equality of variances and the groups' variance equality. It was determined that variances in teacher empowerment showed a homogeneous distribution, and the Post Hoc procedure suggested by Tukey was carried out. It was determined that teachers working in schools with 1001 or more students ($\bar{X}=4.11$) have a higher perception of teacher empowerment than teachers in schools with students in the range of 501-1000 ($\bar{X}=3.92$).

Discussion, Conclusion, and Implications

According to this research, teachers perceive their empowerment level as high. Similar to this result of the study, Cheasakul and Varma (2016), Ganiban, Belencia, and Ocampo (2019), Odabaş (2014), Tindowen (2019) found that teachers perceived their level of empowerment as high. Differently, Marks and Louis (1999) found that teachers perceive their empowerment level as a medium, Squire Kelly (2012) as low, and Al-Yaseen and Al-Musaileem (2013) as very low.

Developments in information processing technology, increasing competition, increasing education levels and expectations of individuals in the society, and the formation of a globalizing and constantly changing external environment make it essential for teachers to be empowered and perceive themselves as empowered. Employees with high perceptions of empowerment are more willing to achieve organizational goals and believe that ensuring their efficiency meets their personal needs (İhtiyaroğlu, 2017).

An important reason for the growth of developed countries is educational investments in human capital (Tunç, 1993). Teacher empowerment in schools is realized with school administrators transferring their powers to teachers, involving teachers in their decisions, creating awareness of togetherness in schools, spending time together in a different school, canteen, garden, teachers' room, cafeteria, classrooms. It is carried out by communicating with them, encouraging teachers for professional and personal development, and taking into account the particular situation of teachers in the preparation of the curriculum and during shifts (Kıral, 2019). Investments in education by empowering teachers will enable teachers to be more productive and efficient, and higher productivity means higher earnings (Üstün, 2006).

It was determined that teachers have a very high level of perception of their professional development. According to teachers' perceptions, school administrations support teachers' professional development and provide opportunities for teachers to improve themselves in their profession. One of the most critical factors affecting teachers' motivation is school administrators (Argon, 2015). School administrators were not supporting teachers, being indifferent to their requests and problems; in other words, school administrators who have an indifferent management style create a feeling of powerlessness in teachers (Çelik & Akar, 2020).

It was determined that teachers have a high level of perception of their status. However, it was found that teachers have a lower perception of status than other dimensions of empowerment. Similarly, Ökmen (2018) determined that teachers perceive the status of their teaching profession as high. Tindowen (2019), Aguado, Garcia, Laguador, and Deligero (2015) determined that teachers in the Philippines have a very high level of status perception. Kahraman and Çelik (2020), in their study critical the status of the teaching profession, determined that according to teachers, teaching is sacred, respected, and reliable. Sunar, Kaya, Otrar, Demiral, Nerse, and Kalpaklıoğlu's (2015) research on the credibility of the profession in Turkey has identified that teaching is the most respected profession after a medical doctor, university professor, and judge. According to the study of Sunar et al. (2015), it was determined that the status of the teaching profession lagged behind some professions, but when examined in general, it was seen that it ranks high. Accordingly, it can be said that teachers have professional respectability and feel that other individuals respect their knowledge and experience. Differently, 87% of teachers in Ulutaş's (2017) study on the social status of the teaching profession, and 78% of teachers in Ünsal's (2018) study find the status of the teaching profession low. In the studies of Demir and Almalı (2020), Varkey (2013), Sönmez and Cemaloğlu (2017), teachers state that they believe that the status of the teaching profession is decreasing day by day. Gök and Okçabol (1998) argue that according to most of the teachers teaching profession is not accepted in society, students will not listen to a teacher who is not respected, and parents will not support the teacher.

It was determined that teachers have a high level of perception about the dimension of "trust." This result reveals that teachers trust their schools and administrators. Teachers' trust in their schools ensures that a favorable environment is created to achieve the school's goals (Çelik & Gencer, 2019).

Studies on trust in schools are addressed with trust in the administrator, trust in stakeholders, trust in colleagues, communication, openness to innovation, and sensitivity to employees. In this study, trust primarily includes trust in the manager. Akgündüz, Güzel, and Harman (2016) state that the primary determinant of teachers' perceptions of trust is the trust they have in their administrators. Teachers' trust in their administrators is influenced by the fact that administrators are accessible, open, keeping their word, skill, consistency, loyalty, accuracy, honesty, attentiveness, openness to new opinions, and general reliability (Deluga, 1994). Baş and Şentürk (2011), Candaş and Kavas (2015), Çelik and Gencer

(2019), Duman (2018), Polat (2007), Polat and Celep (2008) also emphasize that teachers' perception of trust is high. Uygur (2018) states that teachers' trust in their principals and colleagues is "very high," and their trust in stakeholders is "high." There are also studies in which teachers' perception of trust is "moderate" (Artuksi, 2009; Bökeoğlu & Yılmaz, 2008; Kalaycı, 2007; Memduhoğlu & Zengin, 2011; Özdere, 2015; Yıldız, 2013). Although these studies were carried out in Turkish schools, the reasons that have caused the differences in teachers' trust levels can be investigated.

It was determined that teachers have a high level of perception of cooperation. This result reveals that teachers have perceptions of a high level of cooperation between teachers. One of the management processes of Fayol is coordination. Coordination has three essential steps: harmony, cooperation, and encouragement (Tortop, İşbir, & Aykaç, 1999). Increasing participation, cooperation and cooperation relations among teachers in educational organizations provide an increase in efficiency and quality in education (Çepni & Küçük, 2003). Members of the organization can do actions that cannot be carried out alone, in cooperation. Cooperative behaviors among teachers include shared works on implementing the curriculum, teachers' creating lesson plans together, and developing assessment and evaluation practices together (DuFour, Eaker, & DuFour, 2005). Teachers can share good practices with their colleagues, transfer them to their classes, exchange ideas, and collaborate to solve the problems they encounter in the classroom (Cerit, 2009).

No statistically significant differences were found in teachers' perceptions of teacher empowerment according to their gender. Accordingly, it can be said that male and female teachers have similar perceptions of teacher empowerment. Similarly, Al-Yaseen and Al-Musaileem (2013), Ganiban et al. (2019), Gardenhour (2008), Gonzales and Short (1996), Kırıl (2020), Odabaş (2014), Ökmen (2018), Short and Rinehart (1992), Veisi et al. (2015) did not find a statistically significant difference in teachers' perceptions of empowerment according to their gender. İhtiyaroğlu (2017) determined that while female teachers have a higher perception of their psychological empowerment, male teachers have a higher perception of structural empowerment. While Altinkurt et al. (2016) have a higher perception of psychological empowerment among female teachers, they did not find a statistically significant difference regarding structural empowerment according to teachers' gender. At the same time, Yorulmaz et al. (2018) found that while teachers' perceptions of structural empowerment did not differ statistically significant, male teachers had a higher perception of psychological empowerment. According to Duman (2018), while male teachers have a higher perception of structural empowerment, there is no statistically significant difference in their perceptions of psychological empowerment according to their gender. Dimitriades and Kufidu (1995) did not find a statistically significant difference in teachers' perceptions of psychological empowerment according to their gender. Uygur (2018) did not identify statistically significant differences in teachers' perceptions of structural empowerment. Different results have been revealed in teachers' perceptions of teacher empowerment when the literature is examined according to gender.

When examined according to the age variable, teachers over 41 have a higher perception of teacher empowerment. In this direction, it can be said that teachers over the age of 41 can undertake their development and improve their ability to solve their problems. Differently, according to Odabaş (2014), Ökmen (2018), Veisi et al. (2015), teachers' perceptions of empowerment differ statistically significantly according to their age. One of the researchers, İhtiyaroğlu (2017) and Güneş (2015), who dealt with teacher empowerment separately as structural and psychological empowerment, found in their study that there was no statistically significant difference in teachers' perceptions of structural and psychological empowerment according to their age. While Duman (2018) determined that teachers between the ages of 20-29 and over 50 have a higher perception of structural empowerment, they did not find a statistically significant difference in teachers' perceptions of psychological empowerment by age. There is no consensus in teachers' perceptions regarding teacher empowerment in the literature according to the age variable.

No statistically significant differences were found in teachers' perceptions of teacher empowerment according to their branches. Accordingly, it can be said that teachers have similar perceptions of empowerment regardless of their branch. Similarly, Kırıl (2020) did not find a statistically significant difference in teachers' perceptions of psychological empowerment according to their branches. According to their branches, Uygur (2018) did not identify statistically significant differences in teachers' perceptions of structural empowerment.

No statistically significant differences were found in teachers' perceptions of teacher empowerment according to their educational status. Accordingly, it can be said that undergraduate and graduate teachers have similar perceptions of teacher empowerment. Al-Yaseen and Al-Musaileem (2013), Ganiban et al. (2019), Gardenhour (2008), Ökmen (2018) did not find a statistically significant difference in teachers' perceptions of empowerment according to their educational status. Uygur (2018), on the other hand, found that undergraduate teachers have a higher perception of structural empowerment.

No statistically significant differences were found in teachers' perceptions of teacher empowerment according to their union status. Accordingly, it can be said that unionized or non-unionized teachers have similar perceptions of teacher empowerment.

It was revealed that teachers between the ages of 31-40 according to the age variable and teachers with seniority between 6-15 years according to the seniority variable have a lower perception of empowerment than the other groups. Perception of teacher empowerment is higher among teachers who have worked in their school for six years or more. Teachers who have been working in the same school for a long time are more familiar with the school they are in, administrators and management approach, students and colleagues at the school, parents, and school environment (Tepe, 2018). Teachers who work in the working environment are accustomed to know more about the school administration, students, other teachers, and parents and can communicate with them more easily. For these reasons, it can be said that teachers who worked at their schools for a long time felt stronger.

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TÜRKÇE GENİŞ ÖZET

Öğretmenlerin Güçlendirilmelerine İlişkin Algılarının Çeşitli Değişkenlere Göre İncelenmesi

Problem Durumu

Alanyazında güçlendirme 1980'li yılların sonlarına doğru ortaya çıkmaya başlamıştır (Edwards, Green ve Lyons, 2002). 1980'li yıllarda güçlendirme çalışan katılımı, katılımcı karar verme, kendi kendini yönetme kavramlarıyla birlikte kullanılırken; 1990'lı yıllardan sonra çalışanları özgürleştirmek, daha yenilikçi olmaları için cesaretlendirmek, onları daha mutlu ve verimli bireyler yapmak için bir araç olarak ele alınmıştır (Davidson ve Martinsons, 2002). Bu nedenle öğretmen güçlendirme yeni bir çalışma alanı olarak değerlendirilebilir. 21. yüzyılda gerekli becerilerin belirlenmeye başlamasıyla birlikte öğretmenlerin bu çağda güçlendirilmesi, güçlendirilmesi için gerekli becerilerin belirlenmesi ve eksiklerinin giderilmeye çalışılması önem kazanmaktadır.

Bu araştırmada öğretmen güçlendirme; öğretmenlerin mesleki gelişimlerinin sağlanması, statülerinin artırılması, örgütlerine güven duymalarının ve örgüt üyeleri arasında iş birliğinin artırılmasının sağlanması olarak ele alınmıştır. Gelişen ve değişen koşullarla birlikte öğretmenlerin de fırsat yapılarının, güçlerinin ve psikolojilerinin değişimler doğrultusunda yönlendirilmesi gerekmektedir. Bu nedenle öğretmen güçlendirme, üzerinde araştırma yapılması gereken ve değişim var olduğu sürece güncelliğini her zaman koruyacağı düşünülen bir konudur. Öğretmen güçlendirmeye ilgili çalışmaların artarak devam etmesi eğitim politikalarının belirlenmesi ve uygulanması açısından önemlidir.

Bu araştırmayı orijinal kılan farklı nedenler bulunmaktadır. Öğretmenlerin güçlendirilmesiyle ilgili çalışmalar incelendiğinde Short ve Rinehart (1992) tarafından geliştirilen öğretmen güçlendirme ölçeği ile karşılaşılmaktadır. Bu ölçek Mete (2004) tarafından "Okul Katılımcıları Yetkilendirme Ölçeği" adıyla kullanılmıştır. Ayrıca bu ölçek Baloğlu, Karadağ ve Gavuz (2009) tarafından Türkçeye uyarlanmış ve "Okul Paydaşları Yetkilendirme Ölçeği" olarak adlandırılmıştır. Genç (2007) güçlendirmede geniş bir yetki devri olduğunu, fakat güçlendirmedeki anlayışın yetki devrinden farklı olduğunu belirtmiştir. Yetki devrinde yönetici sorumludur ve gerekli görmesi durumunda kendine ait yetkiyi geçici olarak astlarına devretmektedir. Güçlendirmede ise kişi yaptığı işin sahibi gibidir ve iş hakkındaki fırsatları görüp kendi karar verebilmektedir. Bu nedenle güçlendirme ve yetkilendirmenin tam olarak birbiriyle örtüştüğünü söylemek zordur. Bunun dışında yapısal güçlendirme ölçekleri ve psikolojik güçlendirme ölçeklerinin ayrı ayrı kullanıldığı çalışmalar ile de karşılaşılmaktadır. Somech (2005) her bir güçlendirme biçiminin ayrı ayrı ele alınmasının güçlendirme olgusunu tam olarak açıklamada yetersiz kaldığını belirtmektedir. Bu araştırmada, araştırmacılar tarafından geliştirilen ve öğretmenlerin güçlendirilmesi ile ilgili daha kapsamlı, kullanışlı, geçerli ve güvenilir bir ölçek kullanılmıştır. Özkan Hıdıroğlu ve Tanrıöğen (2020) öğretmen güçlendirme konusundaki araştırmalarda ilişkisel tarama modelinin yoğun olarak kullanıldığını belirlemişlerdir. Bu araştırma betimsel tarama modelindedir. Bu anlamda araştırmanın literatüre katkı sunacağı düşünülmektedir.

Araştırmada öğretmenlerin güçlendirilmelerini hangi düzeyde algıladıkları ve öğretmenlerin güçlendirilmelerine ilişkin algılarında hangi değişkenlerin önemli olduğunun belirlenmesi

hedeflenmiştir. Bu doğrultuda araştırmanın amacı öğretmenlerin güçlendirilmelerine ilişkin algılarını ve bu algıların onların cinsiyetlerine, yaşlarına, branşlarına, mesleki kıdemlerine, bulundukları okuldaki çalışma sürelerine, öğrenim durumlarına, sendikalı olma durumlarına, okuldaki öğrenci sayısının büyüklüğüne göre anlamlı olarak farklılık gösterip göstermediğini belirlemektir. Bu amaç doğrultusunda aşağıdaki alt problemlere yanıt aranmıştır.

- a) Öğretmenlerin güçlendirilmelerine ilişkin algıları ne düzeydedir?
- b) Öğretmenlerin güçlendirilmelerine ilişkin algıları onların cinsiyetlerine, yaşlarına, branşlarına, mesleki kıdemlerine, bulundukları okuldaki çalışma sürelerine, öğrenim durumlarına, sendikalı olma durumlarına, okuldaki öğrenci sayısının büyüklüğüne göre anlamlı olarak farklılık göstermekte midir?

Yöntem

Araştırmanın Modeli

Araştırma nicel araştırmalardan betimsel tarama modelinde bir çalışmadır. Bu model, araştırmaya konu olan olay ya da durumu var olduğu şekliyle betimlemeyi amaçlayan araştırma yaklaşımıdır (Karasar, 2007). Bu araştırmada var olan durum olduğu haliyle aktarıldığı için betimsel tarama modelindedir.

Evren-Örneklem

Araştırmanın evreni 2019-2020 eğitim öğretim yılında Denizli'nin Merkezefendi (1159) ve Pamukkale (1117) ilçelerindeki ortaokullarında görev yapan 2276 ortaokul öğretmenidir. Denizli İl Milli Eğitim Müdürlüğünden ölçeğin uygulanabilmesi için gerekli izinler alınmıştır. Araştırmanın evreni her iki ilçede devlet ortaokullarında görev yapan öğretmenlerdir. Veriler gönüllü öğretmenlerden online olarak toplanmıştır. Evreni temsil edecek örneklem sayısı Şahin'in (2014) önerdiği formül dikkate alınarak hesaplanmıştır. Örneklem hesaplama formülüne göre 2276 kişilik bir evren için 329 kişilik örnekleme ulaşılması yeterli görülmektedir. Bu araştırma gönüllü 473 öğretmen ile gerçekleştirilmiştir. Farklı illerden (10 form) ve farklı okul düzeylerinden (12 form) doldurulan formlar ile okul müdürleri (7 form) formlar ve ön lisans mezunları tarafından doldurulan (3 form) formlar araştırmaya dahil edilmeyerek çalışma 441 öğretmen üzerinden ilerletilmiştir.

Veri Toplama Araçları

Araştırmada Özkan Hıdıroğlu ve Tanrıöğen (2020) tarafından geliştirilen "Öğretmen Güçlendirme Ölçeği" ve "Kişisel Bilgi Formu" veri toplama araçları olarak kullanılmıştır. Öğretmen Güçlendirme Ölçeği 4 boyut (mesleki gelişim, statü, güven, işbirliği) ve 37 maddeden oluşmaktadır. Ölçeğin Cronbach Alpha güvenirlik katsayısı 0,97'dir. Ölçekte yakınsak ve ıraksak geçerlilik sağlanmaktadır (CR=0,999; AVE=0,948). Ölçekteki maddeler normal dağılım göstermektedir.

Veri Analizi

Verilerin analizinde betimsel ve vardamsal istatistik teknikleri (Independent Sample T test, One Way ANOVA) uygulanmıştır.

Sonuçlar

Öğretmenlerin, öğretmen güçlendirmeye, statüye, güvene ve iş birliğine ilişkin algılarının yüksek; mesleki gelişime ilişkin algılarının çok yüksek düzeyde olduğu belirlenmiştir. En yüksek ortalamaya sahip ilk beş madde mesleki gelişim boyutundadır. Bu doğrultuda öğretmenler okullarını, mesleki anlamda gelişmelerini destekleyici olarak algılamaktadırlar. Öğretmenlerin en düşük olarak algıladıkları maddeler; öğretmenlik mesleğinin sosyal statüsü, çevrelerindeki kişilerin öğretmenlere yönelik tutumları ve mesleğin öğretmene itibar sağlaması içeriklerindedir. Bu doğrultuda öğretmenler statülerini, öğretmen güçlendirmenin diğer boyutlarına göre daha düşük olarak algılamaktadırlar. Öğretmenlerin güçlendirilmelerine ilişkin algılarında cinsiyetlerine, branşlarına, öğrenim durumlarına ve sendikalı olma durumlarına göre istatistiksel olarak anlamlı bir farklılık yoktur. Yaş değişkenine göre 31-40 yaş aralığındaki öğretmenlerle ve kıdem değişkenine göre 6-15 yıl arası kıdeme sahip öğretmenlerin diğer gruplara göre, güçlendirilmelerine ilişkin daha düşük bir algıya sahip oldukları ortaya koyulmuştur. Bulundukları okulda 6 yıl ve üzerinde bir süredir çalışan öğretmenlerin ve 1000'in üzerinde öğrenci mevcuduna sahip okullarda çalışan öğretmenlerin diğer gruplardaki öğretmenlere göre güçlendirilmelerine ilişkin daha yüksek bir algıya sahip oldukları belirlenmiştir. İlgili sonuçlar doğrultusunda, öğretmenlerin statülerine ilişkin algılarını iyileştirmeye yönelik yasal düzenlemeler yapılabilir. Mesleklerinin ortalarında bulunan öğretmenlerin güçlendirilme düzeylerini diğer gruplara göre daha düşük olarak algılama nedenleri araştırılabilir. Öğretmenlerin bulundukları okulda uzun yıllar çalışmalarına yönelik teşvik edici önlemler alınabilir. Kalabalık okullarda çalışan öğretmenlerin daha güçlendirilmiş olarak algılamalarının nedenleri ortaya koyulabilir.