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|Research Article/ Araştırma Makalesi|

Development of Productive (Active) Vocabulary in the First Language: Let's Play "Guess Who?"[1]

Birinci Dilde Üretici (Aktif) Kelime Bilgisinin Gelişimi: "Bil Bakalım Kim?" Oynayalım

Ayşe Dilek YEKELER GÖKMEN[2], Mustafa ULUSOY[3]

Keywords
1.Elementary school students
2.Vocabulary knowledge
3.Productive vocabulary
4.Games

Anahtar Kelimeler
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Abstract

Purpose: The aim of this study is to examine how 2nd graders use their vocabulary knowledge in word games. We investigated how students used vocabulary knowledge in games. For this purpose, a word game which is designed for listening and speaking skills has been chosen.

Design/Methodology/Approach: The case study method, which is one of the qualitative research methods, was used in the study, as an attempt was made to examine how primary school students use their productive vocabulary knowledge in word games. In the analysis stage of the study, the data obtained by the students and their answers to the questions asked during the game were analyzed by the two researchers, the codes were determined, and the data were interpreted by creating the themes appropriate to these codes. Percentage and frequency calculations of the words were grouped under the themes. The research findings were supported by direct quotations where necessary. In the analysis of the interview data, students' answers were subjected to content analysis and they were shared under certain themes and with direct quotations.

Findings: At the end of this study, it was concluded that the students use their vocabulary knowledge through the visuals by producing questions related to the physical characteristics of the character and the profession, and trying to ask questions by using clue words that bring themselves closer to the result in order to win the game. As a result of the interviews, the students expressed that they were very excited about the game. They stated that they gained the skills of asking the appropriate questions and using the correct words to be the winners of the game. In the game process, they experienced difficulties in finding the appropriate words for inquiring about the depth of the word information.

Highlights: During the questioning process, students can express their current understanding of a subject, connect with other ideas and become aware of the points they do not know. In this direction, finding the appropriate word and asking questions is important to win the game and for using productive vocabulary in the first language.

Öz

Çalışmanın amacı: Bu araştırmanın amacı, ilkokul 2. sınıf öğrencilerinin kelime oyunlarında üretici kelime bilgilerini nasıl kullandıklarını incelemektir. Bu doğrultuda araştırmada "öğrenciler kelime bilgilerini oyunlarda nasıl kullanıyor?" sorusuna cevap aranmıştır. Bu amaç doğrultusunda dinleme ve konuşma becerilerine yönelik olarak tasarlanan bir kelime oyunu seçilmiştir.

Materyal ve Yöntem: Araştırmada ilkokul öğrencilerinin kelime oyunlarında üretici kelime bilgilerini nasıl kullandıkları incelenmeye çalışıldığından nitel araştırma yöntemlerinden biri olan durum çalışması yöntemi kullanılmıştır. Araştırma verilerinin analizinde öğrencilerin oyun esnasında sordukları sorular/ kullandıkları kelimeler ile elde edilen veriler iki araştırmacı tarafından analiz edilerek kodlar belirlenmiş ve bu kodlara uygun temaları oluşturarak veriler yorumlanmıştır. Temalar altında gruplandırılan kelimelere ait yüzde ve frekans hesapları yapılmıştır. Araştırma bulguları tanımlanırken gerekli yerlerde doğrudan alıntılarla desteklenmiştir. Görüşme verilerinin analizinde ise öğrencilerin verdikleri cevaplar içerik analizine tabi tutularak belli temalar altında ve doğrudan alıntılara yer verilecek şekilde paylaşılmıştır.

Bulgular: Araştırma sonucunda öğrencilerin kelime bilgilerini, görseller aracılığıyla genellikle karakterin fiziksel özelliklerine ve ardından mesleğine yönelik sorular üreterek kullandığı ve oyunu kazanmak için kendilerini sonuca yaklaştıran ipucu kelimeler kullanarak sorular sormaya çalıştıkları sonuçlarına ulaşılmıştır. Yapılan görüşmeler sonucunda öğrenciler oyunla ilgili hislerinde büyük oranda heyecanlı olduklarını ifade etmişlerdir. Oyunun kazandırdıklarına yönelik olarak ise uygun soru sorma ve doğru kelimeleri kullanma becerilerini kazandıklarını belirtmişlerdir. Oyun sürecinde uygun kelime bulmakta zorlandıklarını ifade etmeleri kelime bilgilerinin derinliğini sorgulamaları açısından yararlıdır.

Önemli Vurgular: Soru sorma sürecinde öğrenciler bir konuyla ilgili mevcut anlayışlarını ifade edebilir, diğer fikirlerle bağlantı kurabilir ve bilmediği noktaların farkına varabilirler. Bu doğrultuda uygun kelimeyi bulup soru sorabilmek oyunu kazanmak ve birinci dilde üretici kelime bilgisinin kullanımı açısından önemlidir.

[1]This study is a revised and expanded version of the verbal statement presented by the researchers at the 1st International Elementary Education Congress (UTEK 2018) held on 29-31 March 2018.

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INTRODUCTION

"Lexical problems often hinder the communication process, and when the correct words are not used, communication breaks down." Allen (1983, p.5).

Words are meaningful sound associations and the labels of the thoughts to be expressed. The basis of comprehension and expression skills consists of higher mental skills such as creativity, problem solving, critical thinking, learning and teaching (Güney and Aytan, 2014). According to May (1994), "vocabulary constitutes 50% of comprehension" (p.105).The incorrect recognition of the words in the texts read or listened to affects comprehension negatively. Haris and Sipay (1990) state that the relationship between vocabulary and comprehension is around .80 as a result of their study of students in the first, second and third grades (as it cited Akyol, 2008, p.202).

Students who start school with more vocabulary knowledge increase their ability to understand the texts they read and explain what they have read, and their vocabulary knowledge expands accordingly. On the contrary, students who start school with limited vocabulary struggle with reading comprehension problems, which limits their vocabulary. Research suggests that "students should be provided with rich vocabulary instruction which includes such things as questioning, clarifying, repeating, pointing to words, supplying examples, and providing 'child friendly' definitions in words that a young child can understand" (Jalongo and Sobolak, 2011, p.424).

Beck, McKeown and Kucan (2005, p.211-225) conceptualized words in three different levels. The first level words are common labels that are widely understood and can be quickly understood with an example, such as door, table, computer, and hippopotamus. Because these words are either already known or can be illustrated, the word teaching takes minimum time. Second-level words are highly beneficial for the listening, speaking, reading and writing skills of mature language users. Examples of this level are words such as "courage", "mixed" or "deliberate", and such words often focus on more abstract or complex ideas. Vocabulary researchers agree that level-two words should be the main focus when teaching time is limited (Nagy and Scott, 2000).Third-level words are words that are specific to certain subject areas and are not valid outside these areas. These include words found in mathematics (e.g., triangles), science (e.g., chlorophyll) and social fields (multiculturalism). Although these words require some teaching periods in the content area, they are not suitable for long teaching periods as they do not provide high benefits.

Word learning is a multidimensional and gradual process. The development of vocabulary in children goes through various stages. For example, the child may not see the word at all; he/she may hear the word but have no knowledge of what the word means, recognize the word in the text environment, and finally, know the word completely and correctly (Akyol, 2008, p.199). Vocabulary has been classified in different ways by many researchers. The most general of these definitions is: "the size of the vocabulary, the depth of the vocabulary, the organization of the words in the sentence, and the classifications for the receptive (passive) and productive (active) vocabulary" (Qian, 2002, p.156). Receptive vocabulary is the knowledge of understanding a word while listening and reading. Productive vocabulary can also be defined as word production knowledge while speaking and writing. Güney and Aytan (2014) defined these concepts as "active (productive) vocabulary of words used by students in the process of verbal and written expression" (p.619). Vocabulary knowledge has a decisive role in a child's language skills throughout his life. Receptive language is based on the language of interpreting what is heard or read. Expressive (productive) language means "producing language through speaking or writing" (Jalongo and Sobolak, 2011, p.422).

Vocabulary has been the main focus of receptive and productive vocabulary research, because "how to transform the receptive word information into producer word information is generally a curious subject, and the basic question at this point is why some words (receptive) are known but are not used within the productive vocabulary" (Zhong, 2018, p.358).

Nation (1993) states that "the most frequently used 2000 passive (receptive) word types allow participants to understand 90% of the words in verbal discourse" (cited in Webb, 2008, p.79-80). Jalongo and Sobolak (2011), state that "passive vocabulary is about four times the active vocabulary" (p.422). According to Beck, McKeown and Kucan (2002), studies show that approximately 100 unknown words are encountered during reading and 5-15 of them are learned.

Webb (2008) stated that "Researchers and teachers have long been interested in measuring vocabulary size" (p.79). This study demonstrated that knowing the receptive word dimensions of students, and knowing the productive vocabulary as a criterion / measure of whether a student understands the task of reading or listening to a text provides some indicators of students' speaking and writing skills. Studies have also shown that students' difficulties in both receptive and productive vocabulary are due to insufficient vocabulary, and that students need vocabulary even when they are at a higher level of language proficiency and performance (Laufer, 1986).

Games

Among the reasons for the difference between the child's receptive and productive vocabulary, vocabulary teaching is based on receptive (passive) vocabulary knowledge. Therefore, the aim of vocabulary teaching is to help students acquire productive vocabulary knowledge. Studies show that there are few vocabulary teaching activities based on speaking and writing (Okur, 2013, p.22). For this reason, especially "activities for listening and speaking skills" should be included in the teaching process (Shen,

2003; Güney and Aytan, 2014). Jalongo and Sobolak (2011) also state that in this case, expression-based vocabulary teaching strategies should be applied in the development of students' vocabulary knowledge. In this process, games have an important place in the development of productive vocabulary knowledge, especially in pre-school and primary school students. Hadfield (1990, p.5) defined the game as "an activity whose main element is to have fun together with its rules and purpose" (as cited in Gülsoy, 2013, p.14). The game types are exemplified as gaining points based on knowledge, guessing, matching and sequencing (Hadfield, 1990, p.8; as cited in Tuan, 2012). In this direction, games can be considered as an activity that requires compliance with the rules and cooperation, provides competition among the players, and requires communication with speech or written language (Gülsoy, 2013, p.14).

Rixon (1988) states that “vocabulary games are assumed to be at the center of teaching the target language. They can be applied at all stages of the class, which consist of three stages: presentation, controlled practice and communicative practice, but they are assumed to be educational and appropriate for the teacher’s purpose” (as cited in Gülsoy, 2013, p.15). These games provide students with the opportunity to use their vocabulary knowledge. In other words, students can have the opportunity to use the words they have learned appropriately and in accordance with their meaning.

Gülsoy (2013) used games in vocabulary teaching and found that vocabulary teaching lessons taught through games reveal students' creativity and help them develop a positive attitude towards the lesson. Tuan (2012) examined the effect of using games on students' vocabulary in a quasi-experimental study with sixth grade students. The results of the research showed that the experimental group was superior to the control group in remembering words for concrete objects in the retention phase and in the delayed storage phase. According to the results of the study conducted by Webb (2008), it was seen that the total volume of the receptive words was higher than that of the productive words. According to the findings, it was stated that the students' receptive word level could be an indicator of their productive word skill. It was stated that students with greater receptive vocabulary know how to use most of these words more efficiently than students with smaller receptive vocabulary.

Vocabulary has a decisive role in a child's language skills throughout their life. While children are listening to adults, talking, and communicating with their friends, they can learn words through direct instruction. Until now, in studies on language learning, it has not been clearly explained how students make their receptive vocabulary knowledge productive and how they use these words in the next stage. In other words, it is not enough for a student to know the meaning of a word. It is necessary to demonstrate the productive vocabulary by using the word in daily life, at the appropriate place and time. In this direction, the curriculum aims to help students to improve their vocabulary by using visuals and to use word types in accordance with their functions, "to pronounce words correctly in their speech, ask questions about a reading text they listen to/watch, oral presentation or media content, and answer questions ..." (Meb, 2019). The aim of this study is to examine how primary school 2nd grade students use their productive vocabulary knowledge in word games. In this direction, in this study the following question was investigated: "How do students use their vocabulary knowledge in games?”.

METHOD/MATERIALS

The case study method, which is one of the qualitative research methods, was used in the study, as an attempt was made to examine how primary school students use their productive vocabulary knowledge in word games. This method is suitable for seeking answers to the question of how students use their vocabulary knowledge in games, as it allows for the search for answers to *what*, *how* and *why* questions in order to describe or evaluate a particular situation or event in detail (Büyüköztürk et al., 2014; Gürbüz and Şahin, 2015). Since the situation that was examined in the research process was how second grade primary school students used their vocabulary knowledge in word games, an attempt was made to examine what happened in a game environment created under the supervision of the researcher. However, the researchers had no control / influence on the situation / students other than introducing the game to the students at the beginning of the game process.

Study group

The study group of this research consists of 32 second grade students studying in a state primary school in Giresun in the 2017-2018 academic year. In the determination of the study group, a convenience sampling method was used, since it can provide convenience in terms of time and workforce due to playing games with students in pairs. Information about the students in the study group is presented in Table 1.

Table 1. Information about the students in the study group

Variable	Group	(f)	%
Gender	Female	14	44
	Male	18	56
	Total	32	100

Data Collection Process and Tool

The researchers first started the data collection process by obtaining the necessary permission from a primary school in Giresun city center through the Directorate of National Education. In the school where the research permission was obtained, the classroom teachers were interviewed and the activity to be held with the students, namely a word game and its purpose, was introduced. Then, the first author of this research took the students from the voluntary classes to a suitable and quiet environment for the game in pairs and introduced the "Guess who?" game. This game, which is claimed to support the development of students' speaking and listening skills, is designed to help them identify the cards in the hands of their competitors through their current receptive and productive vocabulary knowledge. The game is for two players. It is necessary to determine the similarities and differences between the two characters chosen by the opponent. For example, questions such as "Do both have glasses?" or "Does one of the characters you are holding have black hair?" In the meantime, to eliminate characters, the questions asked and the answers received should not be forgotten. The students were given the following instructions about the game:

"The purpose of the game is to find the secret character of your choice before your opponent finds hers/his. During the process of the game, it is necessary to ask your opponent questions that can only be answered as "Yes" or "No". Depending on the answers received, the windows on the eliminated characters should be closed. For example, you asked, "Does your secret character have a hat?". If the answer is "No", close the windows above all characters with hats. Now you are one step closer to finding the hidden character your opponent has chosen. After closing the windows, it is the other player's turn to ask questions. Remember, you can only ask one question each time it's your turn. If you want to guess your opponent's hidden character, wait for your turn first. Then instead of asking questions, state your guess. If you guess the hidden character on your opponent's card correctly, you will win the game, but if you guess wrong, your opponent wins the game!"

After the students were matched in pairs, they were observed by the first researcher without any intervention in the game process, and the words used by their opponents to guess the cards and the questions they asked were recorded (in the form of paired group dialogues) with instant notes (Table 2). During the game, the first author of this study explained to the students, "Now I want to sit at the side table and observe who won the game, I am very excited like you and I wonder who will be the winner". During the game process, a professions card with the same characters was used for all the students. These cards were chosen because they could make predictions about the professions, ask questions about the physical characteristics of the characters and express the profession names in Turkish.

Table 2. Note-taking form for students' dialogues during the game process

1. Player (gender, name)	2. Player (gender, name)
Q1:……..?	A1:Yes/No
A1: Yes/No	Q1: ……..?
Q2: ……..?	A2: Yes/No
A2: Yes/No	Q2: ……..?
Q3: ……..?	A3: Yes/No
A3: Yes/No	Q3: ……..?
S4: ……..?	A4: Yes/No
Q4: Yes/No	Q4: ……..?
Q5: ……..?	A5: Yes/No
A5: Yes/No	Q5: Is your character's job XXX?

After the game was completed in voluntary classes, a focus group meeting was held with 13 volunteer students to learn about the students' thoughts about the game process and to obtain qualitative information about their feelings and experiences. First, the students were asked to introduce themselves and to write their names on their name badges. Then, they were made to sit in a circle so that they could hear each other's answers to previously prepared open-ended questions. In order to freely express the students' thoughts and to trigger the feelings and experiences in each other's minds about the game, their answers were recorded. The students who remained passive were encouraged, and attention was paid to obtain answers from each student. These questions were asked in the following order:

1. What did you feel while playing "Guess Who?"
2. What did the "Guess Who?" game bring you?
3. What did you pay attention to most while playing "Guess Who?"
4. What subject / subjects did you have difficulties with while playing "Guess Who?"
5. Would you recommend to your friends to play "Guess Who?"
6. Did you like "Guess Who?"
7. Would you like to play "Guess Who?" with your friends later in your spare time?

Data Analysis

Content analysis, one of the qualitative data analysis methods, was used in the analysis of the research data. The main purpose of content analysis is to create concepts and relationships that can explain the data collected. In other words, similar data should be brought together within the framework of certain concepts and themes and interpreted in a way that the reader can understand (Yıldırım and Şimşek, 2013). In the content analysis, four steps were included. First of all, the researchers examined the data they obtained and decided how to encode meaningful wholes. Then, they created the themes by bringing together these codes that explained the data at a general level. In the third step, the data were organized and defined according to the codes and themes. Finally, the findings were interpreted and conclusions were reached. In the analysis of the research data, the data were analyzed by the two researchers. Working together, the two researchers identified the codes and interpreted the data by creating themes suitable for these codes. Percentage and frequency calculations of the words grouped under the themes were made. While describing the research findings, they were supported with direct quotations where necessary. In the analysis of the interview data, the answers given by the students were subjected to content analysis and presented under certain themes in the findings section in such a way as to include direct quotations.

FINDINGS

In this section, the findings obtained as a result of the analysis of the research data are presented. The questions asked by the students to each other during the game by using their productive vocabulary knowledge in word games were divided into themes and codes and are shared in Table 3.

Table 3. Questions produced by the students during the game

Theme	Code	Students	Frequency (f)	Percentage (%)
Gender of the chosen character	Female	E1, E4, E6, E12,	4	2.9
	Male	K1, K12,	2	1.4
		Total	6	4.3
Job of the chosen character	Likes to sing	E3, K6, K11,	3	2.1
	Wears an apron	E3, E5, E7, E10, E11, K9, K12, E17, E18,	9	6.4
	Uses a pen	K3,	1	0.7
	Treats animals	K4,	1	0.7
	Uses a mallet	E5,	1	0.7
	Has a book read	E5, K14,	2	1.4
	Treats patients	K6,	1	0.7
	Likes to fly	E6,	1	0.7
	Does exercises	E14,	1	0.7
	Dives	K11,	1	0.7
	Paints	K13,	1	0.7
	Wears a helmet	E17, E18,	2	1.4
	Likes to swim	E17,	1	0.7
		Total	25	17.6
Physical characteristics of the chosen character	Whether he has hair or not	K7, E7, K8, E11, E12, E13, E14,	7	5
	Hair color	K1, K1, K2, K2, K2, E2, K3, K4, K4, K4, K5, K5, E4, E4, K6, E6, K7, E7, E7, K8, E8, E9, E9, E10, E11, E11, K9, K9, K10, E15, E16, E16, K11, K11, K12, K14, E17, E18, E18, E18,	40	28.6
	Hair style	E1, E2,K5, K6, K7,	5	3.6
	Hair length	K3, K3,	2	1.4
	Whether he has a beard or not	E1,K1, E3, E10, E14, E18,	6	4.3

	The color of his beard	K6, E12,	2	1.4
	Whether he has a moustache or not	K8, E13,	2	1.4
	Whether he / she has a uniform	E1,	1	0.7
	Whether he wears glasses or not	E1, K2, E2, E3, E4, K5, K7, E8, E10, E12, E13, K9, E15, K12, K13, E17,	16	11.4
	Skin color	E2, K3, K4, E4, E7, E8, E11, K10,	8	5.7
	Color of clothes	E2, K2, E2, K7, E9, E13, E16, K14, K13,	9	6.4
	Eye color	E3, K3, K4, E6, K10,	5	3.6
	Whether he wears a hat or not	K6, K7, E9, E15,	4	2.9
		Total	108	77.1
Age of the chosen character	Old/Young	E16	1	0.7
		Total	140	100

When Table 3 is examined, it is seen that the majority of the students (77.1%) asked questions about the physical characteristics of the character chosen during the game. This was followed by the profession (17.6%), gender (4.3%) and age (0.7%) of the selected character. In order to predict the character chosen during the game, students mostly generated questions related to the physical characteristics of the character. The questions about the hair color of the character (28.6%) came in first place. When asking these questions, it was seen that they saw the colors of hair as a main factor to determine the physical characteristics. The second category, which was produced the most in terms of physical characteristics, consisted of questions (11.4%) about the character's glasses. This was followed by the character's clothing color (6.4%). Color was a distinctive feature in the students' questions from the pictures of the characters and from answering the questions. Thus, in guessing the characters on the cards of their opponents through the questions they asked, they made acquisitions such as connecting the questions to each other, speaking with an audible tone by making eye contact, pronouncing words correctly, and extracting meaning from pictures. In the second place, in order to guess the character chosen during the game, the students produced questions about the character's profession; the questions about the character wearing an apron (6.4%) came in first place. This situation can be interpreted as the distinctiveness of their teachers wearing aprons during lessons and some occupational groups (such as doctor, veterinarian) wearing aprons while performing their profession. The age and gender of the chosen character was a distinctive situation for students. An example dialogue between 2 players as an example of the questions asked by the students is shared in Table 4.

Table 4. Students' dialogues during the game process

1st Player (Male): P1, 2nd Player (Male): P2
P1Q1: Does your character have white hair?
O2A1: Yes, white.
P2Q1: Does your character have a hat?
P1A1: No, it doesn't.
P1Q2: With glasses?
P2A2: No, not wearing glasses.
P2Q2: Is his hair color black?
1A2: No, it's not black.
P1Q3: Do they have a beard?
P2A3: No, they don't have a beard.
P2Q3: Are their clothes in blue?
P1A3: Yes, in blue.
P1Q4: Does he wear an apron?
P2A4: Yes, he does.
P2Q4: Is the hair color yellow?
P1A4: Yes, yellow.
P1Q5: Is your character a scientist?
P2A5: Yes😌
P2Q5: Is your character a policeman?
P1A5: Yes😌

The opinions of primary school students about the game process were received by conducting a focus group meeting, and the data obtained were divided into themes and codes and are shared in Table 5.

Table 5. Students' opinions about the game

Theme	Code	Frequency (f)	Percentage (%)
Feelings about the game	Happy	2	15.4
	Excited	7	53.8
	Enjoyable	3	23.1
	Fear	1	7.7
	Total	13	100
Benefits of the game	Asking appropriate questions and using the right words	5	38.5
	Problem solving skills	1	7.7
	Prediction skill	4	30.7
	Friendship	1	7.7
	Being careful	1	7.7
	Being closely acquainted	1	7.7
	Total	13	100
Considerations in the game	Asking the right question	3	23.1
	Paying attention to the answers given by the opponent	3	23.1
	Not giving a clue to the opponent	4	30.7
	Getting to know the opponent well	1	7.7
	Paying attention to the chosen character	2	15.4
	Total	13	100
Difficult points in the game process	Finding the right question / word	10	76.9
	Not knowing the characteristics of the character	1	7.7
	Guessing	2	15.4
	Total	13	100
Liking The game	Yes Total	13	100
Intention to play the game again	Yes Total	13	100

When Table 5 is examined, it is seen that the students mostly (53.8%) expressed that they were excited about the game. They expressed this situation as "I felt so excited that the game would fall from my shaking hands (M)", "I felt good emotions, I was excited while playing the game (F)", "I was very excited (M)". Regarding the gains of the game, it was observed that the students mostly (38.5%) expressed their opinions in the form of gaining the skills of asking appropriate questions and using the right words. They generally expressed this situation as "I learned to be smart by asking the right questions, to remove obstacles in our way (M)", "I learned to beat my opponent by choosing the right words (F)", "He taught me to win the game by asking good questions (F)". The students stated that they mostly (30.7%) took care not to give hints to their opponents. During the game process, it is understood from the statements that they mostly (76.9%) had difficulty in finding the appropriate word / question, such as "I had trouble asking good questions (F)", "I had difficulty choosing the appropriate words for guessing the character (F)". The students mostly (53.8%) suggested that it was necessary to pay attention when asking questions about the game, listen well, pay attention to the characteristics of the character, and choose difficult characters. They expressed this situation as "They should listen to the answers of their friends and choose difficult professions (M)", "I recommend paying attention to the questions (M)". All of the students who were interviewed in the focus group stated that they liked the game: "I also liked it very much, I hope we will play it again (M)", "I loved it; because I learned to play games with my friends (M)", I loved it; because it was a very fun game (F)", " I liked it very much, I want to buy it for myself (M)". All of the interviewed students stated that they wanted to play the game later in their spare time. "Yes, I want to play with the whole school (E)", "I want to, because it is a fun game but we also need to use our mind (F)"," I would like to, because it is important not to win but to have fun (F)".

CONCLUSION, DISCUSSION AND SUGGESTIONS

As a result of this study, which examined how primary school students use their productive vocabulary knowledge in word games, it was concluded that the majority of students produced questions about the physical characteristics of the character, followed by their profession, gender and age, and tried to ask questions using clue words to win the game. However, all of the students interviewed realized that they liked the game and realized the importance of choosing the right word, and learned how to ask appropriate questions about the game. Considering that games are an activity whose main element is having fun, together with the rules and purpose, it was observed that students tried to use their vocabulary knowledge in a receptive and expressive way while having fun. In the interviews about the game, the students stated that they were mostly excited and gained the skills of asking appropriate questions and using the correct words. The students had difficulty finding suitable words during the game process and they questioned the depth of their own vocabulary knowledge. However, the fact that all the characters in the game

are on the profession cards caused the students to focus largely on the professional and physical characteristics of the characters in the questions they produced during the game, and on the necessity of asking appropriate questions and using the correct words in the game process, which are considered difficult. The character's gender, age, occupational characteristics and physical characteristics caused students to realize and emphasize the importance of prediction skills in their thinking about the game.

In the interviews about the game, the students stated that they were mostly excited and gained the skills of asking appropriate questions and using the correct words. They stated that they had difficulty finding suitable words during the game process, which shows that they questioned the depth of their vocabulary knowledge. However, the fact that all the characters in the game are on the profession cards caused the students to focus largely on the professional and physical characteristics of the characters in the questions they produced during the game. It supported their thoughts on the necessity of asking appropriate questions and using the right words in the points that were considered, recommended, and challenging during the game process. Since the aim of the game is to guess the card in the hand of the opponent by asking appropriate questions, the gathering of the questions asked by the students about the professions under the themes of the character's gender, age, occupational characteristics and physical characteristics, caused the students to realize and emphasize the importance of guessing skills in their thinking about the game.

In the study conducted by Gülsoy (2013), the effect of games on word teaching was examined and as a result, it was stated that games reveal the creativity of students and develop a positive attitude towards the lesson. In this study, it was observed that students asked key questions to predict the characters they chose and tried to be more creative than their opponents. According to the results of the study conducted by Webb (2008), it was stated that the total volume of the recipient words was greater than that of the productive words, and it was observed that the students with more recipient vocabulary could use the words more efficiently than the students with less receptive word knowledge. In this study, it was seen that the students tried to find more correct questions that brought them closer to the result in order to win the game and took examples from each other with the questions they produced. Allen (1983) states that "… the teacher's task is to prepare good lessons that improve vocabulary in the classroom, and a well-chosen game can help students use words correctly and feel that certain words are important and necessary, because without these words, the aim of the game cannot be realized" (p.10).

In the study conducted by Özaslan (2006) with middle school seventh graders, the students who were determined as the experimental group played "Tabu" and word derivation games for eight weeks, while no intervention was made to the control group students. At the end of the eight weeks, a reading comprehension posttest was applied to the groups. As a result of this process, it was determined that while there was no significant difference in the word dimension of the experimental and control group students in their knowledge and comprehension tests, the students in the experimental group had higher levels of reading comprehension than the control group students. According to Yolageldili and Arıkan (2011), games are "Not only for entertainment, but also for making language lessons beneficial and thus closer to the goal of improving students' communication skills" (p.226). In this direction, the importance of games in terms of students' communication skills cannot be denied and it can be thought that they may attract students' interest more.

In this study, primary school students revealed their knowledge of receptive and productive vocabulary through the questions they asked their opponents during the game. In the process of asking questions, students can express their current understanding of a topic, connect with other ideas, and become aware of unknown points (Chin & Osborne, 2008). In this direction, it is important to find the appropriate word and ask questions to win the game. At the same time, the students who were rivals with each other during the game, as they were also friends, guessed by asking questions about the professions they liked or wanted to do when they grew up, and had the chance to get to know each other better. In this study, which was conducted to examine how primary school 2nd grade students use their productive vocabulary knowledge in word games, students asked questions about the physical characteristics and profession of the character on the profession cards, and this improved their awareness of the use of prediction, attention and listening skills depending on the breadth and depth of their vocabulary knowledge. It is known that following the *yes* and *no* cues given by the opponent requires attention and memory skills in the listening process. Since the game is about guessing the card in the hand of the opponent by asking the correct questions, the students used their productive vocabulary knowledge to win the game by trying to pinpoint the character through correct questions and listening well. However, obtaining the students' opinions and feelings about the game reflected their productive vocabulary knowledge and strategies from their perspective.

This research is limited to 32 students in total in the second grade of primary school, and as data collection tools, the data obtained from focus group interviews in order to learn the students' thoughts about the game and the note-taking form regarding the dialogues of the students during the game. The game used in the research is for the age of 6 and above. It was difficult for second year primary school students to have foreign names for cards other than professions. In this direction, adaptation studies to Turkish should be conducted more carefully. In future studies, the effect of games on sentence order and the depth of vocabulary can be investigated.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

Research data were collected in 2018. Research permission was obtained from Giresun Provincial Directorate of National Education on 19.03.2018 (Number: 29409993-605.01- E.5696382). Therefore, there is no ethics committee approval document.

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| Research Article / Araştırma Makalesi |

Investigation of Students' Hypothesis Skills In Chemistry Laboratory Applications

Kimya Laboratuvarı Uygulamalarında Öğrencilerin Hipotez Kurma Becerilerinin İncelenmesi

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Keywords

1. Establishing hypothesis
2. Hypothesis building skills
3. Llaboratory activities,
4. science education.
5. Scientific process skills

Anahtar Kelimeler

1. Bilimsel süreç becerileri.
2. Hipotez, hipotezi kurma becerileri.
3. Laboratuvar etkinlikleri
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Abstract

Purpose: This study aimed to determine the skill level of hypothesis gained by the students as a result of the applications made with the activities designed based on Scientific Process Skills.

Design/Methodology/Approach: In this study, in the context of constructivist learning approach; A laboratory training material which has been developed by Yaz (2018), consisting of 10 activities, which includes hypothesis-based experimental technique applications, enriched in terms of scientific process skills, has been used in the General Chemistry Laboratory-I course in the Faculty of Education Science Education program.

This research was carried out with 31 students studying in the first grade of the Science Teaching Department in the Faculty of Education. General Chemistry Laboratory I courses were conducted for 10 weeks with activities developed based on scientific process skills. This research is a descriptive research type and designed according to the qualitative research approach. After performing the activities, content analysis was conducted on the student reports, and the students' ability to form hypotheses were determined.

Findings: As a result of the content analysis conducted on the students' experimental results reports, it was concluded that a significant number of students were able to construct at least one or more researchable and testable hypotheses about the subject of the experiment.

Highlights: It was concluded that a significant part of the hypotheses established could be investigated and tested, and no significant difficulties were encountered during the applications. It was determined that the rate of students who could establish testable and meaningful hypotheses (80%) was higher than the rate of students who could not establish such hypotheses (20%). In addition, it can be said that such activities designed for the acquisition of process skills can contribute positively to both the acquisition of adequate process skills to the students and the permanence of these skills.

Öz

Çalışmanın amacı: Bu çalışmanın amacı, bilimsel süreç becerilerine dayalı olarak tasarlanan etkinliklerle yapılan uygulamalar neticesinde öğrencilerin kazandığı hipotez kurma beceri düzeylerini tespit etmektir.

Materyal ve Yöntem: Bu çalışmada, yapılandırmacı öğrenme yaklaşımı kapsamında; öğrenciyi aktif kılan, bilimsel süreç becerileri dikkate alınarak hazırlanan, hipoteze dayalı deney tekniği uygulamalarını içeren, 10 etkinlikten oluşan ve Yaz (2018) tarafından geliştirilen bir laboratuvar eğitim materyali Eğitim Fakültesi Fen Eğitimi Anabilim Dalı programında yer alan Genel Kimya Laboratuvarı I dersinde kullanılmıştır. Bu araştırma, Eğitim Fakültesinde Fen Bilgisi Öğretmenliği bölümü 1. sınıfta öğrenim gören 31 öğrenci ile yürütülmüştür. Genel Kimya Laboratuvarı I dersleri, 10 hafta boyunca, bilimsel süreç becerilerine dayalı olarak geliştirilen etkinliklerle yürütülmüştür. Bu araştırma, betimsel desene sahip bir araştırma türüdür ve nitel araştırma yaklaşımına uygun olarak tasarlanmıştır. Etkinliklerden gerçekleştirildikten sonra, öğrenci raporları üzerinde içerik analizi yapılmış ve öğrencilerin hipotez kurma becerileri tespit edilmiştir.

Bulgular: Gerçekleştirilen etkinlikler sonrasında, öğrenci deney sonuç raporları üzerinde yapılan içerik analizleri neticesinde, önemli sayıda öğrencinin deneyin konusu hakkında en az bir veya daha fazla araştırılabilir ve test edilebilir hipotez oluşturabildiği sonucuna varılmıştır.

Önemli Vurgular: Oluşturulan hipotezlerin önemli bir kısmının araştırılıp test edilebildiği ve uygulamalar sırasında önemli bir güçlükle karşılaşılmadığı sonucuna varılmıştır. Test edilebilir ve anlamlı hipotezler kurabilen öğrencilerin oranının (%80), bu tür hipotezleri kuramayanların oranından (%20) daha yüksek olduğu belirlenmiştir. Ayrıca süreç becerilerinin kazanılmasına yönelik tasarlanan bu tür etkinliklerin hem öğrencilere yeterli süreç becerilerinin kazanılmasına hem de bu becerilerin kalıcılığına olumlu katkı sağlayabileceği söylenebilir.

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INTRODUCTION

Many curricula and standards prepared in the field of science emphasize that students should learn both scientific knowledge and skills related to the construction of this knowledge within the scope of the constructivist approach. One way to achieve this goal is to use inquiry-based learning activities that include acquisitions related to science process skills (Stender, A. et al. 2018). When evaluated in terms of both basic skills and experimental (high-level) skills, Scientific Process Skills (SPS) is a unique skill that can be gained efficiently and easily at both levels in a practical way, when appropriate activities and teaching-learning strategies are designed in science lessons (Padilla, 1990; Winarti, A. et al., 2019; García-Carmona, A., 2020).

In science education, the applications of inquiry-oriented experimental techniques give teachers and students the opportunity to investigate their environment (Alouf & Bentley, 2003). With this technique, the student designs the necessary experiments to test the accuracy of a hypothesis about a problem under the supervision of a teacher. In addition, he sets up the relevant experimental setups, records his observations and data by doing experiments, interprets the results obtained to decide whether this hypothesis is true or false, accepts the results if the hypothesis he has established is true, rejects those results if it is wrong, the student creates a new hypothesis and tests. A well-designed student-centered laboratory activity can provide students with the experiences necessary to develop SPS and distinguish conceptual structure. In addition, in such approaches, a more effective and accurate concept teaching can be provided by designing and applying experiments that include examples from daily life.

Chatterjee et al. (2009) revealed that students prefer the research and inquiry-based experimental technique and have gained more knowledge and skills with this technique. In the experimental technique based on research and inquiry, students are given a problem that they need to solve and sometimes the necessary tools and explanatory materials. Under the teacher's guidance, the students themselves design and conduct experiments, collect relevant data, and evaluate results. The teacher guides the students with questions when necessary to make it easier for them to reach a conclusion and/or deepen the subject.

Laboratory methods and applications are of great importance in science education, which includes theoretical and practical education. Hofstein & Lunetta (2004) stated that laboratories are in a central position in science education. Without laboratory applications, it is inconceivable that the science course can be successful. Due to the nature of the science course, learning in science education courses doesn't only happen in school classrooms; people may also experience learning outside of the formal classroom setting. Other than classroom learning, learning also takes place both in laboratories set in schools and in environments out of schools named as "out-of-school learning". Parallel to the developments in science and technology, alternative out-of-school learning environments (e.g., science cafés, virtual reality (VR) Technologies, home-lab activities) that further students' science learning have emerged in recent decades. In general, student-centered practical studies carried out in different learning environments can contribute to the increase of students' motivation and self-confidence, and ultimately to the realization of permanent and meaningful learning (Şen Et al., 2021; Tal, 2012; Kılıç & Aydın, 2018; Rennie, 2014; Yıldırım, 2018)

(Kılıç & Aydın, 2018). It was stated that as a result of the learning by doing and experiencing approach, knowledge would be more permanent, and because of this, the importance of laboratory used and applied studies in science education is becoming widespread day by day (Toprak, 2011).

In a study conducted by Şimşir et al. (2018), some activities for the General Chemistry-II laboratory course were designed and developed based on the SPS and the constructivist laboratory approach. It has been reported that these activities reveal a significant difference in the academic achievement of students.

In a study conducted by Ünal (2018), various activities based on inquiry and social network support were carried out for prospective teachers studying in the first grade in General Chemistry Laboratory II course. According to the results of the study, it was revealed that students' perceptions of scientific process skills and their academic achievement changed in a positive and meaningful way.

In the science education program in Turkey, the skills specific to the field of science education have been indicated as one of the SPS areas (MEB, 2018). The field of SPS includes the skills scientists use during their work, such as observing, classifying, measuring, predicting, expressing, recording data, forming and testing hypotheses, changing and controlling variables, conducting experiments, interpreting data, identifying by doing, and creating models. With the help of the scientific process skills planned to be acquired by this program, it was stated that various achievements, which are one of the important goals of science education, can be achieved to generate solutions to the problems encountered in daily life.

This study aimed to determine the hypothesis-building skill levels that students gain as a result of the applications made with the activities designed based on scientific process skills. In this study, within the scope of the General Chemistry Laboratory I course, which consists of 10 activities, a laboratory education material suitable for the constructivist learning approach, which makes the student active, taking into account SPS and including hypothesis-based experimental technique applications, was used (Yaz, 2018).

METHOD/MATERIALS

This section includes the model of the study, study group, data collection tool, and data analysis sections.

Research Design and Methodology

This research was designed in accordance with a qualitative research approach and had a descriptive design. The purpose of descriptive analysis is to make the raw data collected can be easily understood by researchers. The data collected in the descriptive analysis are classified, summarized, and interpreted according to previously prepared themes (Altunışık et al., 2001). In this study, content analysis was made on student reports, and determinations were made regarding hypothesis-building skills.

In this study, a laboratory education material consisting of a constructivist laboratory approach and SPS-based 10 activities and containing instructions were developed for the first-year science education students to apply in the General Chemistry Laboratory I course. The prepared material was examined by two experts, and the material was finalized in line with their opinions. After implementing the activities, as a result of the content analysis made on the student reports, the hypothesis-building skills of the students were determined. The stages in this research are given below:

- The SPS, which is aimed to be acquired, was analyzed by analyzing the content for each activity, and skills were determined.
- At the end of each activity, the students were guided with appropriate sentences and explanations to make research and observations on the next activity topic.
- The experiments are designed in accordance with the experimental technique of establishing and testing hypotheses, which are based on inquiry and will provide as many process skills as possible. In the content of the designed activity, students were encouraged to make at least one hypothesis sentence by giving sample hypothesis sentences.
- Significant and testable hypotheses were determined by conducting a content analysis on student reports.

Working group

This research was conducted at an education faculty in Turkey. The research group was composed of 31 first-year students studying in the Department of Science Education in the 2017-2018 academic year.

Implementation Process and Designed Activities

The experiments designed according to the theoretical course, General Chemistry-I, were carried out in accordance with the content of the course and in communication with the instructors who gave the course. The activities developed were applied to the students studying in the first year of science teaching for 10 weeks, two hours a week, in the spring semester of the 2017-2018 academic year.The names of the activities designed and implemented are given below (Summer, 2018):

Experiment 1: Boiling, Evaporation, Condensation, and Distillation in Liquids.

Experiment 2: Physical and Chemical Changes in Substances.

Experiment 3: Hydrogen Gas and Combustion Reaction.

Experiment 4: Stoichiometry.

Experiment 5: Investigation of Acids and Bases: Neutralization Reactions.

Experiment 6: Determination of Heat-Temperature Difference of Different Materials with Equal Mass**.**

Experiment 7: Determining the Amount of Energy in Foods**.**

Experiment 8: Solubility and Inter-Particle Interactions in Solutions**.**

Experiment 9: Interaction Between Particles and Surface Tension in Liquids**.**

Experiment 10: Hess's Law

The SPS, which is aimed to be acquired in science education, has been classified into two groups: basic processes and experimental processes (Martin, 1994; Martin, 1997; Yerlikaya, 2006). The explanations about these skills and the abbreviations used for each skill in this study are shown in Tables 1 and 2. Table 3 shows which skills are aimed to be acquired with the designed activities. . A section from the designed experiment sample was shown in figure 1.

Table 1. SPS-1: Basic processes.

Code	Sps-1: Basic Processes	Descriptions
SPS -1.1	Observation	Science begins with observation and builds on previous knowledge (Ayas, 1994). It is the determination of the properties of an object or event using sense organs (Özaydın, 2010).
SPS -1.2	Classification	Classification is the grouping of events, opinions, and objects by certain characteristics. It is a skill of using the events and generalizations used in scientific subjects and necessary to form the concepts (Silay & Çelik, 2013; Yerlikaya, 2006).
SPS -1.3	Measuring, using space and time relationships	Expressing the characteristics of materials numerically. Length, volume, weight, temperature, and time are five variables students use (Silay & Çelik, 2013; Yerlikaya, 2006).
SPS -1.4	Prediction	Making a prediction about situations and events (Harlen & Jelly, 1989).
SPS -1.5	Inferring	Making predictions and drawing conclusions based on the available information (Martin, 1997).
SPS -1.6	Communication (Expression)	Expressing opinions and thoughts about events and situations when communicating with other people (Yerlikaya, 2006).

Table 2. SPS -2: Experimental processes

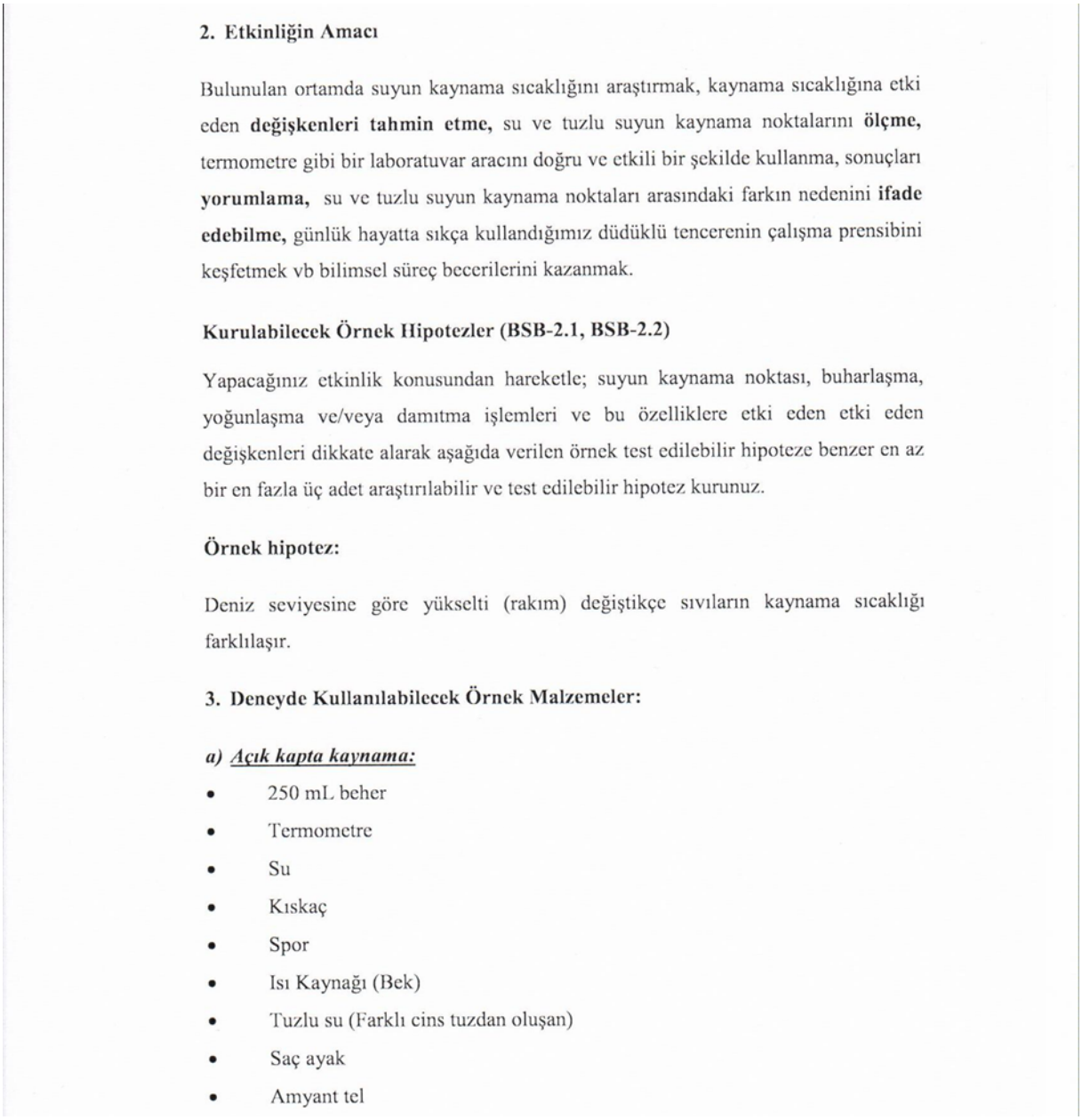
Code	Sps -2: Experimental Processes	Descriptions
SPS -2.1	Hypothesis building and Testing the Hypothesis	Hypotheses are propositions formed based on variables to construct laws and theories (Ayas et al., 1997).
SPS -2.2	Defining and controlling variables	Defining variables and revealing the effect of another variable on a variable (Yerlikaya, 2006).
SPS -2.3	Interpreting the data	It is a comprehensive process that includes making sense of data obtained through experimental studies (Ayas et al., 1997).
SPS -2.4	Defining operationally	It is the process of measuring variables indirectly in scientific studies where variables cannot be measured directly (Yerlikaya, 2006).
SPS -2.5	Organizing and conducting experiments	It is a process that includes scientific skills such as designing and implementing the experiment, making observations, changing and controlling variables, obtaining and interpreting data during this application process (Yerlikaya, 2006).
SPS -2.6	Making a model	It is the process of making assets and events concrete with graphics, figures, or multiple visual materials (Martin, 1994).

The experiments designed were created based on the constructivist laboratory approach and SPS to ensure students are at the center of learning. In each designed experiment, the rules that students must obey regarding the safety precautions and the use of the laboratory environment were explained to the students separately, and their attention was drawn to this issue. In the experiment sheets given to the students, the guiding sentences about the process skills acquisition are shown in bold letters (without SPS number) on the text. Each activity was analyzed by content analysis, and each SPS aimed to be gained determined separately. The scientific process skills aimed to be acquired in the applied activities are shown in Table 3.

Table 3. Scientific process skills aimed to be acquired by students through the activities developed

Activity Number	Scientific process skills												Total SPS targeted to be gained with the activities designed
	Basic processes						Experimental processes						
	SPS 1.1	SPS 1.2	SPS 1.3	SPS 1.4	SPS 1.5	SPS 1.6	SPS 2.1	SPS 2.2	SPS 2.3	SPS 2.4	SPS 2.5	SPS 2.6	
1	+	+	+	+	+	+	+	+	+	+	+	-	11
2	+	+	-	+	+	+	+	+	+	-	+	-	9
3	+	-	-	+	+	+	+	+	+	-	+	-	8
4	+	-	+	+	+	+	+	+	+	-	+	-	9
5	+	+	+	+	+	+	+	+	+	-	+	-	10
6	+	-	+	+	+	+	+	+	+	+	+	-	10
7	+	+	+	+	+	+	+	+	+	+	+	-	11
8	+	+	+	+	+	+	+	+	+	-	+	-	10
9	+	-	-	+	+	+	+	+	+	-	+	-	8
10	+	-	+	+	+	+	+	-	+	+	+	-	9

When Table 3 was examined, it was seen that the activities aimed to be gained in laboratory activities designed based on SPS and hypothesis setting and testing can be achieved with 11 SPS, at most with first and seventh experiments. On the other hand, it was seen that the third and ninth experiments (with eight SPS) were the experiments in which the least number of skills can be gained. In addition, it was aimed to gain 10 SPS in the fifth and sixth experiments and nine SPS in the second, fourth, eighth, and 10th experiments.



2. Etkinliğin Amacı

Bulunulan ortamda suyun kaynama sıcaklığını araştırmak, kaynama sıcaklığına etki eden **değişkenleri tahmin etme,** su ve tuzlu suyun kaynama noktalarını **ölçme,** termometre gibi bir laboratuvar aracını doğru ve etkili bir şekilde kullanma, sonuçları **yorumlama,** su ve tuzlu suyun kaynama noktaları arasındaki farkın nedenini **ifade edebilme,** günlük hayatta sıkça kullandığımız düdüklü tencerenin çalışma prensibini keşfetmek vb bilimsel süreç becerilerini kazanmak.

Kurulabilecek Örnek Hipotezler (BSB-2.1, BSB-2.2)

Yapacağınız etkinlik konusundan hareketle; suyun kaynama noktası, buharlaşma, yoğunlaşma ve/veya damıtma işlemleri ve bu özelliklere etki eden etki eden değişkenleri dikkate alarak aşağıda verilen örnek test edilebilir hipoteze benzer en az bir en fazla üç adet araştırılabilir ve test edilebilir hipotez kurunuz.

Örnek hipotez:

Deniz seviyesine göre yükselti (rakım) değiştikçe sıvıların kaynama sıcaklığı farklılaşır.

3. Deneyde Kullanılabilecek Örnek Malzemeler:

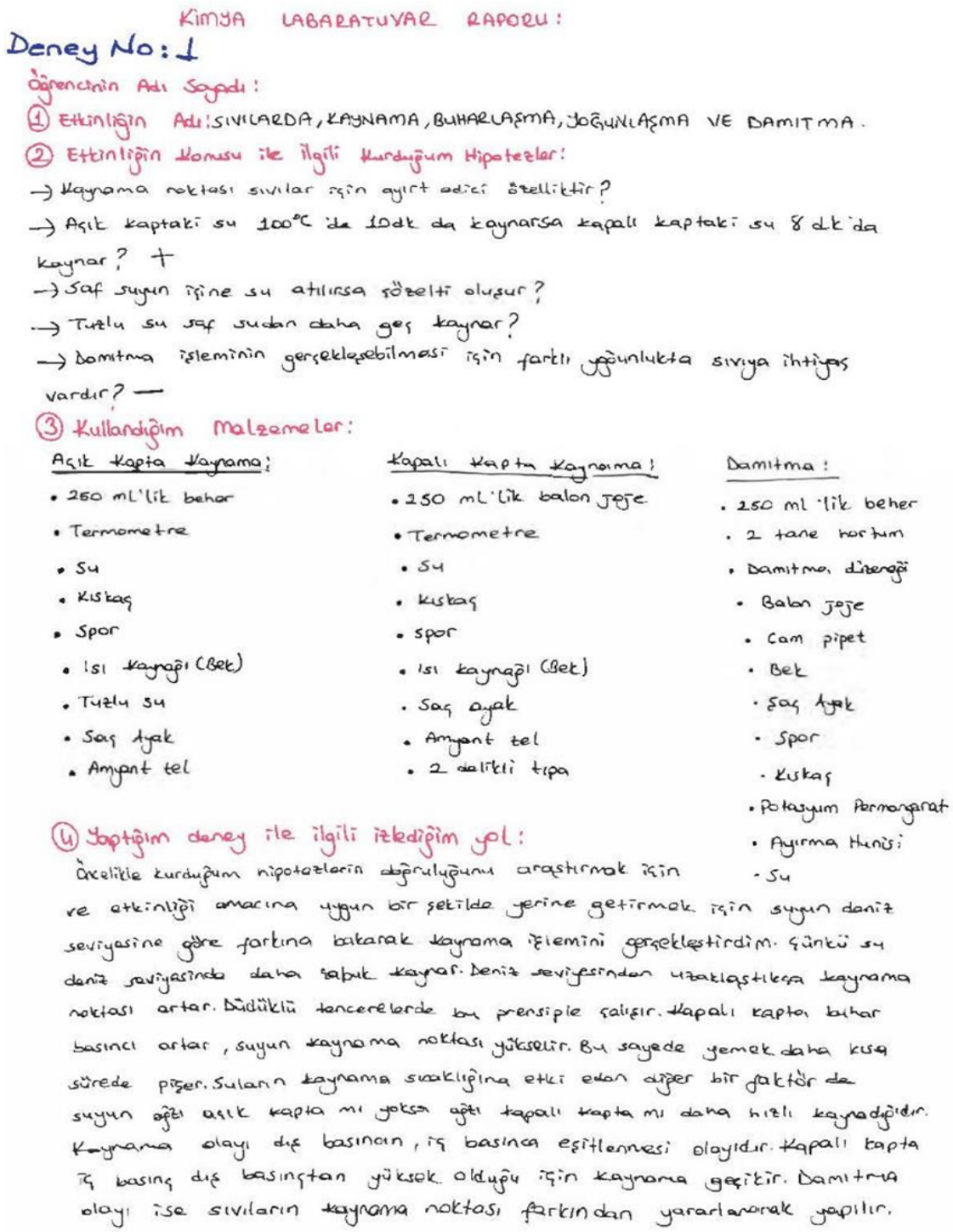
a) Açık kapta kaynama:

- 250 mL beher
- Termometre
- Su
- Kıskaç
- Spor
- Isı Kaynağı (Bek)
- Tuzlu su (Farklı cins tuzdan oluşan)
- Saç ayak
- Amyant tel

Figure 1. A section from the designed experiment sample

Data Collection Tool

Content analysis was made on the experimental reports of the students who applied the experiments developed in accordance with the constructivist laboratory approach, SPS, and the experimental technique based on hypothesis, and the results were evaluated. A section from a Student report sample was shown in Figure 2.



KİMYA LABARATUVAR RAPORU:

Deney No: 1

Öğrencinin Adı Soyadı:

① Etkinliğin Adı: SIVILARDA, KAYNAMA, BUHARLAŞMA, YOĞUNLAŞMA VE DAMITMA.

② Etkinliğin Konusu ile İlgili Kurduğum Hipotezler:

→ Kaynama noktası sıvılar için ayırt edici özelliktir?

→ Açık kaptaki su 100°C de 10dk da kaynarsa kapalı kaptaki su 8 dk'da kaynar? +

→ Saf suyun içine su atılırsa çözelti oluşur?

→ Tuzlu su saf sudan daha geç kaynar?

→ Damıtma işleminin gerçekleşebilmesi için farklı yoğunlukta sıvıya ihtiyaç vardır? —

③ Kullandığım Malzemeler:

Açık Kapta Kaynama:
- 250 mL'lik behar
- Termometre
- Su
- Kıskaç
- Spor
- Isı kaynağı (Bek)
- Tuzlu su
- Saç ayak
- Amyant tel

Kapalı Kapta Kaynama:
- 250 mL'lik balon jeje
- Termometre
- Su
- kıskaç
- spor
- Isı kaynağı (Bek)
- Saç ayak
- Amyant tel
- 2 delikli tıpa

Damıtma:
- 250 ml'lik beher
- 2 tane hortum
- Damıtma düzeneği
- Balon jeje
- Cam pipet
- Bek
- Saç ayak
- Spor
- Kıskaç
- Potasyum Permanganat
- Ayırma Hunisi
- Su

④ Yaptığım deney ile ilgili izlediğim yol:

Öncelikle kurduğum hipotezlerin doğruluğunu araştırmak için ve etkinliği amacına uygun bir şekilde yerine getirmek için suyun deniz seviyesine göre farkına bakarak kaynama işlemini gerçekleştirdim. Çünkü su deniz seviyesinde daha sabit kaynar. Deniz seviyesinden uzaklaştıkça kaynama noktası artar. Düdüklü tencerelerde bu prensipte çalışır. Kapalı kapta buhar basıncı artar, suyun kaynama noktası yükselir. Bu sayede yemek daha kısa sürede pişer. Suların kaynama sıcaklığına etki eden diğer bir faktör de suyun açık kapta mı yoksa açık kapalı kapta mı daha hızlı kaynadığıdır. Kaynama olayı dış basıncın, iç basınca eşitlenmesi olayıdır. Kapalı kapta iç basınç dış basınçtan yüksek olduğu için kaynama geçiktir. Damıtma olayı ise sıvıların kaynama noktası farkından yararlanarak yapılır.

Figure 2. A section from a Student report sample.

Data Analysis

Data on hypothesis-building skills were determined on student experiment reports by analyzing content. In addition, content analysis was performed by an independent researcher specialized in this field, and the validity of the hypotheses was checked by the expert.

FINDINGS

For each experiment, data on hypothesis-building skills obtained from content analysis on student activity reports are given in Table 4. When Table 4 was examined, it was seen that the first experiment had the highest rate (69.8%) in terms of establishing only one meaningful and testable hypothesis sentence, while this rate was the lowest in the third experiment (35.7%). When evaluated in terms of making two or more meaningful and testable hypothesis sentences, it was seen that the ninth experiment had the highest rate (44.7%), while the fifth experiment

had the lowest rate (12.2%). The rate of those who could not make a meaningful and testable hypothesis sentence or who set it wrong was found to be the highest rate (39.4%) in the second experiment and the lowest rate (7.2%) in the ninth experiment.

The proportion of those who never set up a meaningful and testable hypothesis sentence or set it incorrectly decreased significantly as the weeks progressed, especially after the fifth week. In addition, a significant increase was observed in the rate of establishing only one meaningful and testable hypothesis sentence after the fifth week.

Table 4. Hypothesis-building skills

Experiments	The proportion of those who established only one meaningful and testable hypothesis sentence (%) (A)	The proportion of those who established two or more meaningful and testable hypothesis sentences (%) (B)	The proportion of those who never set up a meaningful and testable hypothesis sentence or who set it incorrectly (%) (C)	The proportion of those who established at least one or more meaningful and testable hypotheses (%) (D=A+B)
Experiment 1: Boiling, Evaporation, Condensation, and Distillation in Liquids	69.8	19.8	10.4	89.6
Experiment 2: Physical and Chemical Changes in Substances	44.5	16.1	39.4	60.4
Experiment 3: Hydrogen Gas and Combustion Reaction	35.7	32.3	32	68
Experiment 4: Stoichiometry	38.9	26.7	34.4	65.6
Experiment 5: Investigation of Acids and Bases: Neutralization Reactions	68.7	12.2	19.1	80.9
Experiment 6: Determination of Heat-Temperature Difference of Different Materials with Equal Mass	65.3	14.2	20.5	79.5
Experiment 7: Determining the Amount of Energy in Foods	48.4	35.8	15.8	84.2
Experiment 8: Solubility and Inter-Particle Interactions in Solutions	52.2	34.8	13	87
Experiment 9: Interaction Between Particles and Surface Tension in Liquids	48.1	44.7	7.2	92.8
Experiment 10: Hess's Law	58.1	28.7	13.2	86.8
Average Value	53	26.5	20.5	79.5

Note 1: The number of reports evaluated for each experiment is 31.
Note 2: Other incorrect hypotheses constructed by students who set at least one correct hypothesis have not been taken into account.

When the data about the hypotheses formed by the students and the suggestions reported by the students were evaluated, it was observed that the experiments designed were applicable, that these experiments were appropriate for the students' levels and the curriculum and that the students gained the ability to formulate hypotheses at a significant rate.

When Table 4 was examined, it can be said that there was an increase in the rate of those who made at least one or more significant and testable hypotheses in the fifth week and onwards. The reason(s) of the high rate in the first experiment was that the students were presented with a sample hypothesis as a clue and for informational purposes, and the content of the subject was broad and related to common events in daily life, so it can be thought that the students were experienced on these issues.

DISCUSSION

According to the data in Table 4, it was seen that most of the students had at least one hypothesis sentence, and some of them never had. The results obtained in this study are similar in some respects to the results obtained in the study conducted by Bolat et al. (2012). They reported that students had difficulty forming hypotheses. In this study, the rate of students who could not make a meaningful and testable hypothesis statement was determined as 20%. In addition, Turan (2018) stated that the number of students who failed to make the correct hypothesis proposition was higher than the number of students who made the correct hypothesis. On the contrary, in this study, the proportion of students who made at least one or more correct hypotheses was higher than those who could never formulate correct hypotheses. It is thought that the

reasons for this are encouraging the students to do research on the subject before the activity and giving the students a sample hypothesis as a clue. Şimşek & Kabapınar (2010) also stated that students had problems with their hypothesis-building skills.

CONCLUSION AND RECOMMENDATIONS

In this research process, the educational material developed within the scope of laboratory applications based on the constructivist learning approach was used for the General Chemistry Laboratory-I course, and the hypothesis-building skills of the students were evaluated.

Application results were reported by the students. As a result of the content analysis made over the student reports, it was concluded that a significant part of the hypotheses established could be investigated and tested, and no significant difficulties were encountered during the applications. As a result of these analyses, it was determined that the rate of students who could establish testable and meaningful hypotheses (80%) was higher than the rate of students who could not establish such hypotheses (20%). In addition, it can be said that such activities designed for the acquisition of process skills can contribute positively to both the acquisition of adequate process skills to the students and the permanence of these skills.

- Within the scope of science education applications, the applications designed based on the constructivist laboratory approach and developed in terms of gains related to the process skills should be included more in the research and inquiry processes.

- It may be suggested that similar applications should be made within the scope of other applied basic science courses such as biology, physics.

- In the field of science education, it is important to adequately evaluate the effects and efficiency of the activities designed based on the constructivist laboratory approach and developed in terms of process skills. For this reason, it can be suggested to conduct studies on the students' scientific process skills levels and whether these skills differ in terms of various variables, and whether there are positive developments in these skills in the education and training process.

Declaration of Conflicting Interests

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Author contribution statements:

This study has been produced from the master's thesis. Şule Yaz is the author who conducted his thesis research and Zekeriya Yerlikaya is the author who supervised the thesis.

All authors discussed the results and contributed to the final manuscript.

Researchers' contribution rate The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

All stages of the study were carried out in accordance with ethical principles. Since the implementation of the study was carried out before 2020, the Ethics Committee Approval Document was not received.

Conflict of Interest: The authors declare that they have no conflict of interest.

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|Araştırma Makalesi / Research Article|

Investigation of the Relationship Between Secondary School Teachers' Purposes of Using Social Media and Their Levels of Informal Learning with Smartphones [1]

Ortaokul Öğretmenlerinin Sosyal Medya Kulanım Amaçları ile Akıllı Telefonla İnformal Öğrenme Düzeyleri Arasındaki İlişkinin İncelenmesi

Esra YARDİMCİEL[2], Murat TAŞDAN[3]

Keywords
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Abstract

Purpose: This study has two main purposes, which are to reveal teachers 'views on social media use and their levels of informal learning with smartphones, and to determine the relationship between teachers' social media usage purposes and their levels of informal learning with smartphones.

Design/Methodology/Approach: Explanatory mixed design was used in the survey made using a survey model and mixed methods. The study's population consists of 1,198 teachers working in secondary schools in Kars Province, whereas the study's sample group consists of 303 secondary school teachers selected using the multi-stage stratified purposeful sampling method. “Purpose of Using Social Media Scale,” “Informal Learning Activities with Smartphones Scale,” and the “Semi-Structured Interview Form for Opinions of Teachers on Social Media and Informal Learning” were used as data collection tools in the study. One-Way Variance Analysis, Mann-Whitney U test, Kruskal Wallis H test as well as t test for frequency, percentage, relative coefficient of variable, and arithmetic mean independent samples were used to analyze the study's quantitative data. The study's qualitative data were resolved using descriptive and content analysis.

Findings: The results of the study showed that teachers' use of social media for content-sharing purposes and the level of informal learning with smartphones decreased as their age increased and that their use of social media for communication and content-sharing purposes and the level of informal learning with smartphones decreased as their seniority increased. It was determined that the use of social media for research, to share content, and to initiate communication decreased as the time spent using social media decreased. It was also seen that all the teachers who participated in the study transferred and used the videos, information, and documents they saw on social media in their lessons, that they learned informal information from social media, and that they used their smartphones in informal learning.

Highlights: In the light of the results of this study, it can be suggested to create a social media platform that enables all stakeholders of education to take part in every stage of the formation, and that makes it possible to work educationally with more advanced features. According to EBA and to evaluate the work done in a reliable and valid way.

Öz

Çalışmanın amacı: Çalışmanın öğretmenlerin sosyal medya kullanımı ile akıllı telefonla informal öğrenme düzeyleri hakkındaki görüşlerini ortaya koymak ve öğretmenlerin sosyal medya kullanım amaçları ile akıllı telefonla informal öğrenme düzeyleri arasındaki ilişkiyi tespit etmek üzere iki temel amacı vardır.

Materyal ve Yöntem: Tarama modelinde ve karma yöntem ile yapılan araştırmada açıklayıcı karma desen kullanılmıştır. Araştırmanın evrenini Kars il genelindeki ortaokullarda görev yapan 1198 öğretmen; çalışmanın örneklemini ise çok aşamalı tabakalı amaçsal örnekleme yöntemi ile belirlenen 303 ortaokul öğretmeni oluşturmaktadır. Araştırmada veri toplama aracı olarak, “Sosyal Medya Kullanım Amaçları Ölçeği”, “Akıllı Telefonla İnformal Öğrenme Aktiviteleri Ölçeği” ve “Öğretmenlerin Sosyal Medya ve İnformal Öğrenme Hakkındaki Görüşleri Yarı Yapılandırılmış Görüşme Formu” kullanılmıştır. Araştırmanın nicel verilerinin analizi için frekans, yüzde, bağıl değişkenlik katsayısı, aritmetik ortalama bağımsız örneklemler için t testi; Tek Yönlü Varyans Analizi, Mann Whitney U testi, Kruskal Wallis H testi kullanılmıştır. Araştırmanın nitel verileri ise betimsel ve içerik analizi ile çözümlenmiştir.

Bulgular: Araştırmanın sonucunda öğretmenlerin yaşları arttıkça sosyal medyayı içerik paylaşma amacıyla kullanım ve akıllı telefonla informal öğrenme düzeylerinin; kıdemleri arttıkça iletişim kurma ve içerik paylaşma amacıyla kullanım ve akıllı telefonla informal öğrenme düzeylerinin azaldığı saptanmıştır. Sosyal medya kulanım süresinin azalması ile araştırma, içerik paylaşma ve iletişimi başlatma amacıyla sosyal medyanın kullanımının azaldığı saptanmıştır. Görüşmeye katılan öğretmenlerin tamamının sosyal medyadan izledikleri video, bilgi ve belgeleri derslerinde aktarıp kullandıkları, sosyal medyadan informal öğrenmeler edindikleri ve akıllı telefonlarını informal öğrenmelerde kullanmakta oldukları görülmüştür.

Önemli Vurgular: Bu çalışma sonuçları ışığında EBA'dan daha gelişmiş özelliklere sahip eğitsel anlamda çalışma yapmayı ve yapılan çalışmaları güvenilir ve geçerli bir şekilde değerlendirmeyi mümkün kılan eğitimin tüm paydaşlarının oluşumun her aşamasında yer aldığı sosyal medya platformunun oluşturulması önerilebilir.

[1] Article created from the post-graduate thesis entitled " Investigation of the Relationship Between Secondary School Teachers' Purposes of Using Social Media and Their Levels of Informal Learning With Smartphones " Advisor: Prof. Dr. Murat TAŞDAN

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INTRODUCTION

Communication is always present in life because humans are social, versatile beings with needs. With advances in science and technology reaching the highest levels in the 21st century, social media has come to the fore with such applications as social networking, blogging, microblogging, and picture- and video-sharing as one of the most important parts of the media. Social media includes platforms that enable interaction, communication, sharing, and mobilizing users and communities (Manavcıoğlu, 2011, p.23).

Education is one of the institutions where the intense and rapid effects of social media on societies through channels and different tools are observed (Kurt & Kürüm, 2010). The way social media tools are used affects education. According to Ekici and Kiyici (2012), social media today is an important force in terms of education with its interaction and communication features and its widespread use. Social media affects not only individuals but also individuals' education processes. This is because students today obtain a lot of information from social networks (Kıncal & Kartal, 2009).

Advances in technology have forced education institutions to keep up with the times and these technological developments have been effective in meeting the educational needs of individuals. These technological developments have changed the structure of the education system and learning and teaching activities, and have focused on social, collaborative, lifelong, and informal learning rather than the classroom environment. Social and interactive environments based on cooperation with social media have emerged, and learning experiences are taking place in a fast, instantaneous, and cost-effective manner (Atıcı & Yıldırım, 2010). Social media is a type of informal learning tool. Social media shapes people's perspective of the world they live in, educates people in their own way, and gives people informal learning (Bilici, 2014). Competing with the school and family as an informal teacher, social media has become the principal teacher and storyteller. Toğay, Akdur, Yetişken, and Bilici (2013) conducted a study on social media-based education with 60 students studying at Gazi University Ankara Vocational School for one semester. According to the results of a survey undertaken by students at the end of the term, most of the students stated they noticed they were learning topics with the relevant social media tool without getting bored and often without realizing it and that their learning processes became easier.

With so much use of social media, we are bound to learn things via social media about topics we know nothing about. In today's information societies where information is constantly changing and being refreshed and updated, social media plays a key role in teachers keeping themselves up to date. This is because we encounter unlimited messages on social media every day. These messages contribute to our learning, albeit without realizing it. Öztürk and Özen (2016) concluded in their qualitative study that with respect to lifelong learning, teachers believe that social media is important for their self-development. Although social media is mostly used informally, it is also important in supporting learning and learning activities. For example, with the WhatsApp app, not only is there an increase in student-student and teacher-student communication, but it also allows for activities, homework, and resources to be shared between educators and learners. Similarly, Facebook is suitable for use as an education tool in terms of peer feedback, active participation, and cooperation (Mazman, 2009).

Although learning is defined as instruction that takes place in an educational institution, today's technological developments are changing learning for learners and the concept of informal learning is emerging as an effective form of learning (Yaşar, 2013). Informal learning is all the learning that emerges in a natural environment in an individual’s life and that occurs as a result of experience (Çavuş, Topsakal, & Kaplan, 2012). Attwell. (2007 Cited in. Yaşar, 2013) concluded that 80% of students' learning occurs through informal learning. In the study by İnce (2017) conducted with secondary school students, it was found that informal learning was effective in learning new concepts. In Tekinalp's (2012) study with parents, it was concluded that the Internet and television are the most effective informal learning resources for parents.

Advances in telephone technologies also play a role in informal learning through social media. Smartphones make it easy to access mobile internet and social media apps. The fact that university students in the study by Santo and Ali (2012) said that they use their smartphones for informal learning may be cited as an example of this. Rahim et al. (2012; cited in Yaşar, 2013) concluded in their study that Facebook, Twitter, and SMS (short message) are the phone apps used the most for informal learning. All of this shows that social media is effective in informal learning and that smartphones are devices that support informal learning.

A review of the literatures shows studies on social media made by Oğuz and Sözcü (2016), Solmaz, Tekin, Herzem and Demir (2013), Toğay, Akdur, Yetişken, and Bilici (2013), Öztürk and Özen (2016), Tekinalp (2012), Derya (2017), Vural and Bat (2010), Bostancı (2010), Öztunç (2015), Yengin (2015), Akgündüz (2013), Deperlioğlu and Köse (2010), Sarsar, Başbay, and Başbay (2015), Kıcı and Dilmen (2014), Öztürk and Tetik (2015), Güler, Şahinkayası, and Şahinkayası (2017), Gülbahar, Kalelioğlu and Madran (2010); and on smartphones by Baykut (2014), Kumcağız and Gündüz (2016), Minaz and Bozkurt (2017), Ağca and Bağcı (2013). There is an insufficient number of joint studies on social media and smartphone use. A review of the literature shows studies by Yaşar (2013), Işık and Kaptangil (2018), Altundağ and Bulut (2017), Yusufoğlu (2017) and Ataman Yengin (2016) on the use of social media and smartphones.

The Purpose of the Study

This study has two main purposes, which are to reveal teachers' views on social media use and their levels of informal learning with smartphones, and to determine the relationship between teachers' social media usage purposes and their levels of informal learning with smartphones. To achieve the stated goals, answers to the following questions were sought:

1. Social media usage purposes of secondary school teachers working in Kars -- Does it differ significantly depending on the teachers' age, gender, seniority, and time spent every day using social media?

2. Levels of informal learning with smartphones of secondary school teachers working in Kars -- Does it differ significantly according to the teachers' age, gender, seniority, and time spent every day using social media?

3. What are the opinions of the teachers working in Kars on the use of social media, smartphones, and informal learning?

Research Problem

The research problem of this study is to reveal secondary school teachers' purposes of using social media and their levels of informal learning with smartphones and their views on their use.

METHOD / MATERİALS

The study was carried out using a correlational survey model and a mixed method in which qualitative and quantitative data were used together. Survey studies are studies in which the opinions of the participants on a topic or event or their interest, skills, attitudes, talents, and other characteristics are identified (Büyüköztürk et al., 2012, p.177). Accordingly, the quantitative aspect of the study is a correlational survey used to examine the relationship between secondary school teachers' purposes of using social media and their levels of informal learning. Explanatory design, a form of mixed-method research, was used in the study. In explanatory design, quantitative data are collected and analyzed first after which qualitative data are collected (Karasar, 2015; Büyüköztürk et al., 2012).

Working Group

The study's population consists of 1,198 teachers working in secondary schools in Kars in the 2017-2018 academic year, whereas the study's sample group consists of 303 secondary school teachers. The study's sample group was created in three stages. Multi-stage stratified purposeful sampling was used in the study. In this way, it was ensured that each teaching branch in the population was sampled according to its proportion of the population. Later, Kars central district and all districts were accepted as strata and it was ensured that all districts were represented in the sample to the same degree they are represented in the population. The simple random sampling method was used to determine which teachers in which districts the scale was to be applied. When the distribution of teachers included in the sample by gender is examined, 170 (56.1%) of the secondary school teachers who participated in the study are women and 103 (43.9%) are men. Among the secondary school teachers participating in the study, 52 (17.2%) are aged 22-25, 157 are aged 26-30 (51.8%), 87 are aged 31-40. (28.7%), and finally, seven are aged 41-50 (2.3%). Examining by seniority, it is seen that 205 (67.7%) of the participating secondary school teachers have 1-5 years seniority, 56 (18.5%) have 6-10 years, 29 (9.6%) have 11-15 years, 8 (2.6) have 16-20 years, and five (1.7%) have 21-25 years. Of the teachers in the sample, 46 (15.2%) were Turkish teachers, 42 (13.9%) were Religious Culture and Morals teachers, 47 (15.5%) were Mathematics teachers, nine (3.0 %) were Visual Arts teachers, seven (2.3%) were Music teachers, 37 (12.2%) were English teachers, 35 (11.6%) were Social Sciences teachers, 12 (4.0%) were Information Technologies teacher, 38 (12.5%) were Natural Sciences teachers, 19 (6.3%) were Physical Education teachers, and 11 (3.6%) were Technology and Design teachers. When the location of the place where teachers work is examined, it is seen that 83 (27.4%) of the secondary school teachers participating in the study are in the city center, 143 (47.2%) are in the district center, and 77 (25.4%) are in towns and villages. Of the secondary school teachers participating in the study, 131 (43.2%) are married and 172 (56.8%) are single.

Data Collection Tools

"Purpose of Using Social Media Scale," "Informal Learning Activities With Smartphones Scale," and the "Semi-Structured Interview Form for Opinions of Teachers on Social Media and Informal Learning" were used as data collection tools in the study.

Purpose of Using Social Networks Scale

In the study, the "Purpose of Using Social Networks Scale" developed by Koçak-Usluel, Demir, and Çınar (2014) was used to determine the teachers' purposes of using social media. Each item in the "Purpose of Using Social Networks Scale" takes the form of a 7-point Likert-type grade ranging between "Strongly agree" (7) and "Strongly disagree" (1). The Scale consists of six factors: research, collaboration, initiating communication, establishing communication, maintaining communication, and sharing content. The scale explains 68.32% of the total variance. Item factor loads are between .57 and .85. According to the results of the reliability analysis, the reliability coefficient of the 21 items in the scale calculated with Cronbach alpha is .92. Cronbach alpha reliability coefficients of the factors range from .67 to .87. When looking at the sub-dimensions of the scale, the research dimension is .78; cooperation is .86; initiating communication is .67; establishing communication is .87; maintaining communication is .82, and sharing content is .87. This shows that the scale is reliable. Item-total correlations of the items on the scale range from .331 to .717. All these results show that the scale is a valid and reliable measurement tool.

Informal Learning Activities With Smartphones Scale

The study used the "Informal Learning Activities With Smartphone Scale" developed by Yaşar (2013) to determine secondary school teachers' levels of informal learning with smartphones. A 5-point Likert-type scale is used in the study. The points are

"Never," "Rarely," "Occasionally," "Often," and "Always." Cronbach alpha test was applied to the data obtained to make an internal reliability analysis of the items on the scale. The Cronbach Alpha test yielded a very high value of .83.

Semi-Structured Interview Form

For the qualitative aspect of the study, a semi-structured interview form was used to reveal the secondary school teachers' views on social media and informal learning, and the extent to which they use smartphones for social media and informal learning. Semi-structured interviews provide not only fixed answers but also in-depth knowledge of the subject area (Büyüköztürk et al., 2012). The draft interview form was first examined by experts in the field. The opinion of a linguist was sought to give the final touches to the interview formed created using corrections and feedback provided by experts in the field. For the validity of the semi-structured interview form, the different data collection tools and analysis methods were reviewed first. Expert opinion was sought throughout the development of the form from creating the draft to making corrections and at every stage of the implementation process. The corrections needed were all done following expert opinion. The study's assumptions and limitations are stated. All participants in the study were volunteers. However, in ensuring its validity, the theoretical framework was adhered to and the purpose of the study and the rationale of the method used were explained to the participants in detail. All interviews were recorded to ensure the reliability of the interview form. Consistency was ensured through checks by different experts and their opinions, and the presentation of the obtained data was made clearly and was checked by the expert. At the same time, the reliability formula proposed by Miles and Huberman (1994) was used to calculate the reliability of the study [Reliability=Number of Agreements / (Number of Agreements + Disagreements)]. The result obtained was accepted as reliable for the study.

Data Analysis

Data were analyzed using SPSS software. Frequency, percentage, relative coefficient of variation, and arithmetic mean statistics were used for descriptive analysis. The first check carried out in the study was to check the normality of the data using the Kolmogorov-Smirnov test. Parametric tests were applied to groups with normal distribution and non-parametric tests were applied to groups that did not show normal distribution. T test was applied to groups of two with normal distribution and One-Way Analysis of Variance (ANOVA) was applied to groups of more than two. Mann-Whitney U test was applied to groups of two that did not show normal distribution and Kruskal Wallis H test was applied to groups of more than two. Semi-structured interview was used to obtain the study's qualitative data. Analyses of the research data were carried out using the descriptive and content analysis qualitative research approaches. After the themes and codes were determined, interviews were held and recorded. The recorded interviews were transcribed verbatim. The study involved 20 participants, each of whom was coded "F1, F2, M1, M2..." and so on. Here F and M are gender and the number represents the order. After the interviews were written down, the counting/quantification process took place. For this, the frequency of the responses given by the participants was determined according to the previously determined themes and codes. Here, each unit was counted each time. This revealed the frequency of the answers given within the same theme. Briefly, in the analysis of qualitative data, the following processes were carried out in this order: data collection, data analysis, coding of the data, creating categories from the obtained codes, checking the suitability of the categories, and presenting the data.

FINDINGS

Table 1. T test results of teachers' purposes of using social media by gender.

Dimensions	Gender	N	X	SS	Sd	T	P
PUSM scale	Female	170	4.31	1.02	301	.37	.70
	Male	133	4.35	.98			
Research	Female	170	5.27	1.31	301	2.68	.00
	Male	133	4.82	1.63			
Collaboration	Female	170	4.51	1.40	301	.35	.72
	Male	133	4.56	1.32			
Initiating communication	Female	170	2.25	1.50	301	4.20	.00
	Male	133	3.02	1.67			
Communicating	Female	170	5.21	1.65	301	1.88	.06
	Male	133	4.85	1.66			
Maintaining communication	Female	170	4.39	1.60	301	1.28	.20
	Male	133	4.63	1.52			
Sharing content	Female	170	4.29	1.68	301	1.01	.31
	Male	133	4.10	1.46			

The scale's *"Research"* dimension shows a significant difference under the teacher gender variable [t (301)=2.68, p <.05]. Accordingly, it was determined that female teachers (X=5.27) use social media for research purposes more than male teachers

(X=4.82) do at a level that shows a significant difference. The scale's *"Initiating communication"* dimension shows a significant difference under the teacher gender variable [t (301)=4.20, p <, 05]. Accordingly, it was determined that male teachers (X=3.02) use social media to initiate communication far more than female teachers (X=2.25) at a level that shows a significant difference.

Table 2. Kruskal Wallis H test results of teachers' purposes of using social media by age.

Dimension	Age	N	Mean Rank	Sd	x^2	p*	Significant difference
PUSM Scale	(1) 22-25 years old	52	166.55	3	4.20	0.24	
	(2) 26-30 years old	157	152.61				
	(3) 31-40 years old	87	146.32				
	(4) 41-50 years	7	100.79				
Research	(1) 22-25 years old	52	160.86	3	5.14	16	
	(2) 26-30 years old	157	156.54				
	(3) 31-40 years old	87	143.37				
	(4) 41-50 years	7	91.71				
Collaboration	(1) 22-25 years old	52	159.69	3	.51	.91	
	(2) 26-30 years old	157	149.68				
	(3) 31-40 years old	87	151.78				
	(4) 41-50 years	7	149.71				
Initiating communication	(1) 22-25 years old	52	162.17	3	3.20	.36	
	(2) 26-30 years old	157	149.50				
	(3) 31-40 years old	87	154.41				
	(4) 41-50 years	7	102.43				
Communicating -	(1) 22-25 years old	52	165.64	3	5.76	.12	
	(2) 26-30 years old	157	157.32				
	(3) 31-40 years old	87	137.41				
	(4) 41-50 years	7	112.71				
Maintaining communication	(1) 22-25 years old	52	155.36	3	1.19	75	
	(2) 26-30 years old	157	152.72				
	(3) 31-40 years old	87	151.50				
	(4) 41-50 years	7	117.21				
Sharing content	(1) 22-25 years old	52	158.82	3	12.09	.00	1-4
	(2) 26-30 years old	157	157.79				2-4
	(3) 31-40 years old	87	146.18				3-4
	(4) 41-50 years	7	43.86				

A significant difference is seen in the teachers' scores on the *"Sharing content"* sub-dimension of the scale under the age variable (x^2=12.09 p>.05). According to the results of the Mann-Whitney U test conducted to determine which groups the difference is between, the scores of the teachers in the 41-50 age group (M.R.=43.86) are lower than the scores in the 22-25 age group (M.R.=158.82), the 26-30 age group (M.R.=157.79), and the 31-40 age group (M.R.=146.18).

Table 3. Kruskal Wallis H test results of teachers' purposes of using social media by professional service time.

Dimension	Age	N	Mean Rank	Sd	x^2	p*	Significant difference
PUSM Scale	(1) 1-5 years	205	154.15	3	10.69	.03	1-4
	(2) 6-10 Years	56	160.73				2-4
	(3) 11-15 Years	29	150.95				3-4
	(4) 16-20 years	8	56.31				
	(5) 21-25 years	5	125.30				
Research	(1) 1-5 years	205	156.01	4	7.49	.11	
	(2) 6-10 Years	56	159.11				
	(3) 11-15 Years	29	135.83				
	(4) 16-20 years	8	92.38				
	(5) 21-25 years	5	97.30				
Collaboration	(1) 1-5 years	205	150.15	4	3.21	.52	
	(2) 6-10 Years	56	158.85				
	(3) 11-15 Years	29	153.95				
	(4) 16-20 years	8	115.69				
	(5) 21-25 years	5	198.10				
Initiating communication	(1) 1-5 years	205	153.49	4	5.14	.27	
	(2) 6-10 Years	56	153.95				
	(3) 11-15 Years	29	160.50				
	(4) 16-20 years	8	90.63				
	(5) 21-25 years	5	118.10				

Dimension	Age	N	Mean Rank	Sd	x^2	p*	Significant difference
Communicating -	(1) 1-5 years	205	158.09	4	12.01	.01	1-4
	(2) 6-10 Years	56	137.22				2-4
	(3) 11-15 Years	29	167.57				3-4
	(4) 16-20 years	8	69.19				
	(5) 21-25 years	5	109.90				
Maintaining Communication	(1) 1-5 years	205	149.23	4	10.05	.04	1-4
	(2) 6-10 Years	56	167.33				2-4
	(3) 11-15 Years	29	166.17				3-4
	(4) 16-20 years	8	68.50				
	(5) 21-25 years	5	145.20				
Sharing Content	(1) 1-5 years	205	157.26	4	15.52	.00	1-4
	(2) 6-10 Years	56	160.95				1-5
	(3) 11-15 Years	29	136.86				2-4
	(4) 16-20 years	8	73.38				2-5
	(5) 21-25 years	5	49.60				3-4
							3-5

The teachers' scores across the total PUSM scale (x^2=10.69, p <.05) show a significant difference under the time in professional service variable. It was determined that teachers with a professional service time of 16-20 years are at a lower level than teachers with a professional service time of 1-5 years, 6-10 years, and 11-15 years across the entire scale. The teachers' views with respect to the "*Communicating*" sub-dimension (x^2=12.01, p <.05) show a significant difference under the time in professional service variable. It was determined that teachers with a professional service time of 16-20 years use social media to communicate less than teachers with a professional service time of 1-5 years, 6-10 years, and 11-15 years. Teachers' views with respect to the *"Maintaining communication"* sub-dimension (x^2=10.05, p <.05) show a significant difference under the time in professional service variable. It was determined that teachers with a professional service time of 16-20 years use social media to maintain communication less than teachers with a professional service time of 1-5 years, 6-10 years, and 11-15 years. Teachers' views with respect to the *"Sharing content"* sub-dimension (x^2=15.52, p <.05) differ significantly under the time in professional service variable. It was determined that teachers with a professional service time of 16-20 years and 21-25 years use social media for content sharing less than teachers with a professional service time of 1-5 years, 6-10 years, and 11-15 years.

Table 4. Kruskal Wallis H test results of teachers' purposes of using social media by daily social media usage time.

Dimension	DSMUT	N	Mean Rank	Sd	x^2	p*	Significant difference**
PUSM scale	(1) 0-1 hours	119	141.38	3	7.71	.05	
	(2) 1-3 hours	137	150.57				
	(3) 3-5 hours	34	181.93				
	(4) 5 - over	13	186.00				
Research	(1) 0-1 hours	119	136.33	3	8.65	.03	1-3
	(2) 1-3 hours	137	156.43				
	(3) 3-5 hours	34	176.81				
	(4) 5 - over	13	183.81				
Collaboration	(1) 0-1 hours	119	153.94	3	.56	.90	
	(2) 1-3 hours	137	148.18				
	(3) 3-5 hours	34	157.49				
	(4) 5 - over	13	160.23				
Initiating communication	(1) 0-1 hours	119	142.79	3	9.24	.02	1-3
	(2) 1-3 hours	137	150.31				2-3
	(3) 3-5 hours	34	193.47				
	(4) 5 - over	13	145.62				
Communicating	(1) 0-1 hours	119	139.09	3	7.55	.05	
	(2) 1-3 hours	137	157.13				
	(3) 3-5 hours	34	157.40				
	(4) 5 - over	13	202.00				
Maintaining communication	(1) 0-1 hours	119	146.26	3	2.95	.39	
	(2) 1-3 hours	137	150.24				
	(3) 3-5 hours	34	172.63				
	(4) 5 - over	13	169.04				
Sharing content	(1) 0-1 hours	119	136.80	3	10.49	.015	1-3
	(2) 1-3 hours	137	154.03				1-4
	(3) 3-5 hours	34	180.19				
	(4) 5 - over	13	196.00				

A significant difference is seen under the daily social media usage time variable of the PUSM scale's *"Research"* sub-dimension (p <.05). Mann-Whitney U test was conducted to determine between which groups this significant difference exists. Accordingly, there is a difference between those who use social media for 0-1 hour a day and those who use it for 3-5 hours. Considering the arithmetic means, it was determined that those who use social media for 3-5 hours (B = 136.33) use it for research purposes more than those who use social media for 0-1 hour (B = 183.31). A significant difference is seen under the daily social media usage time variable of the PUSM scale's *"Initiating communication"* sub-dimension (p <.05). There is a difference between those who use social media for 0-1 hours, those who use 1-3 hours, and those who use it for 3-5 hours. Considering the arithmetic means, it was determined that for the purpose of initiating communication, those who use social media for 3-5 hours a day (B = 193.47) use social media for this purpose more than those who use social media for 0-1 a day (B = 142.79) and 1-3 hours a day (B = 150.31). A significant difference is seen under the daily social media usage time variable of the PUSM scale's *"Sharing content"* sub-dimension (p <.05). There is a significant difference between those who use social media for between 0-1 hour a day (B = 136.80) and those who use it for 3-5 hours a day (B = 180.19) and 5 hours or over (B = 196.00). Considering the arithmetic means, it was determined that those who use social media 3-5 hours a day and 5 hours or more use it for sharing content more than those who use it between 0-1 hour a day.

Table 5. Kruskal Wallis H test results of levels of informal learning with smartphones by age.

Dimension	Age	N	Mean Rank	Sd	x^2	p*	SignificantDifference
Informal Learning With Smartphones Scale	(1) 22-25 years	52	171.56	3	19.67	.00	1-3
	(2) 26-30 years	157	161.09				1-4
	(3) 31-40 years	87	132.84				2-3
	(4) 41-50 years	7	41.07				2-4
							3-4

The informal learning levels of the teachers differ significantly by age (x^2=19.67, p <.05). It was determined that teachers in the age group 22-25 (M.R.=171.56) and 26-30 (M.R.=161.09) do more informal learning with smartphones than those in the 31-40 age (M.R.=132.84) and 41-50 years (M.R.=41.07) groups; and that teachers in the 31-40 age group (M.R.=132.84) do more informal learning with smartphones than teachers in the 41-50 age group (M.R.=41.07) at a level that makes a significant difference.

Table 6. Kruskal Wallis H test results of levels of informal learning with smartphones by time in professional service.

Dimension	Age	N	Mean Rank	Sd	x^2	p*	Significant difference
Informal Learning With Smartphones Scale	(1) 1-5 years	205	163.21	3	18.30	.00	1-4
	(2) 6-10 Years	56	140.32				1-5
	(3) 11-15 Years	29	131.02				2-5
	(4) 16-20 years	8	95.81				3-5
	(5) 21-25 years	5	34.60				

Teachers' informal learning levels differ by time in professional service (x^2=18.30, p <.05). At the end of the multiple comparisons, it was determined that this difference was between teachers with 1-5 years of professional service and those with 16-20 years, and between teachers with 21-25 years of professional service and those with 1-5 years, 6-10 years, and 11-15 years. It was determined that teachers with 16- 20 years of professional service do less informal learning than teachers with 1 to 5 years of professional service and that teachers with 21-25 years of professional service do less informal learning than teachers with 1-5, 6-10, and 11-15 years of professional service.

Table 7. Kruskal Wallis H test results of levels of informal learning with smartphones by daily social media usage time.

Dimension	DSMUT	N	Mean Rank	Sd	x^2	p*	Significant difference**
Informal Learning With Smartphones Scale	(1) 0-1 hours	119	128.71	3	18.36	.00	1-2
	(2) 1-3 hours	137	159.90				1-3
	(3) 3-5 hours	34	195.49				2-3
	(4) 5 - over	13	168.27				

Teachers' informal learning levels differ by daily social media usage time (x^2=18.36, p <.05). According to the results of the Mann-Whitney U test conducted to determine which groups this significant difference is between, it was determined that those who use social media for 3-5 hours a day (M.R.=195.49) have higher levels of informal learning with smartphones than those who use social media for 0-1 hour a day (M.R.=128.71) and 1-3 hours a day (M.R.=159.90) and that those who use social media for 1-3 hours a day (M.R.=159.90) have higher levels of informal learning with smartphones than those who use it for 0-1 hour a day (M.R.=128.71).

Table 8. Teachers' views on informal learning.

Themes	Codes	*f* *(n=20)*
Environmental and cultural factors	Outside of school.	2
	Circle of friends and family.	3
	Customs-traditions.	1
Lifelong learning	Daily life practices.	2
Observation	Modeling, imitation.	5
Natural environment	Irregular and unplanned.	9
	Occurs accidentally/randomly.	4
Media	Takes place on the Internet.	1

The majority of teachers taking part in the study stated that informal learning is learning that is *irregular and unplanned*. Aside from that, the teachers stated that informal learning is learning *through modeling and imitation*, *by accident/at random*, *and learning from family and friends*. Examples of the teachers' comments follow: F4 - "*Informal learning is spontaneous learning in a natural environment."* M7 -*"Informal learning is learning that is not part of a specific plan; the kind of learning done while doing daily life activities such as sports, traveling, chatting, etc."*

Table 9. Teachers' views on social media.

Themes	Codes	*f* *(n=20)*
Virtuality/virtual environment	Contains virtuality.	1
	The Internet	1
Communicating	Lets people communicate	1
	Lets people interact	3
	Acculturation properties	2
Social media platforms and apps	Facebook, WhatsApp, Twitter, Instagram, and similar apps.	13
	Lets people share.	3
	Entails the concepts of follower, like	1

Most of the teachers who took part in the study stated that *social media platforms and apps* such as Facebook, WhatsApp, Twitter, and Instagram come to mind. Aside from that, teachers stated that *sharing, interaction,* and *acculturation* are concepts that come to mind when social media is mentioned. Some examples of teachers' comments follow: M2 - *"When I think of social media, the first thing that comes to mind is the Internet, Facebook, Instagram, Twitter, etc."*M5 - "*When I think of social media, Twitter, Instagram, Facebook, and blogs come to mind."*

Table 10. The types of information teachers get from social media.

Themes	Codes	*f* *(n=20)*
Currency	I follow scientific developments.	2
	I keep up with the latest news.	9
Education/teaching/learning	I gain vocational knowledge.	6
	I get information about education.	4
Informal knowledge	Informal learning	6

It was concluded that the teachers who took part in the study mostly acquired *up-to-date news, vocational knowledge, information about education, and information based on informal learning*. Some examples of teachers' comments follow: F1 - *"When I think of social media, communication comes to mind. Social media is where information is shared and followed. Yes, I learn new things from social media. In particular, I get information about education from social media."* "M1 - *"I get mainly informal learning-based information off social media."*

Table 11.The fields where teachers say social media influences informal learning.

Themes	Codes	*f* *(n=20)*
Information	It provides access to information.	4
	I gain vocational knowledge.	2
	I get information about education and teaching.	1
Social life	I learn through imitation, observation, and modeling.	8
	It ensures social change and solidarity.	3
	I learn daily life practices.	3

All the teachers (n=20) who took part in the study stated that social media affects their informal learning. It can be seen that the informal learning areas most influenced by social media are learning by imitation/observation, access to information, social change-solidarity, and daily life practices, respectively. M1 - "I think the social media tools we use in daily life are conducive to

informal learning. I think social media makes informal learning more appealing. An example of positive informal learning is housewives benefiting from these environments for cooking.

Table 12. Teachers' purposes of using smartphones for informal learning.

Themes	Codes	*F (n=20)*
Getting Information	I find out the news from news sites.	2
	I gain vocational knowledge.	11
	I listen to subject-matter experts.	7
Personal development	I use it to learn a language.	8
	I follow fashion.	1
	I learn recipes.	6

All the teachers (n=20) in the study stated they use their smartphones for informal learning. Teachers stated that the informal learning areas where they use their smartphones the most are *professional development, language learning, listening to subject-matter experts, and learning recipes,* respectively. In addition, it was determined that the majority of participants who use smartphones for recipes *are female teachers (F2, F3, F4, F5, F8)*. Some examples of teachers' comments follow: F2 - *"I use smartphones for language learning, listening to subject-matter experts, learning recipes, and for professional development. I use Duolingo for language learning, e-books for reading books, and Instagram and Facebook for professional development. I also exchange vocational knowledge on various blogs. In general, I frequently use Pinterest and YouTube for almost everything."*

Table 13. Teachers' use of information and materials obtained from social media in lessons.

Themes	Codes	*f (n=20)*
Video/film/animation	I make them watch Videos/films/animation.	18
Vocational knowledge and sharing	I do group sharing.	6
	Creating or downloading vocational documents/papers/visuals	4
Play/entertainment	I learn educational games	3
	I use their tunes	1
News/information	I use current news or information.	2

All the teachers (n=20) in the study stated they use the information and materials they obtain from social media in their lessons. The teachers also said that the *videos they use in their lessons are mostly obtained from social media and that they also apply to their lessons the information, shares, documents, and educational games* that they get from community groups. Some examples of teachers' comments follow: F9 - *"If I ever seek an expert's opinion on something, I mean if I listened to it, I use that in my lessons. There are even social media pages that I recommend the children check out. After all, even NASA has an official page on Instagram. I want to direct the children there and have them look at the photos or learn about the astronauts' lifestyles."*M10 - *"I actively follow robotic technologies. These are of great interest to children. That's why I use the information, images, and videos I get from social media about them, especially in the part of the lesson where I get their attention.* M1 - *"Yes, I pass on to the children the different and highly motivational information I see in documentaries, particularly on social media. I also get my students to watch the videos on social media that I think are going to be beneficial. "*F2 - *"In my lessons, I use the videos, information, and documents that I have seen."*

Table 14. The reasons stated by teachers why they do not use social media tools in assessing student development.

Can social media tools be used to assess student progress?		
Yes (f) 3		*No (f) 17*
Themes	Codes	*f (n=20)*
Reliability-validity	The conditions for reliability and validity cannot be met.	8
	Not possible to make an assessment based on objective criteria.	2
Educational issues	The learning environment is inappropriate.	2
	It is far from having an educational purpose.	2
Virtuality	It is nothing like real life (virtuality).	1

Three of the teachers who took part in the study stated that social media can be used with a strong supervisory network because it allows for multiple evaluations and attaches importance to individual differences. The other 17 teachers stated that social media cannot be used in assessing student development. The reasons cited for not using social media included reliability and validity issues, it being a long way from having an educational purpose, the unsuitability of the learning environment, the lack of objective evaluation criteria, and the fact that social media is virtual. M1- "I don't think it can be used. It can't be used because of its low level of reliability and validity."F1 - "Social media can be used, in my opinion. This is because it is possible to find materials suitable for individual learning differences on social media."

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

In the study, it was seen that female teachers use social media for "research" purposes more than male teachers and that male teachers use social media "to initiate communication" more than female teachers. No difference was seen in male and female teachers' levels of informal learning with smartphones. In contrast to these findings, Tiryakioğlu and Erzurum (2011) did find a difference in the gender variable in their study on the use of social networks in education with the academic staff at Anadolu University Faculty of Communication. In the study, it was determined that teachers aged 41- 50 are the group that uses social media the least for content-sharing purposes. Furthermore, as age increases, content sharing on social media decreases. In Menteşe's (2013) study on the use of social media by school administrators and teachers, it was observed that young teachers and administrators were more active and willing to use social media, and at the same time, as age increases, the purposes of using social media and the will to use it decreases. As the time spent in professional service increases, the level of informal learning with smartphones decreases. Similar to this study, Çobanoğlu (2018) concluded that teachers with 1-5 years of professional service use social media more. Supporting these findings, the study of İşman (2002) and Menteşe (2013) reported that young teachers have a more positive attitude toward using social media. It can be said that the reason for this is that teachers with more years of seniority are more distant from technology and web-based applications, just as with the age variable. A significant difference was seen in teachers' use of social media for the purposes of "research," "initiating communication," and "sharing content" under the "daily use of social media" variable. Teachers who use social media 3-5 hours a day use it mostly for research and initiating communication while those who use social media for 3-5 hours or more than 5 hours a day use it mostly for sharing content. Solmaz, Tekin, Herzem, and Demir (2013) concluded that the participants in their study used social media mainly for 1-3 hours a day. In the study conducted by Vural and Bat (2010) on university students who are pre-service teachers, it was determined that the participants use social networks every day and that students spend mainly 1-3 hours a day on their social media accounts.

In the study, it was determined that secondary school teachers mostly think of informal learning as irregular and unplanned learning, random/accidental learning, and learning from family and friends. There are many studies in which these concepts are included in the definitions and explanations of informal learning (Maden & Dincel, 2015; Güleç, Çelik & Demirhan, 2012; Çavuş, Kaplan, & Topsakal, 2013; İnce, 2017; Sürerbiçer, 2018; Alakurt, 2015; Yaşar, 2013). For example, Maden and Dincel (2015) define informal learning as a lifelong learning style and approach. Informal learning is defined as a process involving the acquisition of wanted and undesirable behaviors in daily life, such as the ability to recognize, experience, and explore private and social environments within the context of instinct and needs.

It has been determined that the concepts that come to mind the most for teachers when it comes to informal learning are sharing, interaction, and acculturation via social media platforms and apps such as Facebook, Twitter, and Instagram. There are many studies that include these concepts in their definitions and explanations of social media (Solmaz, Tekin, Herzem, Demir, 2013; Kıcı & Dilmen, 2014; Alkan & Bardakçı, 2017; Koç and Ayık, 2017; Sarsar, Başbay and Başbay, 2015; Öztürk and Tetik, 2015; Tiryakioğlu and Erzurum, 2011; Vural and Batı, 2010). For example, Büyükşener (2009) defines social media as a form of practice that includes social networks such as Facebook, Twitter, YouTube, forums, and platforms with chat rooms.

It was concluded that teachers mostly get current information and news, vocational information, information about teaching, and knowledge based on informal learning from social media. In line with these conclusions, Tonbuloğlu & İşman (2014) reported that teachers use social media mainly to get current news, videos and photographs, and information relating to vocational topics. Gülbahar, Kalelioğlu, and Madran (2010) concluded that Facebook, which is a social media app, is used for sharing and for following daily events, news, and people. All the teachers interviewed think that social media influences informal learning. In her study on lifelong learning, Harper (2011) concluded that the best learning occurs through informal learning. Almost none of the participants find the informal learning obtained from social media to be reliable. The study by Türkoğlu and Doğan (2018) on students upholds this conclusion. According to the study, young people attach great importance to social media and acquire information even without realizing it, but despite this, 79.4% of youths stated that the information they acquired from social media had reliability problems. It was concluded that the participants transferred the videos, documents, educational games, and share from community groups that they obtained from social media to their lessons. In their study on Twitter, Özmen, Aküzüm, Şükür, and Baysal (2011) concluded that teachers shared their resources, knowledge, and experiences by establishing professional learning communities with their colleagues in the same or different institutions via social media. It was concluded that all the participants used the documents, videos, and information they saw on social media in their lessons. Participants stated that they used the videos, films, animations, documents, and pictures they saw on social media in lessons in line with learning outcomes and student levels. Baltacı, Göktalay, and Özdilek (2010) concluded in their study with their pre-service teachers that they are willing to use social networks, video sharing sites, and instant messaging apps in education. Three participants said social media can be used to evaluate student development and 17 participants said it cannot. Students who participated in Atal's (2010) study stated that social media can be used in lessons if hardware and access problems are solved, and problems originating from teachers and families are eliminated.

In parallel with all these results, it is possible to make the following recommendations:

- Social media tools and accounts that can be accessed via smartphones and used only for educational purposes can be introduced to teachers, and how they will contribute to education can be conveyed through in-service training. In this way, teachers' levels of informal learning particularly with smartphones can be increased.

- Research results show that social media are being used more and more by teachers. In this case, adult media literacy training can be given to teachers. This will enable them to use social media correctly, appropriately, and effectively in a way that contributes to their pedagogical formations and field knowledge.
- It may be possible to motivate teachers to learn informally using social media and smartphones thanks to the apps they create. Furthermore, the deliberate inclusion of teachers who are disadvantaged in terms of age and professional service time in contributing to these apps can not only motivate them, it can also ensure that use is made of their experience in education.
- Informal learning environments that take place on social media should be increased. In this sense, teachers should be given various forms of in-service training.
- An effective educational social media app could be developed to assess students' versatile academic achievement and development.
- There are hardly any studies that investigate the relationship between teachers' purposes of using social media and their levels of informal learning and that examine their informal learning on their own. When the literature was examined, it was seen that the purposes of using social media were studied using such variables as motivation and attitude. By doing more research on this subject and enriching the findings, the results of the studies can be compared allowing more robust generalizations to be made.

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Statements of publication ethics

I/We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The authors formed the research idea together. The first author took part in the literature review, data collection, data analysis, data interpretation and reporting. The second author took part in the collection of data and reporting the research.

Ethics Committee Approval Information

It was decided that this study complied with the ethical rules of Education and Humanities due to the meeting dated 19.04.2018 by Kafkas University Social Educational Sciences, Social Educations Ethics Committee.

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| Research Article / Araştırma Makalesi |

Investigation of Environmental Related Course Gains at the First Level of Primary Education in Terms of Interdisciplinary Approach

İlköğretim Birinci Kademe Düzeyinde Çevre İçerikli Ders Kazanımlarının Disiplinler Arası Yaklaşım Açısından İncelenmesi

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Keywords
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Abstract

Purpose: Environment is an interdisciplinary research field related to many social, cultural, psychological, economic and social fields. Therefore, the success of a study to be planned in environmental education requires directing the study by considering these disciplines. Since environment and environmental problems affect many areas in our lives, environmental education in education programs should be handled with an interdisciplinary approach. In the research, environmental related gains in primary education curriculum were examined in the context of associating with other disciplines based on integrated interdisciplinary approach.

Design/Methodology/Approach: The study is qualitative research and document analysis method was used in the analysis of the data.

Findings: The number of environmental related gains at primary level was determined to be 96. It has been determined that the environmental related gains in primary education curriculum are concentrated in some courses such as Life Science, Science and Social Studies, and these gains are not included in the curriculum of some courses. It has been observed that the level of association of the determined gains with other disciplines is weak. In addition, no clear explanation has been found in the curriculum about the necessity of handling environmental related gains with an interdisciplinary approach.

Highlights: The research shows that environmental gains in primary education curriculum are insufficient in terms of integrated interdisciplinary approach.

Öz

Çalışmanın amacı: Çevre; sosyal, kültürel, psikolojik, ekonomik ve toplumsal pek çok alanla ilgili disiplinler arası bir çalışma alanıdır. Dolayısıyla çevre eğitiminde planlanacak bir çalışmanın başarısı bu disiplinleri de göz önüne alarak çalışmaya yön verilmesini gerektirir. Çevre ve çevre sorunlarının hayatımızdaki birçok alanı etkilemesi sebebiyle, eğitim programlarındaki çevre eğitiminin disiplinler arası bir yaklaşımla ele alınması gerekmektedir. Araştırmada ilköğretim birinci kademe ders öğretim programlarındaki çevre temalı kazanımlar, bütünleştirilmiş disiplinler arası yaklaşıma dayalı olarak diğer disiplinlerle ilişkilendirme bağlamında incelenmiştir.

Materyal ve Yöntem: Çalışma nitel araştırma olup verilerin analizinde doküman analizi yöntemi kullanılmıştır.

Bulgular: İlköğretim birinci kademe seviyesinde çevre temalı kazanımların sayısı 96 olarak tespit edilmiştir. İlköğretim birinci kademe ders öğretim programlarındaki çevre temalı kazanımların Hayat Bilgisi, Fen Bilimleri, Sosyal Bilgiler gibi bazı derslerde yoğunlaştığı, bu kazanımların bazı derslerin öğretim programında ise hiç yer almadığı tespit edilmiştir. Tespit edilen kazanımların diğer disiplinlerdeki kazanımlarla ilişkilendirilme düzeyinin zayıf olduğu görülmüştür. Ayrıca öğretim programında çevre temalı kazanımların disiplinler arası bir yaklaşımla ele alınması gerekliliği konusunda net bir açıklamaya rastlanmamıştır.

Önemli Vurgular: Araştırma ilköğretim birinci kademe seviyesinde öğretim programlarındaki çevre temalı kazanımların bütünleştirilmiş disiplinler arası yaklaşım açısından yetersiz olduğunu göstermektedir.

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INTRODUCTION

The environment is broadly defined as the environment in which living and non-living beings interact, where cultural and social elements of the environment are evaluated together (Keleş, 2015). Basically, the medium in which living and non-living beings are in mutual relationship is called the environment. When the environment is examined as artificial and natural, the natural environment can be defined as areas where human do not interfere, and the artificial environment can be defined as environments where people reshape (houses, bridges, industrial facilities, etc.) the natural environment to serve their own purposes. The world's rapid population growth, urbanization, industrialization and with efforts to achieve better living standards of people brings various environmental problems, especially the destruction of the natural environment. Air pollution, water pollution, excessive and unconscious consumption of resources, leaving harmful waste to the environment is some of the most important environmental problems. It is known that the effect of these problems causes deterioration and changes in the natural environment and, according to a general approach, also includes dissolutions in the structures of society and their negative effects on nature (Çoban, 2014). It is necessary to look for the basis of environmental problems in the moral, institutional structure of human communities, because the more social rules in society value the environment, the more motivation and environmental ethics of individuals develop (Serim, 2016). Issues such as sustainable development, environmental protection, and fighting hunger and poverty, preventing terrorism and anarchy, and efficient energy supply are among the main issues of the modern world and society (Aydınlı, 2019). Environment, the area where living things are connected by vital bonds, affect and affected by various reasons; influences the individual and society in terms of physical, biological, social-psychological, economic and cultural aspects (Güney, 2003). It is necessary to teach and develop information about the environment, attitude towards the environment and behavior that is beneficial to the environment, as well as instill existing environmental awareness in all segments of society (Erten, 2004). The environment, which is the medium in which people are directly or indirectly affected, is essential for maintaining their living life. For this reason, humanity must be sensitive to the environment and consciously consume resources, thinking about future generations. Raising individuals that have environmental awareness is only possible with the education that given in early ages.

In environmental education, the basis of which is the protection of nature and natural resources, it is aimed to provide information to the individual, as well as to create positive and permanent changes in the behavior of the individual and to ensure the active participation of the individual in the solution of environmental problems (Şimşekli, 2004). It also aims to develop the environmental management skills of society through environmental education (Ünal & Dımışkı, 1999). Erten (2004), stating that the main goal of environmental education is to transfer ecological information to individuals, as well as to develop their attitudes towards the environment and convert these attitudes to behavior. It is known that environmental education aimed at protecting nature and natural resources is given in primary schools at first (Stevenson, 2007). However, it is understood that environmental education is more comprehensive than nature and natural resources conservation education; it is assumed that the purpose of environmental education is to develop and protect natural resources such as soil, water, forest and air, as well as to improve the environment by protecting the biosphere, biomes and ecosystem.

It is known that environmental education has functioned global value with the United Nations Human Environment Conference in 1972, which was held to prevent and solve environmental problems at the international level (Ünal & Dımışkı, 1999). Environmental education requires lifelong learning, starting from the family and following school life; in this context, the lack of environmental education in the family is tried to be eliminated by environmental gains in school programs (Akınoğlu & Sarı, 2009). In this context, environmental education programs are developed and developed in many countries (Akınoğlu & Sarı, 2009). It is known that Bulgaria organizes curriculum to students from five grades to eight grades to develop a positive attitude to where they live, to take on roles in protecting nature with a change in the curriculum in 2003 (Revised School Programs, 2003). In Finland, where environmental education is mandatory for all students at primary level, students are taken to nature parks and botanical gardens at an early age. In Germany, environmental education is considered as interdisciplinary education, and primary school students are initiated into environmental education in their environment. Spain and Turkey similarly distribute environmental education to all levels (Stokes, Edge & West, 2001). It is suggested that the solution of vital problems such as hunger, high unemployment rates, rapid population growth and the onset of ecological irregularities in India will be overcome by sustainable development. Indian educators have stated that environmental education is the first stage of sustainable development and have made various initiatives related to environmental education in their country. All of the course books at all levels in this country are edited to include themes related to environmental gains (Ravindranath, 2007).

The fact that the environment is related to areas like social, cultural, psychological, economic, social etc. requires considering various disciplines at the same time while environmental education to be planned. Because environment and environmental problems affect many areas in our lives, environmental education in educational programs needs to be addressed with an interdisciplinary approach. At the Tbilisi conference, it is also reported that the issue of the environment is discussed inter-governmental and that it is in accordance with an interdisciplinary approach that ensures that environmental education is holistic (Intergovernmental Conference on Environmental Education-Final Report, 1978). Accordingly, Dımışkı and Ünal (1998) emphasizes that environmental education in formal education-related goals to achieve on its own and as a course in the curriculum of Science, Mathematics, Social Sciences, or in the course of only a portion of the model that are being widely applied in Science, Math, Social, Visual Arts, Turkish courses in related topics, along with the environmental issues, as explained in a common model (multi-disciplinary) can be applied (Ünal & Dımışkı, 1999).

Disciplines also associate the knowledge they produce with different disciplines using their own methods and techniques. A phenomenon in nature cannot be explained only by one discipline, healthy results cannot be achieved in solving complex issues and problems with one discipline. A single discipline considers a fact in nature only in the context of its own terminology. For this reason, Ackoff (1973) who supports this opinion likens disciplines to interrelated filing and argues that the facts of nature cannot be evaluated in a single discipline or in such a sequential form. However, many things in nature are not that simple and plain. In order to explain events in nature and to solve complex problems, it should also be looked at from the point of view of different disciplines (Ulusoy, 2007; as cited in Gürkan).

Although the interdisciplinary approach cannot be a new field of study, it is estimated that the change of society and the different problems arising with the growing population lead to the inclusion of this field of study in research more effectively and quickly (Stein, 2007). In literature, disciplines are mostly integrated and classified as multidisciplinary, multidisciplinary, trans-disciplinary, cross-disciplinary and interdisciplinary (Piaget, 1972; Meeth, 1978; as cited in Jacobs, 1989; Drake, 2007; as cited in Gürkan, 2015). Multidisciplinary approach, a model of interdisciplinary teaching in which there is little interdisciplinary relationship (Grady, 1994). In this approach, the aim of direct combination of different disciplines is to focus on a problem without teachers in different disciplines being motivated around a common theme from the point of view of teaching. An example of this approach is that the topic of environmental cleanliness is processed both in the course of religious culture and ethics and in the course of natural sciences, but there is no connection between these disciplines. The multi-participation interdisciplinary approach is the recognition that courses such as mathematics and physics are interrelated (Piaget, 1972; as cited in Jacobs, 1989). In a curriculum based on a cross-disciplinary approach, teaching is created around student problems, interests and starts with a problem and different disciplines are employed in its solution (Meeth, 1978; as cited in Jacobs, 1989). In a cross-disciplinary curriculum, one discipline is examined from another discipline area (Meeth, 1978; as cited in Jacobs, 1989). In the interdisciplinary approach, techniques and methods of multiple disciplines are used by associating the aspect of different disciplines related to the subject in understanding a situation (Yıldırım, 1999). Fogarty (1991) models the curriculum as fragmented, connected, nested, and then sequential, shared, structured, connected, threaded, integrated, embedded, networked in terms of an interdisciplinary approach (as cited in Gürkan, 2015). In the integrated model between these models, various disciplines arise in the understanding of a subject, and the teacher establishes an interdisciplinary relationship between these similarities. For example, the relationship of concepts such as discussion and proof with the fields of Science, Social Sciences and literature is also addressed, explaining how they are used in these fields (Fogarty, 1991).

There are different studies on creating the teaching process based on an interdisciplinary approach and developing the curriculum (D'Hainaut, 1986; Lattuca, Voight & Fath, 2004; Jacobs & Borland, 1986 as cited in Jacobs, 1989). Jacobs and Borland (1986) proposes 4 stages in the curriculum based on the interdisciplinary approach it has developed:

1. Editing Center Selection: A topic, event, or problem to be explained is selected.
2. Brainstorming: Disciplines related to the Editing Center are identified.
3. Preparation of Guide Questions: Questions are prepared for research in the Editing Center.
4. Writing Activities for Applications: Activities are prepared by teachers and students that address the interdisciplinary relationship related to the subject to be investigated in the Editing Center.

Jocobs (1986) defines an interdisciplinary approach as the study of a theme, problem, and life using methods and knowledge of multiple disciplines (as cited in Yıldırım, 1996). According to Jocobs and Borland, the first stage of a program development model according to the interdisciplinary approach is the selection of the theme. The theme should not be too far-reaching and too narrow-reaching when determining. For example, a very comprehensive topic such as 'country' or very narrow scope topics such as 'cell' are not suitable for teaching with an interdisciplinary approach. The teaching of subjects such as energy, revolution, inflation, management, equality, environment and climate as subjects is well suited to the interdisciplinary approach and the result will be positive when applied effectively (Jacobs & Borland, 1986). The interdisciplinary approach aims to learn the knowledge and skills of a particular discipline, as well as to organize and teach them in a meaningful way with the knowledge and skills of other disciplines to which they are associated (Yıldırım, 1996). In this context, it is necessary to choose the themes that will be taught with an interdisciplinary approach, taking into account that they are conceptual and related to other disciplines. From this point of view, it is considered that the topic of the environment is suitable for interdisciplinary teaching (Yıldırım, 1996). Giving environmental gains with an interdisciplinary approach is more effective in developing attitudes and behaviors towards the environment compared to teaching with a traditional approach (Hamalosmanoğlu & Güven, 2014). In some studies it is proposed that interdisciplinary students participating in gardening activities showed a positive development in their attitude towards the environment; positive advantages interdisciplinary approach in environmental education environmental engineering; the interdisciplinary approach will ensure sustainable solutions to complex problems through the interdisciplinary synthesis of different sciences (Skelly & Zajicek, 1998; Semerijan, El-Fadel, Zurayk & Nuwayhid, 2004; Focht & Abramson, 2009).

In the program applied in Turkey, environmental themes are included in courses such as Life Science, Science, and Social Sciences. In other words, these themes are given by taking into account a multidisciplinary model. In addition, the gains in the content of this course are given to students without being related to each other and without ensuring integrity (Akınoğlu & Sarı, 2009). Güven and Hamasoğlu (2012) state that 17 gains in environmental education in the seventh grade course curriculum are included in the Science course and Social Sciences course, and that environmental education in the seventh grade course

curriculum is not suitable for an interdisciplinary approach. In another study that same year, they emphasize that environmental activities in fourth-grade Science textbooks are not suitable for an interdisciplinary approach. In many studies in Turkey, educational programs are examined in terms of environmental education (Gülay & Ekici, 2010; Akınoğlu & Sarı, 2009; Harman, 2011; Tanrıverdi, 2009). However, the number of studies in which educational programs are studied in terms of an interdisciplinary approach in the context of environmental education is quite limited (Güven & Hamasoğlu, 2012). In order to contribute to the elimination of this limitation in the literature, in this study, environmental related gains given at the first level (basic education) level of primary education in the curriculum of the Ministry of National Education (MoNE) in terms of an integrated interdisciplinary approach. For this purpose, answers to the following research problems were sought:

1. In what disciplines are environmental related gains associated with educational programs at the first level of primary education?
2. Is primary education in accordance with an integrated interdisciplinary approach in terms of environmental education curriculum at the first level?

METHOD

This research is qualitative research. Document analysis was used as a method of data collection and analysis. Document analysis can be used as a complement to other research methods or as a stand-alone method. Systematic examination of both written and electronic documents is called document analysis (Bowen, 2009). In the process of collecting and analyzing data, environmental related gains in Primary Education first-tier (1^{st}, 2^{nd}, 3^{rd}, 4^{th} grade) courses were determined within the framework of the MoNE's 2018 curriculum. In the process of determining environmental gains, previous studies (Güven & Hamalosmanoğlu, 2012; Gülay & Ekici, 2010; Akınoğlu & Sarı, 2009; Harman, 2011; Tanrıverdi, 2009) and the opinions of two field experts other than researchers were used. At the next stage, the gains determined were examined with an interdisciplinary approach, and during these reviews, the *'program development model according to an interdisciplinary approach'* developed by Jacobs and Borland (1986) was taken into account. In this study, the first two stages of the model were used. The reason that the last two stages are not used is because they are related to the application of the teaching process. The availability of gains in the program in accordance with an interdisciplinary approach is related to the first two stages of the model (Güven & Hamalosmanoğlu, 2012). In this context, environmental related gains in different disciplines at the same class level were compared in this study; similar coinciding gains were determined and clearly shown in the tables given in the results section.

Unlike quantitative research the validity and reliability of the analysis was achieved by taking into account the concepts of plausibility (internal validity), transferability (external validity), consistency (internal reliability) and confirmability (external reliability) (Yıldırım & Şimşek, 2013). The credibility of research findings was provided by taking expert opinion, by detailed description of the findings, by comparing independent analyses conducted by the researchers during the analysis and adopting a common opinion at points where adaptation could not be achieved and by comparing the results with raw data by a field specialist (confirmation review). Based on the findings, comments were made on the level at which environmental related gains are involved in accordance with the interdisciplinary approach at different class levels.

FINDINGS

In the study, the primary first-tier course curriculum was examined in terms of environmental topics within all courses and it was found that there were 18 gains at first-grade level, 21 gains at second-grade level, 28 gains at third-grade level and 28 gains at fourth-grade level. There are a total of 95 environmental related gains in the primary education first-tier curriculum.

At the first- grade level, Life Sciences, Turkish, Mathematics, Physical Education and Playing, Visual Arts, Music courses were examined in terms of environmental related gains. In the first grade course curriculum, it was determined that there were 15 environmental related gains in the Life Sciences, 2 in the Music course, and 1 in the Turkish course. In Mathematics, Physical Education and Playing, and in Visual Arts, there were no environmental related gains (Table 1).

Table 1. Availability of environmental related gains in primary school curriculum according to an integrated interdisciplinary approach

Course	Total gains	Environmental related gains		Gains that can be associated with gains in other disciplines	
		f	%	f	%
Life Science	53	15	28,3	3	20
Turkish	64	1	1,6	1	100
Music	11	2	18,2	2	100
Mathematics	36	0	0	0	0
Physical Education and Playing	24	0	0	0	0
Visual Arts	15	0	0	0	0

As can be seen from Table 1, it was found that the proportion of environmental related gains in the Turkish course was below ten percent. Looking at the gain status that can be associated with gains in other disciplines, only 3 (20%) of the 15 environmental related gains in Life Science courses could be linked to environmental related gains in other courses. All existing environmental related gains in Turkish and Music courses can be associated with other disciplines that contain environmental related gains (Appendix: Table 5).

At the second grade level, the curriculum was studied in terms of the environmental related gains of the English, Turkish, Mathematics, Physical Education and Playing, Visual Arts and Music courses. In the study, it was determined that 10 gains in Life Science course, 1 in Physical Education and Playing course, 1 in Visual Arts course and 9 in English course were environmental related. When Table 2 is examined it was observed that the environmental related gains were associated with some gains in Life Science, Physical Education and Playing, English, Visual Arts, Turkish courses. It has also been found that some gains cannot be associated with any other gains. In Mathematics and Turkish courses, there were no environmental related gains.

Tablo 2. Availability of environmental related gains in primary school second grade curriculum according to an integrated interdisciplinary approach

Course	Total gains	Environmental related gains		Gains that can be associated with gains in other disciplines	
		f	%	f	f
Life Science	50	10	20	6	60
Turkish	46	0	0	0	0
Mathematics	50	0	0	0	0
Physical Education and Playing	28	1	3,6	1	100
Visual Arts	17	1	5,9	1	100
English	39	9	23,1	0	0
Music	7	0	0	0	0

As can be seen from Table 2, it was found that the proportion of environmental related gains in Visual Arts and Physical Education and Playing classes was below ten percent. Given the state of gain that can be associated with gains in other disciplines, none of the 9 environmental related gains in the English course were found to be suitable for an integrated interdisciplinary association. Sixty percent of the 10 environmental related gains in Life Science courses could be linked to environmental related gains in other courses. All of the existing environmental related gains in Visual Arts, Physical Education and Playing courses can be associated with some of the gains in other courses that contain environmental related gains (Appendix: Table 6).

At the third-grade level curriculum Life Science, Science, Turkish, Mathematics, Physical Education and Playing, English, Visual Arts and Music courses are examined in terms of environmental related gains. In the study, it was determined that 10 gains on environmental themes were in Life Science, 12 gains were in Science and 6 gains were in English curriculum. When Table 3 is examined, the environmental related gains of Life science, Science, English, Turkish course associated with it has been seen that some gains, moreover, some gains cannot also be associated with any gains. In Mathematics, Turkish, Physical Education, Visual Arts, and Music courses, there were no environmental related gains.

Tablo 3. Availability of environmental related gains in primary school third grade curriculum according to an integrated interdisciplinary approach

Course	Total gains	Environmental related gains		Gains that can be associated with gains in other disciplines	
		f	%	f	%
Life Science	45	10	22,2	7	70
Turkish	64	0	0	0	0
Mathematics	72	0	0	0	0
Physical Education and Playing	29	0	0	0	0
Visual Arts	17	0	0	0	0
English	46	6	13	5	83,3
Music	7	0	0	0	0
Science	36	12	33,3	5	41,7

Looking at the state of gain that can be associated with gains in other disciplines 5 (83.3%) of the 6 environmental related gains in the English course were found to be suitable for integrated interdisciplinary association. Seventy percent of the 10 environmental related gains in Life Science courses could be linked to environmental related gains in other courses. Less than half of the environmental related gains in the Science course were found to be suitable for integrated interdisciplinary association (Table 3, Appendix**:** Table 7).

At the level of the fourth-grade curriculum Social Sciences, Science, Turkish, Mathematics, Physical Education and Playing, English, Visual Arts, Music, Religion and Ethics, Human Rights Citizenship and Democracy, Traffic Safety courses are examined in terms of environmental related gains. In the study, it was determined that 9 gains with environmental themes were Social Sciences, 12 gains were science, 5 gains were English, 1 gain was human rights, citizenship and democracy, 1 gain was Religion and Ethics, 1 gain was Traffic Safety in the curriculum.

Tablo 4. Availability of environmental related gains in primary school fourth grade curriculum according to an integrated interdisciplinary approach

Course	Total gains	Environmental related gains		Gains that can be associated with gains in other disciplines	
		f	%	f	%
Social Sciences	33	9	27,3	4	44,4
Turkish	78	0	0	0	0
Mathematics	71	0	0	0	0
Physical Education and Playing	25	0	0	0	0
Visual Arts	16	0	0	0	0
English	47	5	10,6	0	0
Music	5	0	0	0	0
Science	46	12	26,1	8	66,7
Religion and Ethics	19	1	5,3	1	100
Human Rights, Citizenship and Democracy	29	1	3,5	1	100
Traffic Safety	21	1	4,8	1	100

As can be seen from Table 4, there were no environmental related gains in Mathematics, Turkish, Physical Education and Playing, Visual Arts, and Music courses. Less than half of the environmental related gains in the Social Sciences course were found to be suitable for integrated interdisciplinary association. None of the environmental related gains in the English course could be associated with environmental related gains in other courses. More than half of the environmental related gains in the Science course were found to be suitable for integrated interdisciplinary association. All of the existing environmental related gains in Religion and Ethics, Traffic Safety, Human Rights, Citizenship and Democracy courses could be associated with some of the gains in other environmental related courses (Appendix: Table 8). In addition, when examined in terms of an integrated interdisciplinary approach, it was found that environmental related gains in fourth-grade curriculum can be associated with gains in more types of courses than in the other three classes (Appendix: Table 8). This can be explained by adding more types of courses to the curriculum as the class level increases.

CONCLUSION AND DISCUSSION

In the research, a total of 95 environmental related gains were determined in the primary education first level curriculum and it was observed that these gains were concentrated in the Life Sciences, Social Sciences and Science course. Akınoğlu and Sarı (2009) handled the 2004 primary education Life Sciences, Social Sciences and Science curriculum with document analysis and determined the total number of environmental related gains at the primary education level as 76. In this study, the number of environmental related gains in the Life Sciences, Social Sciences and Science courses in primary education was determined as 68. When the two studies were compared, it was seen that there was a decrease in the total number of environmental related gains in these three courses, in which environmental related gains were concentrated.

According to the research conducted, it was observed that the environmental related gains were mostly collected in the Life Sciences lesson in the first year curriculum, 2 in the Music lesson and 1 in the Turkish lesson. In their study, Akınoğlu and Sarı (2009) found the number of environmental related gains as 7 within the scope of the first year Life Science course in the 2004 curriculum. When the two studies are compared, it is seen that there is an increase in environmental related gains within the scope of Life Sciences course, but it is thought that the number of environmental related gains in the first year curriculum is still insufficient. In addition, the fact that the environmental related gains in the program are in the curriculum of only 3 courses will make it difficult to associate the environmental issue, which is closely related to many disciplines, with other courses. Themes are mandatory, but other themes are optional (ME, 2018). Considering that the teaching of the 'Nature and the Universe' gains, which is one of these themes, is directly related to the 'Life in Nature' unit gains of the Life Science course, it is thought that it is necessary to clearly include environmental related gains in the Turkish course gains for lesson teaching in accordance with the integrated interdisciplinary approach. Only 3 (20%) of the 15 environmental related gains in Life Sciences courses could be linked with the environmental related gains in other courses. In this context, it can be said that the Life Science course curriculum given at the 1st grade is not suitable in terms of integrated interdisciplinary environmental education. Considering that when environmental education is taught at a very young age, the positive behavior and attitude of the individual towards the environment will develop, it can be concluded that the environmental related gains and distribution of the curriculum examined in the study are quite limited.

When the environmental related gains in the second-grade curriculum were examined in the study, it was seen that the most environmental related gains were in Life Sciences and English course. 10 gains in Life Science, 9 gains in English course, 1 gain in Physical Education and Playing, 1 gain in Visual Arts were determined as environmental related. It can be said that the distribution of the lectures is not sufficient in giving environmental related gains in accordance with the interdisciplinary approach. Some environmental related gains are associated with each other, as can be seen in Table 6 (Appendix), while some are not. The environmental related gains in the 2nd grade curriculum are superior to the 1st grade curriculum in terms of numbers and associations with other courses (Table 1 and Table 2). When the findings of the research are compared with the findings of the study in which Akınoğlu and Sarı (2009) examined the curriculum dated 2004, it is seen that the number of environmental related gains within the scope of the Life Sciences course increased, but it is still thought that the program is inadequate in terms of the variety of courses that environmental related gains can be associated with.

Examining the environmental related gains in the curriculum at the 3rd grade level, it was determined that 10 gains were in the Life Sciences, 12 in the Science and 6 in the English curriculum. The 3rd grade curriculum has superiority in terms of number and association with the courses in the 1st and 2nd grade curricula according to the environmental subjects (Table 1, Table 2 and Table 3). However, it is considered that environmental education in 3rd grade curricula is not suitable in terms of an integrated interdisciplinary approach, since it is collected only in Life Sciences, Science and English courses and there are no environmental related gains in other courses. Akınoğlu and Sarı (2009) identified a total of 20 environment related gains under the Life Sciences lesson in the primary education 3rd grade gains of the 2004 curriculum. When the research conducted is compared with the studies of Akınoğlu and Sarı (2009), it is seen that the number of environmental related gains in the Life Sciences course has decreased. This decrease can be attributed to the environmental related organization of 12 gains in the Science curriculum of 2018.

There are a total of 29 environmental related gains in the 4th grade curriculum. These gains are in Social Sciences, Science, English, Human Rights Citizenship and Democracy, Traffic Safety and Religion and Ethics. However, looking at Table 8, it is seen that these gains are not proportional in number, some gains are associated with other courses, but some are not. Afunction, according to the research, 4th grade environment related gains were not encountered in other courses in the program and examined. According to the study, it is thought that the environmental issues in the 4th grade curriculum are not suitable for the integrated interdisciplinary approach. Especially, the fact that none of the environmental related gains in the English course curriculum can be associated with the environmental related gains in other course suggests that the 4th grade English course curriculum is not suitable for an integrated interdisciplinary approach. Güven and Hamalosmanoğlu (2012) stated in a study they conducted that the environmental activities in the 4th grade Science textbook were not suitable for the interdisciplinary approach and that the activities were not clearly expressed with which disciplines.

Karakuş and Aslan (2016) observed the course activities personally in their study titled "Examination of the current situation for interdisciplinary teaching in primary school" and emphasized that the curriculum is not suitable for applying the interdisciplinary approach. Afunction, Güven and Hamalosmanoğlu (2012) examined the 7th grade environmental education in terms of interdisciplinary approach in their study, and claimed that the program was not suitable for using the interdisciplinary approach at the 7th grade in environmental education. In our current study, when we look at all grade levels from a general perspective, it has been concluded that as the grade level increases, the association of environmental related gains increases in number, but considering the diversity of courses in which these gains are distributed, the curriculum is not sufficient in terms of an integrated interdisciplinary approach.

RECOMMENDATIONS

In the study, the following suggestions can be made according to the findings and results of the study in order to apply the interdisciplinary approach in teaching the environmental related gains at the primary education level of the 2018 curriculum.

1. Increasing the number of environmental related gains that can be associated with gains in other disciplines in the curriculum,
2. Providing more opportunities for integrated interdisciplinary association by including the environmental related gains included in the curriculum of each grade under the curriculum of different disciplines,
3. It is necessary to express more clearly and clearly how the gains related to the environment can be associated with the gains in different disciplines.

This study was conducted at the primary education level. In order to provide environmental education with an interdisciplinary approach, the appropriateness of the program can be evaluated at other grade levels.

Declaration of Conflicting Interests

We declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

Since this study was a document analysis, it was not necessary to obtain an ethics committee approval document.

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Attachments

Table 5. Environmental related gains in primary education first curriculum

	Unit number	Unit name	Environmental related gains	Gains belonging to other disciplines with which the gains are related
Life Science	1	Life in our school	1.1.8. Students will be able to improve toilet use and cleaning habits.	
			1.1.11. Students will be able to participate in the process of determining in-class rules (The subject is explained from the necessity of rules such as keeping the class clean, keeping themselves and their environment clean).	
			1.1.12. Students will be able to follow the school rules (emphasis on using the trash can).	
	2	Life in our home	1.2.5. Students will be able to use resources in the house efficiently (emphasis is on the economical use of electricity, water and personal cleaning materials).	
	3	Healthy life	1.3.1. Students will be able to do their personal care regularly (it is mentioned that resources should be used efficiently when performing their personal care).	
	5	Life in our country	1.5.1. Students will be able to know where they live (recognizes the products that grow in their places of residence)	
			1.5.2. Students will be able to notice the historical, natural and touristic places in their vicinity.	
	6	Life in the nature	1.6.1. Students will be able to observe the animals in the immediate vicinity (The animals in the immediate vicinity, what they feed on and where they shelter. Security measures are taken if observed).	**Association with other disciplines:** 1.6.1. gain has been associated with the basic skills of the listening/ monitoring of the Turkish course.
			1.6.2. Students will be able to observe the plants in the immediate vicinity (garden plants, wild plants and trees in the immediate vicinity, observes how the plants change (growth, shedding, bloom) over time.	**Association with other disciplines:** 1.6.2. gain has been associated with the basic skills of listening/monitoring of the Turkish course
			1.6.3. Students will be able to take care to protect the animals and plants in their vicinity.	
			1.6.4. Students will be able to be sensitive about keeping nature and its environment clean (It is emphasized to do what is necessary to keep nature and the environment clean and to warn the people around in this regard within the framework of courtesy rules).	
			1.6.5. Students will be able to distinguish the materials that can be recycled (Plastics, paper, batteries, vegetable oil and glass are emphasized).	
			1.6.6. Students will be able to observe the sun, moon, earth and stars (the shapes and sizes of the sun, moon, earth and stars are emphasized).	**Association with other disciplines:** 1.6.2. gain has been associated with the basic skills of listening/monitoring of the Turkish course
			1.6.7. Students will be able to research the seasons and their characteristics.	
			1.6.8. Students will be able to understand the changes in nature according to the seasons (The changes in nature according to the seasons and the effects of these changes on plants, animals and humans are emphasized).	
Music	1	Listening - speaking	Mu.1.A.3. Students will be able to distinguishe the sound sources around them (These are classified as natural sounds(sounds in nature, animal sounds, etc.) and artificial sounds(radio-television-motor vehicle-scissors, etc.)).	**Association with other disciplines:** Mu.1.A.3. gain and Mu.1.A.4. gain has been associated with 'T.1.1.1. Students will be able to distinguish sounds from

	Unit number	Unit name	Environmental related gains	Gains belonging to other disciplines with which the gains are related
Life Science	1	Life in our school	1.1.8. Students will be able to improve toilet use and cleaning habits.	
			1.1.11. Students will be able to participate in the process of determining in-class rules (The subject is explained from the necessity of rules such as keeping the class clean, keeping themselves and their environment clean).	
			1.1.12. Students will be able to follow the school rules (emphasis on using the trash can).	
	2	Life in our home	1.2.5. Students will be able to use resources in the house efficiently (emphasis is on the economical use of electricity, water and personal cleaning materials).	
	3	Healthy life	1.3.1. Students will be able to do their personal care regularly (it is mentioned that resources should be used efficiently when performing their personal care).	
	5	Life in our country	1.5.1. Students will be able to know where they live (recognizes the products that grow in their places of residence)	
			1.5.2. Students will be able to notice the historical, natural and touristic places in their vicinity.	
	6	Life in the nature	1.6.1. Students will be able to observe the animals in the immediate vicinity (The animals in the immediate vicinity, what they feed on and where they shelter. Security measures are taken if observed).	**Association with other disciplines:** 1.6.1. gain has been associated with the basic skills of the listening/ monitoring of the Turkish course.
			1.6.2. Students will be able to observe the plants in the immediate vicinity (garden plants, wild plants and trees in the immediate vicinity, observes how the plants change (growth, shedding, bloom) over time.	**Association with other disciplines:** 1.6.2. gain has been associated with the basic skills of listening/monitoring of the Turkish course
			1.6.3. Students will be able to take care to protect the animals and plants in their vicinity.	
			1.6.4. Students will be able to be sensitive about keeping nature and its environment clean (It is emphasized to do what is necessary to keep nature and the environment clean and to warn the people around in this regard within the framework of courtesy rules).	
			1.6.5. Students will be able to distinguish the materials that can be recycled (Plastics, paper, batteries, vegetable oil and glass are emphasized).	
			1.6.6. Students will be able to observe the sun, moon, earth and stars (the shapes and sizes of the sun, moon, earth and stars are emphasized).	**Association with other disciplines:** 1.6.2. gain has been associated with the basic skills of listening/monitoring of the Turkish course
			1.6.7. Students will be able to research the seasons and their characteristics.	
			1.6.8. Students will be able to understand the changes in nature according to the seasons (The changes in nature according to the seasons and the effects of these changes on plants, animals and humans are emphasized).	
			Mu.1.A.4. Students will be able to mimic the sounds they hear around them (sounds in nature, animal sounds, etc. are emphasized).	natural and artificial sound sources' gain of Turkish course.

	Unit number	Unit name	Environmental related gains	Gains belonging to other disciplines with which the gains are related
Life Science	1	Life in our school	1.1.8. Students will be able to improve toilet use and cleaning habits.	
			1.1.11. Students will be able to participate in the process of determining in-class rules (The subject is explained from the necessity of rules such as keeping the class clean, keeping themselves and their environment clean).	
			1.1.12. Students will be able to follow the school rules (emphasis on using the trash can).	
	2	Life in our home	1.2.5. Students will be able to use resources in the house efficiently (emphasis is on the economical use of electricity, water and personal cleaning materials).	
	3	Healthy life	1.3.1. Students will be able to do their personal care regularly (it is mentioned that resources should be used efficiently when performing their personal care).	
	5	Life in our country	1.5.1. Students will be able to know where they live (recognizes the products that grow in their places of residence)	
			1.5.2. Students will be able to notice the historical, natural and touristic places in their vicinity.	
	6	Life in the nature	1.6.1. Students will be able to observe the animals in the immediate vicinity (The animals in the immediate vicinity, what they feed on and where they shelter. Security measures are taken if observed).	**Association with other disciplines:** 1.6.1. gain has been associated with the basic skills of the listening/ monitoring of the Turkish course.
			1.6.2. Students will be able to observe the plants in the immediate vicinity (garden plants, wild plants and trees in the immediate vicinity, observes how the plants change (growth, shedding, bloom) over time.	**Association with other disciplines:** 1.6.2. gain has been associated with the basic skills of listening/monitoring of the Turkish course
			1.6.3. Students will be able to take care to protect the animals and plants in their vicinity.	
			1.6.4. Students will be able to be sensitive about keeping nature and its environment clean (It is emphasized to do what is necessary to keep nature and the environment clean and to warn the people around in this regard within the framework of courtesy rules).	
			1.6.5. Students will be able to distinguish the materials that can be recycled (Plastics, paper, batteries, vegetable oil and glass are emphasized).	
			1.6.6. Students will be able to observe the sun, moon, earth and stars (the shapes and sizes of the sun, moon, earth and stars are emphasized).	**Association with other disciplines:** 1.6.2. gain has been associated with the basic skills of listening/monitoring of the Turkish course
			1.6.7. Students will be able to research the seasons and their characteristics.	
			1.6.8. Students will be able to understand the changes in nature according to the seasons (The changes in nature according to the seasons and the effects of these changes on plants, animals and humans are emphasized).	
Turkish	1	Listening and monitoring	T.1.1.1. Students will be able to distinguish sounds from natural and artificial sound sources. Information about natural and artificial sound sources is not provided.	**Association with other disciplines:** T.1.1.1 gain has been associated with '1.A.3. Students will be able to distinguish the sound sources around' and 'Mu.1.A.4. Studnets will be able to mimic the sounds they hears around them' gains of the Music course.

Table 6. Environmental related gains in primary school second grade curriculum

	Unit number	Unit name	Environmental related gains	Gains belonging to other disciplines with which the gains are related
Life Science	1	Life in our school	2.1.6. Students will be able to take care when using school resources and belongings (emphasis is placed on issues such as electricity, water, cleaning materials and taking care of saving in the use of school course tools and equipment).	**Association with other disciplines:** 2.1.6. gain has been associated with 'BO.2.2.2.10. Students will be able to exhibit sensitivity to the environment when participating in games and physical activities in nature' and 'E2.4.L1. Students will be able to identify and understand the names of some classroom objects', 'E2.4.S1. Students will be able to express the correct names of the classroom objects' gain of Physical Education and Playing course .
	3	Helathty Life	2.3.4. Students will be able to explain the necessity of cleaning for a healthy life (focuses on environmental cleaning)	**Association with other disciplines:** 2.3.4. gain has been associated with 'T.2.2.3. Students will be able to talk about a specific topic in the framework' gain of Turkish course.
	5	Life in our country	2.5.8. Students will be able to observe the production activities carried out in the immediate vicinity (the subject is explained based on business lines such as industry, agriculture and animal husbandry).	
	6	Life in the nature	2.6.1. Students will be able to compare the conditions necessary for plants and animals to live.	**Association with other disciplines:** 2.6.1. gain has been associated with 'E2.8.L1. Students will be able to identify certain pet animals', 'E2.8.L2. Students will be able to follow short and simple oral instructions about the names and locations of pet animals', 'E2.8.S1. Students will be able to say the names of certain pet animals', 'Students will be able to recognize the names of certain animals' and 'E2.8.S2. Students will be able to say where the animals are by pointing out them' gain of English course.
			2.6.2. Students will be able to realize the importance of plant growing and animal feeding (within the scope of opportunities, students are provided to practically grow plants, plant saplings and feed animals).	**Association with other disciplines:** 2.6.2. gain has been associated with 'E2.8.L1. Students will be able to identify certain pet animals', 'E2.8.L2. Students will be able to follow short and simple oral instructions about the names and locations of pet animals', 'E2.8.S1. Students will be able to say the names of certain pet animals', Students will be able to recognize the names of certain animals' and 'E2.8.S2. Students will be able to say where the animals are by pointing out them' gain of English course.
			2.6.3. Students will be able to give examples of the impact of natural elements in its immediate vicinity on human life (the positive and negative effects of natural elements in its immediate vicinity on humans are discussed).	
			2.6.4. Students will be able to contribute to the recycling of consumed substances (examples of areas where substances such as plastic, paper, batteries and glass are reused. It draws attention to the damages that may occur in nature and everyday life by sampling the situations of improper disposal/destruction of vegetable oil).	**Association with other disciplines:** 2.6.4. gain has been associated with 'G.2.1.8.Students will be able to create visual art works based on daily life' gain of Visual Arts course.
			2.6.5. Students will be able to recognize natural events (natural events focus on rain, hail, snow, fog and wind. It focuses on measures that can be taken to ensure that natural events are not harmful).	

			2.6.6. Students will be able to give examples of natural disasters (natural disasters such as floods, landslides, avalanches, storms, tornadoes and earthquakes are emphasized. Organizations such as the Kızılay and AFAD that help during natural disasters are introduced). 2.6.7. Students will be able to explain the measures that can be taken afunctionst natural events and natural disasters.	**Association with other disciplines:** 2.6.7. gain has been associated with 'T.2.2.3. Students will be able to talk about a specific topic' gain of Turkish course.
Physical Education	2	Active and healthy life learning area	BO.2.2.2.10. Students will be able to exhibit conscious consumer sensitivity to the environment when participating in games and physical activities in nature (in nature, in the schoolyard, etc. all activities performed should be used. Values related to gain should be emphasized).	**Association with other disciplines:** BO.2.2.2.10 gain has been associated with '2.1.6. Students will be able to take care when using school resources and belongings', 'E2.5.L1. Students will be able to identify colors of things' and 'E2.5.S1. Students will be able to name the colors of things' gain of Life Science course.
Visual Arts	1	Visual communication and formatting	G.2.1.8. Based on daily life, students will be able to create visual art works (it can be focused on phenomena that disrupt and destroy the natural environment. It can be explained what the banner is and why it was made. They may be asked to give examples of these phenomena around them and then make banners on environmental sensitivity).	**Association with other disciplines:** G.2.1.8. gain has been associated with '2.6.4. Students will be able to contribute to the recycling of consumed substances' gain of Life Science course, 'E2.5.L1. Students will be able to identify colors of things' and 'E2.5.S1.Students will be able to name the colors of things' gains of English course.
English	8	Pets	E2.8.L1. Students will be able to identify certain pet animals. E2.8.L2. Students will be able to follow short and simple oral instructions about the names and locations of pet animals. E2.8.S1. Students will be able to say the names of certain pet animals**.** E2.8.S2. Students will be able to say where the animals are by pointing out them.	
	9	Fruits	E2.9.L1. Students will be able to recognize the names of fruits. E2.9.S1. Students will be able to talk about the fruit they like. E2.9.S2. Students will be able to tell others to do things with fruit by pointing out them.	
	10	Animals	E2.10.L1. Students will be able to recognize the names of certain animals. E2.10.S1.Students will be able to talk about the animals they like / dislike.	

Table 7. Environmental related gains in primary school third grade curriculum

	Unit number	Unit name	Environmental related gains	Gains belonging to other disciplines with which the gians are related
Life Science	2	Life in your home	3.2.6. Students will be able to make original recommendations for effective and efficient use of resources in the home (electricity, water use is handled).	**Association with other disciplines:** 3.2.6 gain has been associated with the 'E3.6.L2. Students will be able to recognize the names of the parts of a house', 'E3.6.S2. Students will be able to ask about and say the parts of a house', 'E3.6.S3. Students will be able to ask about and tell the location of things in a house' gains of English course.
	3	Healthy Life	3.3.2. Students will be able to exhibit conscious consumer behavior when buying food and beverages (shopping is focused on paying attention to the place where food is purchased, the color, shape, smell, expiration date and content of the product).	
			3.3.5. Students will be able to compile with the rules of cleanliness and hygiene in public areas to protect the health of themselves and the community (emphasis is placed on the importance of using public places, toilets and sinks clean, in accordance with hygiene rules).	**Association with other disciplines:** 3.3.5. gain has been associated with '3.6.2.2. Takes active duty in the cleaning of the environment in which s/he lives' gain of Science course.
	5	Life in our country	3.5.3. Students will be able to introduce the characteristics of historical, natural and tourist places located in the immediate vicinity (mosque, Fountain, Inn, bath, Museum, Castle, historical bazaars, bridges, national parks, etc.in the immediate vicinity. allows them to share it with their friends in class by doing research on places).	**Association with other disciplines:** 3.5.3. gain has been associated with '3.6.2.1. Recognizes the environment in which s/he lives', '3.6.2.3. Explains the differences between natural and artificial environment' gains of Science course, ' E3.7.L1. Students will be able to recognize the types of buildings and parts of a city' gain of English course and 'T.3.2.3. The framework speaks about a specific topic' gain of Turkish course.
	6	Life in the nature	3.6.1. Students will be able to understand the importance of plants and animals in terms of human life.	
			3.6.2. Students will be able to explore the growing conditions of fruits and vegetables (the topic is explained on a sample of fruits or vegetables grown in their immediate vicinity).	**Association with other disciplines:** 3.6.2. gain has been associated with '3.6.1.2. It presents the observation results of a plant's life cycle' gain of Science course.
			3.6.3. Students will be able to find directions using nature (focusing on natural direction finding methods such as observing the Sun, ant nests, and mosses)	
			3.6.4. Students will be able to give examples of the impact of humans on natural elements from their immediate environment (emphasis is placed on the positive and negative effects of humans on the natural environment. Care is also taken to give examples of their positive effects. Examples of endangered species are given).	**Association with other disciplines:** 3.6.4. gain has been associated with '3.6.2.6. Students will be able to recommend solutions by conducting research to protect the natural environment' gain of Science course, 'E3.9.L1. Students will be able to identify various weather conditions', 'E3.9.S1. Students will be able to talk about the weather conditions', 'E3.10.S1. Students will be able to talk about nature and animals', 'E3.10.S2. Students will be able to talk about the animals they like or dislike and have been associated with the nature' gain of the English course.
			3.6.5. Students will be able to take responsibility for protecting nature and the environment (emphasis is placed on the importance of keeping natural resources such as water, air and soil clean, proper use and planting trees for a better livable environment. Also, non-governmental organizations interested in the subject are introduced at the basic level).	**Association with other disciplines:** 3.6.5. gain has been associated with '3.6.2.2. Students will be able to take active part in the cleaning of the environment in which they live' and '3.6.2.6. Students will be able to propose solutions by conducting research to protect the natural environment' gains of Science course, and 'E3.10.L2. Students will be able to follow short and simple oral instructions about nature and animals' gain of English course.

			3.6.6. Students will be able to give examples of the contribution of recycling to themselves and the environment in which they lives (examples are the collection methods of substances such as plastic, paper, batteries and glass, as well as the areas where they are reused. The contributions of this process to the environment are emphasized. It is realized that they can play a role in sustainability by using one of the counted substances and providing different gains).	**Association with other disciplines:** 3.6.6. gain has been associated with '3.6.2.6. Students will be able to propose solutions by doing research to protect the natural environment' gain of Science course.
Science	1	Get to know our planet/Earth	3.1.2.1. Students will be able to understand that land and water are located on the surface of the earth.	
			3.1.2.3. Students will be able to explain that there is a layer of air around us on earth.	
	5	Light and sounds around us	3.5.2.1. Students will be able to classify the surrounding light sources as natural and artificial light sources.	
			3.5.3.3. Students will be able to classify surrounding sound sources as natural and artificial sound sources.	
	6	Journey to the world of living things/Living things and life	3.6.1.1. Students will be able to classify entities as living and inanimate using examples around them.	
			3.6.1.2. Students will be able to present the observation results of a plant's life cycle.	**Association with other disciplines:** 3.6.1.2. gain has been associated with '3.6.2. Students will be able to explore the growing conditions of fruits and vegetables' gain of Life Science course.
			3.6.2.1. Students will be able to recognize the environment in which they live.	**Association with other disciplines:** 3.6.2.1. gain has been associated with '3.5.3. Students will be able to introduce the features of historical, natural and tourist places in their vicinity' gain of Life Science course.
			3.6.2.2. Students will be able to take an active role in cleaning the environment in which they live.	**Association with other disciplines:** 3.6.2.2. gain has been associated with '3.3.5. Students will be able to follow the rules of cleanliness and hygiene in public use areas in order to protect the health of themselves and the community' and '3.6.5. Students will be able to take responsibility for protecting nature and the environment' gains of Life Science course.
			3.6.2.3. Students will be able to explain the differences between natural and artificial environment.	**Association with other disciplines:** 3.6.2.3. gain has been associated with '3.5.3.Students will be able to introduce the features of historical, natural and tourist places in their vicinity' gain of Life Science course.
			3.6.2.4. Students will be able to design an artificial environment.	
			3.6.2.5. Realizes the importance of natural environment for living things (national parks and natural monuments are mentioned)	
			3.6.2.6. Students will be able to propose solutions by conducting research to protect the natural environment.	**Association with other disciplines:** 3.6.2.6. gain has been associated with '3.6.4. Students will be able to give examples of the impact of humans on natural elements from their immediate environment', '3.6.6. Students will be able to give examples of the contribution of recycling to themselves and the environment in which they live' and '3.6.5. Students will be able to take responsibility for protecting nature and the environment' gains of Life Science course.

English	9	Weather	E3.9.L1. Students will be able to identify various weather conditions.	**Association with other disciplines:** E3.9.L1. gain has been associated with '3.6.4. Students will be able to give examples of the impact of humans on natural elements from its immediate environment (Emphasis is placed on the positive and negative effects of humans on the natural environment. It is also taken care to give examples of their positive effects. Examples of endangered species are given) gain of Life Science course.
			E3.9.S1. Students will be able to talk about the weather conditions.	**Association with other disciplines:** E3.9.S1. gain has been associated with '3.6.4. Students will be able to give examples of the impact of humans on natural elements from its immediate environment (emphasis is placed on the positive and negative effects of humans on the natural environment. It is also taken care to give examples of their positive effects. Examples of endangered creatures are given)' gain of the Life Science course.
	10	Nature	E3.10.L1. Students will be able to recognize nature and the names of animals.	**Association with other disciplines:** E3.10.L1. gain has been associated with '3.6.4. Students will be able to give examples of the impact of humans on natural elements from their immediate environment (emphasis is placed on the positive and negative effects of humans on the natural environment. Care is also taken to give examples of their positive effects. Examples of endangered species are given)' gain of Life Science course.
		Nature	E3.10.L2. Students will be able to follow short and simple oral instructions about nature and animals.	
		Nature	E3.10.S1. Students will be able to talk about nature and animals.	**Association with other disciplines:** E3.10.S1. gain has been associated with '3.6.4. Students will be able to give examples of the impact of humans on natural elements from their immediate environment (emphasis is placed on the positive and negative effects of humans on the natural environment. Care is also taken to give examples of their positive effects. Examples of endangered species are given)' gain of Life Science course.
		Nature	E3.10.S2. Students will be able to talk about the animals they like or dislike and the nature.	**Association with other disciplines:** E3.10.S2. gain has been associated with '3.6.4. Students will be able to give examples of the impact of humans on natural elements from their immediate environment (emphasis is placed on the positive and negative effects of humans on the natural environment. Care is also taken to give examples of their positive effects. Examples of endangered species are given)' gain of Life Science

Table 8. Environmental related gains in primary school fourth grade curriculum

	Unit No	Unit Name	Environmental related gains	Gains in other disciplines with which gains are related
Science	1	Structure of the earth's crust	4.1.1.1. Students will be able to indicate that the land layer of the Earth's crust is composed of rocks.	**Association to other disciplines: ‘**4.1.1.3.’, ‘4.1.1.2.’, ‘4.1.1.3.’ gains have been associated with ‘T.4.2.3. Makes prepared speeches.’ gain of Turkish course.
			4.1.1.2. Students will be able to associate rocks with mines and discusses the importance of rocks as raw materials. Important rocks and mines in Turkey are mentioned; gold, boron, marble, lignite, copper, coal, silver, etc. an example is given.	
			4.1.1.3. Students will be able to explain the formation of fossils.	
	4	Properties of matter	4.4.5.3 Students will be able to discuss the separation of mixtures in terms of its contribution to the country's economy and the effective use of resources.	**Association to other disciplines:** 4.4.8.3. gain has been associated with ‘4.2.2. Explains ways to bear the responsibility of being human’ gain of Human Rights, Citizenship and Democracy course, ‘TG.4.1.10. ‘Recognizes the importance of using public transport in traffic’ gain of Traffic Safety course and ‘4.5.1. Makes informed choices between the two by distinguishing their desires and needs’, ‘4.5.3. Exhibits conscious consumer behavior as a responsible individual’, ‘4.5.5. Uses the surrounding resources without wasting them’ gains of Social Sciences.
	5	Lighting and sound technologies	4.5.3.1. Students will be able to question the causes of light pollution. 4.5.3.2. Students will be able to explain the negative effects of light pollution on natural life and the observation of celestial bodies. 4.5.3.3. Students will be able to produce solutions to reduce light pollution.	**Association to other disciplines:** 4.5.3.2. gain has been associated with ‘T.4.2.3. Makes prepared speeches’ gain of Turkish course.
			4.5.5.1. Students will be able to question the causes of sound pollution. 4.5.5.2. Students will be able to explain the negative effects of sound pollution on human health and environment. 4.5.5.3. Students will be able to produce solutions to reduce sound pollution.	**Association to other disciplines:** 4.5.5.2. gain has been associated with ‘T.4.2.3. Makes prepared speeches’ gain of Turkish course.
	6	Human and environment	4.6.1.1. Students will be able to take care to be economical in the use of resources (emphasizes the importance of efficient use of resources such as electricity, water, nutrients, and focuses on the importance of reuse).	**Association to other disciplines:** 4.6.1.1 gain has been associated with 4.2.2. Explains ways to bear the responsibility of being human’ gain of Human Rights, Citizenship and Democracy course, ‘TG.4.1.10. Recognizes the importance of using public transport in traffic’ gain of Traffic Safety course and ‘4.5.1. Makes informed choices between the two by distinguishing their desires and needs’, ‘4.5.3. Exhibits conscious consumer behavior as a responsible individual’, ‘4.5.5. Uses the surrounding resources without wasting them’ gains of Social Sciences.

			4.6.1.2. Students will be able to understand the importance of resources and recycling necessary for life (water, nutrients, electricity, etc.).	**Association to other disciplines:** 4.6.1.2. gain has been associated with '4.2.2. Explains ways to bear the responsibility of being human' gain of Human Rights, Citizenship and Democracy course, 'TG.4.1.10. Recognizes the importance of using public transport in traffic' gain of Traffic Safety course and '4.5.1. Makes informed choices between the two by distinguishing their desires and needs', '4.5.3. Exhibits conscious consumer behavior as a responsible individual', '4.5.5. Uses the surrounding resources without wasting them' gains of Social Sciences.
Social Sciences	3	People and palces	4.3.3. Students will be able to distinguish the natural and human elements in the environment in which it lives.	
			4.3.4. Students will be able to transfer his findings to Illustrated graphs by observing the weather events occurring around it.	
			4.3.5. Students will be able to make inferences about the place where he lives and the landforms and population characteristics around them (the political and physical map of Turkey is studied together with students, while these gains are processed, literary products such as poetry, stories, epics are used).	
			4.3.6. Students will be able to make the necessary preparations for natural disasters (priority is given to natural disasters that are likely to encounter in the environment in which the student lives).	
	4	Science, technology and society	4.4.2. Students will be able to compare the past and present use of technological products (draws attention to the positive and negative effects of technology in our lives and environment) 4.4.5. Students will be able to use technological products without harming itself, others and nature.	**Association to other disciplines:** 4.4.5. gain has been associated with '4.2.2. Explain ways to bear the responsibility of being human' gain of Human Rights, Citizenship and Democracy course.
	5	Production, distribution and consumption	4.5.1. Students will be able to make informed choices between the two by distinguishing between its wants and needs (the limitation of resources, the balance of benefits and costs will be taken into account). 4.5.3. Students will be able to exhibit conscious consumer behavior as a responsible individual. 4.5.5. Students will be able to use surrounding resources without wasting them.	**Association to other disciplines:** 4.5.1., 4.5.3. and 4.5.5. gains have been associated with '4.6.1.1. Takes care to be efficient in the use of resources' gain of Science course.
Religion and Ethics	5	Religion and cleanliness	4.5.2. Students will be able to take care to be clean and tidy (it will improve students' self-care skills, as well as cleaning the home, school and environment; it will focus on issues such as hand-mouth cleaning, body cleaning, clothing cleaning before and after meals).	**Association to other disciplines:** 4.5.2. gain has been associated with '4.2.2. Explain ways to bear the responsibility of being human' gain of Human Rights, Citizenship and Democracy course.

Human Rights, Citizenship	2	Rights, freedom and responsibility	4.2.2. Students will be able to explain the ways of carrying the responsibility of being human (human responsibilities to themselves, their family, friends, other people, nature, the environment, animals and the common heritage of humanity are included).	**Association to other disciplines:** 4.2.2. gain has been associated with '4.6.1.1. Takes care to be efficient in the use of resources' gain of Science course, '4.4.5. Uses the surrounding resources without wasting them' gains of Social Sciences and '4.5.2. Takes care to be clean and tidy' gain of Religion and Ethics course. The Turkish course is associated with basic language skills in speech.
Traffic	1	Safety in traffic	TG.4.1.10. Students will be able to realize the importance of using public transport in traffic.	**Association to other disciplines:** TG.4.1.10. gain has been associated with '4.6.1.1. Takes care to be efficient in the use of resources' gain of Science course.
English	8	My clothes	E4.8.L1. Students will be able to understand short oral texts about weather conditions and clothing. E4.8.L2. Students will be able to recognize the names of the season sand clothes in short oral texts. E4.8.S1. Students will be able to describe the weather conditions. E4.8.S2. Students will be able to name the seasons. E4.8.S3. Students will be able to ask and answer simple questions about weather conditions and clothing items in simple conversations.	

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| Research Article / Araştırma Makalesi |

Technology Addiction in Preschool Period: An Analysis on Illustrated Children's Books

Okul Öncesi Dönemde Teknoloji Bağımlılığı: Resimli Çocuk Kitaplarına Yönelik Bir İnceleme

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Keywords

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Abstract

In today's world, technological devices have started to take an important part in human life. Many studies have determined that technological devices have positive and negative effects on individuals' physical, social-emotional, cognitive, and language development. In parallel with the developments in science and technology, tools such as pens, books, notebooks, and erasers, which used to be popular in the past for children, have been replaced by devices such as tablets, phones, and computers. When examined from this aspect, it can be mentioned that many technology-based devices, which are widely used today, have positive and negative effects on people. Especially in early childhood, the misuse of technological devices can cause undesirable and permanent results. For this reason, families and stakeholders in the education process should provide awareness of the prevention of technology addiction. Illustrated children's books are one of the most important tools that parents and educators can use to convey accurate information to children. With the help of illustrated children's books, how and how long technological devices will be benefited, and problems that may arise in their misuse can be conveyed to children in accordance with their developmental levels. This situation reveals the requirement for the content and the way of conveying the content of illustrated children's books related to technology addiction to be correct. In parallel with this information, the study aimed to examine the content of illustrated children's books on technology addiction for the preschool period. The qualitative research method was used in the research. The study group was determined by the criterion sampling method, one of the purposeful sampling methods. Accordingly, the study group consisted of 15 illustrated children's books that are still in print and accessible to researchers. Illustrated children's books were examined by document analysis method. The books were analyzed using descriptive analysis technique and content analysis technique. As a result of the study, it was observed that the illustrated children's books examined did not contain enough content about the dangers that might be encountered in the internet environment which children are frequently exposed to, and some of the suggested solutions for technology addiction are considered appropriate, but not presented sufficiently. As in other books, illustrated children's books on technology addiction should be written according to the child's developmental characteristics, and an information note for families and information about the age group that the book addresses should be included for guidance. Besides, in these children's books, judgments that create anxiety, stress, and fear and blame the family or the child should be avoided.

Öz

Günümüzde teknolojik araçlar insan yaşamında önemli bir yer edinmeye başlamıştır. Teknolojik araçların bireylerin fiziksel, sosyal-duygusal, bilişsel ve dil gelişimine olumlu ve olumsuz etkisinin olduğu birçok araştırmayla belirlenmiştir. Bilim ve teknolojideki gelişmeler doğrultusunda çocuk açısından geçmişte popüler olan kalem, kitap, defter ve silgi gibi araç gereçlerin yerini tablet, telefon, bilgisayar gibi araçlar almıştır. Bu yönden incelendiğinde, günümüzde yaygın olarak kullanılan teknoloji odaklı birçok aracın insanlar üzerinde olumlu ve olumsuz sonuçlar meydana getirdiği söylenebilir. Özellikle erken çocukluk döneminde teknolojik araçların yanlış kullanımı istenmedik kalıcı sonuçlara sebep olabilmektedir. Bu nedenle aileler ve eğitim sürecinde yer alan paydaşlar teknoloji bağımlılığının önlenmesi konusunda bilinçlendirilmelidir. Ailelerin ve eğitimcilerin çocuklara doğru bilgi aktarabilmeleri için kullanacakları en önemli araçlardan biri de resimli çocuk kitaplarıdır. Resimli çocuk kitapları aracılığıyla çocuklara teknolojik araçların nasıl, ne kadar süre kullanılacağı ve yanlış kullanımında oluşabilecek sorunlar çocukların gelişim düzeylerine uygun aktarılabilmektedir. Bu durum teknoloji bağımlılığı konusunu kapsayan resimli çocuk kitaplarının içeriğinin ve aktarılış biçiminin doğru olması gerekliliğini ortaya koymaktadır. Bu bilgiler doğrultusunda çalışmanın amacı, okul öncesi döneme yönelik teknoloji bağımlılığı konusunu içeren resimli çocuk kitaplarının içeriğini incelemektir. Araştırmada nitel araştırma yöntemi kullanılmıştır. Çalışma grubu, amaçlı örnekleme yöntemlerinden ölçüt örnekleme yöntemiyle belirlenmiştir. Bu doğrultuda çalışma grubu, baskısı devam eden ve araştırmacıların ulaşabildiği 15 resimli çocuk kitabından oluşmuştur. Resimli çocuk kitapları doküman inceleme yöntemiyle incelenmiştir. Betimsel analiz ve içerik analizi tekniğiyle analiz edilmiştir. Araştırmanın sonucunda, incelenen resimli çocuk kitaplarında çocukların sıklıkla maruz kaldıkları internet ortamındaki tehlikeler konusunda yeterince içeriğe yer verilmediği, ayrıca teknoloji bağımlılığına ilişkin önerilen çözümlerin bazılarının uygun olmakla birlikte yeterli düzeyde verilmediği görülmüştür. Diğer kitaplarda olduğu gibi teknoloji bağımlılığı konulu resimli çocuk kitapları da çocuğun gelişim özelliklerine uygun şekilde yazılmalı, yol gösterici olması açısından ailelere yönelik bilgi notu ve kitabın hitap ettiği yaş grubuna ilişkin bilgilere yer verilmelidir. Bunların aynı sıra söz konusu çocuk kitaplarında kaygı, stres, korku yaratan ve aile ya da çocuğu suçlayan yargılardan kaçınılmalıdır.

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INTRODUCTION

The preschool period is considered the most critical period that affects personality development, the acquisition of knowledge, skills, and habits in the 0-72-month period, and directly affects the later years of life (Akduman, 2011). In this period, children go out of their home environments and begin to socialize. The environment which the child interacts during the socialization process offers many opportunities for the child to become researchers and individuals open to exploration. These opportunities can affect children's development in both positive and negative ways. Today, technological devices are among the primary means by which children interact in the external environment (Yeygel & Temel Eğinli, 2009). Easy accessibility, portability, and personalization features of technological devices ensure that children play a supportive element in the learning process. However, children who interact with technological devices too much experience problems such as withdrawal from the social environment, introversion, lack of communication, and distraction (Çelen, Çelik, & Seferoğlu, 2011). Although technological devices contribute to children's access to information and doing exercises, the excessive and uncontrolled use of technological devices negatively affects the development of the child. To illustrate, while children used to play outdoor games in environments that would help them develop friendship and support their development, nowadays, with the introduction of technological devices, children have less time to play outside and establish social relationships (Arnas, 2005; Tuncer, 2000).

There is a significant correlation between children's level of interaction with technological devices and families' attitudes (Terkan & Taylan, 2010). Shih (2003) stated that there is a correlation between family attitude and internet addiction. The wrong attitudes of families cause negative consequences for the child (Yalçın & Duran, 2017). For example, due to the possible dangers of the internet, it is seen as a wrong and ineffective behavior for families to ban internet use for their children. Raising the awareness of families about the use of technological devices and internet is considered important in this respect (Odabaşı, Çoklar, & Kavakçı, 2007; Tokel, Başer, & İşler, 2013).

Unhealthy domestic relationships cause an increase in the use of the internet and technological devices by children. A study conducted in China concluded that children of families who do not care enough for their children are internet addicts (Ayas & Horzum, 2013). In a research of Bayraktutan (2005), he stated that mothers and fathers could not spare enough time for their children due to their busy business lives; therefore, children spend the time on technological devices that they are ideally supposed to spend with their parents and try to meet their “socialization needs” in virtual environments. Similarly, Whang, Lee, & Chang (2003) found in their studies on internet addiction that individuals with internet addiction have high levels of loneliness, and being alone increase their level of internet addiction. As a solution, he stated that using internet should be controlled from the first years of life, and families should spend quality time with their children (Ayas & Horzum, 2013; Bölükbaş, 2003).

After the family, the external environment with which the child interacts the most is educational institutions. For this reason, teachers have an important role in the prevention of technology addiction as well as families (Arslan, Bütün, Doğan, Dağ, Serdarzade, & Arıca, 2010). Misuse of technological devices in the first years of life can cause undesirable and permanent results. Therefore, families and stakeholders involved in the education process should provide awareness of the prevention of technology addiction (Kuşkonmaz, 2011; Lee & Chae, 2007). One of the most important devices that families and educators can use to convey correct information to children is illustrated children's books (Güzelyurt, 2020). With the help of illustrated children's books, how and how long technological tools will be used, and the problems that may occur in their misuse can be conveyed to children in accordance with their developmental levels. According to Sever (2015), the correctness of the content and the way of conveying the content through illustrated children's books are seen as a requirement for the message to reach its purpose.

In this respect, the study was carried out to examine the content of illustrated children's books that cover the subject of technology addiction for the preschool period. The study is considered important in terms of supporting the writing, publishing, and selection of high-quality illustrated children's books related to the prevention of technology addiction. However, no studies carried out on the subject of technology addiction in illustrated children's books were found. For this reason, it is thought that the study will contribute to the literature and will guide families and teachers in choosing and using illustrated children's books.

In this research, answers to the following questions were sought:

1. Which situations are included in the content of illustrated children's books on technology addiction for the preschool period?

2. What is the relevance of the content of the illustrated children's books on technology addiction for the preschool period with the literature?

METHOD/MATERIALS

In this part of the research, information about the research model, study group, data collection, and analysis are included.

Research Model

Please The study aimed to determine the status of illustrated children's books in terms of including the subject of technology addiction. For this purpose, the document analysis method, one of the qualitative research methods, was used. Document review covers the analysis of written materials that contain information about the phenomenon or facts aimed to be investigated (Yıldırım & Şimşek, 2013).

Study Group

The study group consisted of 15 illustrated children's books, the first editions between 2010 and 2019, determined by criterion sampling method, one of the purposeful sampling methods. Criterion sampling is the process of selecting the study group from the materials related to the subject to be researched and that meet research criteria (Merriam, 2013). In this study, the criterion was the books containing technology addiction (television, tablet, phone, computer) which were written for the preschool period. The research was also limited to illustrated children's books that are still in print and accessible to researchers.

Data Collection and Analysis

The words preschool, television, tablet, computer, mobile phone, technology, and internet were searched in the catalogs of libraries and on online websites selling books to identify the books related to the scope and content of the research. 72 illustrated children's books determined by this method were examined, and after the reading process, the illustrated children's books that did not fit the scope of the study were removed from the study group. 15 illustrated children's books were analyzed by two independent researchers who found the books to meet the criteria. Illustrated children's books were analyzed with the descriptive analysis technique and content analysis technique. The data obtained through the descriptive analysis technique are summarized and interpreted within the framework of the previously determined research subject or themes (Yıldırım & Şimşek, 2013). Accordingly, the state of including technology addiction in illustrated children's books was examined in the study. Content analysis is defined as any qualitative data reduction and interpretation attempt to determine the voluminous qualitative material, its basic consistencies and meanings (Patton, 2014). The content analysis technique is used to identify common points in the content of many documents. In the content analysis, important concepts are determined, classified, and an interpretation providing generalization is obtained. In the research, categorical analysis was preferred among the content analysis techniques. A categorical analysis is subjecting the determined categories to frequency analysis (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2015). Accordingly, the codes with the theme determined in the research are expressed as frequency. The books are specified with codes (B1, B2, B3…). All of the illustrated children's books examined in the study were analyzed by two field experts. As a result of this, the codes with a consensus and disagreement were determined among the detected codes. To find the reliability ratio among the detected codes, the consensus formula designed by Miles & Huberman (1994) was used. The reliability coefficient among coders was found to be .84. Yıldırım & Şimşek (2013) stated that a reliability percentage of at least 70% should be reached among coders. Accordingly, it can be said that the analysis results of the data obtained in the study are reliable.

FINDINGS

In this part of the research, the data obtained are presented. The data in this study were grouped under six themes: "Information on the books examined" has been grouped under six themes: "technological tools," "actions," "adverse situations," "noticing," and "prevention method.

Theme 1: Demographic Information of the Books Reviewed

Demographic information of the illustrated children's books examined in the study was discussed under this theme. The codes related to this theme, the original first edition year of the illustrated children's books, the first edition year in Turkish, the age recommendation, and findings regarding the family information note are given in Table 1.

Table 1. Findings regarding the demographic characteristics of the illustrated children's books examined

Code	Year of Printing in Original Language	First Edition Year in Turkish	Age Recommendation	Information for the Family
B1	-	2010	Available	Not Available
B2	1984	2011	Not Available	Not Available
B3	2010	2011	Not Available	Not Available
B4	2012	2012	Not Available	Not Available
B5	2005	2012	Not Available	Not Available
B6	2000	2013	Not Available	Not Available
B7	-	2013	Not Available	Not Available
B8	2013	2014	Not Available	Available
B9	-	2014	Not Available	Not Available
B10	-	2015	Not Available	Available
B11	-	2015	Not Available	Not Available
B12	2016	2017	Available	Not Available
B13	-	2017	Not Available	Available
B14	-	2019	Not Available	Available
B15	-	2019	Not Available	Not Available

The illustrated children's books examined within the scope of the research were the books translated into Turkish (f=7) and the books originally written in Turkish (f=8). There was no age recommendation (f=14) and information note for the family (f=11) in the illustrated children's books.

Theme 2: Technological Devices

Technological devices in the illustrated children's books examined in the study were discussed under this heading. The data obtained regarding this theme are given in Table 2.

Table 2. Technological devices used

Code	Frequency (f)	Books (B)
Television	6	B1, B2, B4, B5, B6, B11
Computer	3	B3, B7, B8
Tablet	3	B10, B14, B15
Phone	1	B13
All	2	B9, B12

The content of the examined illustrated children's books included technological devices such as television (f=6), computer (f=3), tablet (3), phone (f=1), and all (f=2). Accordingly, it was observed that television as a device was frequently included in these books.

Theme 3: Actions

The actions taken through technological devices in the illustrated children's books examined in the study were discussed under this heading. The data obtained regarding this theme are given in Table 3.

Table 3.Action carried out through the technological device

Code	Frequency (f)	Books (B)
Playing games	8	B3, B7, B8, B10, B12, B13, B14, B15
Watching cartoons	7	B1, B2, B4, B5, B6, B11, B13
Using the Internet	2	B3, B13
Watching TV series	1	B9

The actions taken through technological devices in the examined illustrated children's books were observed as follows: playing games (f=8), watching cartoons (f=7), using the Internet (f=2), and watching TV series (f=1). Accordingly, it can be expressed that in these books, children mostly used technological tools as a means of playing games and watching cartoons.

In the illustrated children's book coded B8, the statements *"…Yes, you heard right, video games. All the games you can think of. Hakan could not stop himself from constantly playing these games. The truth is, he couldn't even think of anything but video games,"* are included (Moore & Mazalı, 2014).

In the illustrated children's book coded B9, the statements *"…I got away from the computer and came to the hall. While my mom and dad were chatting at dinner, I got caught up in the TV series"* are included (Oy, 2014).

In the illustrated children's book coded B11, the statements *"…The sound of the television was wide open. A knight cartoon was playing on the screen. Limin and Zeytin were watching the cartoon on the one hand and imitating the ones in the movie on the other,"* are included (Elkorek, 2015).

In the illustrated children's book coded B13, the statements *"…You know that you sometimes want to watch the cartoons you love to watch on the video channels on the internet, or you connect to other cartoons after that cartoons are over, and some of them are too scary that you don't want to watch them or they can be on subjects you should not watch. But you still watch them with curiosity and learn things that are not true, or you may be too scared of!"* are included (Oy, 2017).

Theme 4: Adverse Situations

The adverse situations caused by the technological devices in the examined illustrated children's books were discussed under this heading. The data obtained regarding this theme are given in Table 4.

Table 4. Adverse situations caused by technological devices

Code	Frequency (f)	Books (B)
Not playing sociable games	12	B1, B2, B3, B4, B5, B6, B8, B10, B11, B12, B14, B15
Getting away from friends	9	B1, B2, B3, B5, B6, B8, B10, B12, B15
Eating in front of the television	8	B1, B2, B4, B5, B6, B9, B10, B15
Developing health problem(s)	6	B1, B7, B9, B10, B13, B15
Family's being a negative role model	6	B2, B3, B6, B9, B10, B11
Getting scared	5	B6, B7, B8, B10, B13
Not being able to fulfill responsibilities	3	B8, B9, B15
Encountering dangerous content on the internet	2	B3, B13

The negativities caused by technological devices in the illustrated children's books reviewed were reflected upon the content in the form of playing games on technological devices (f=12), getting away from friends (f=9), eating in front of the television/not

wanting to eat anything (f=8), developing health problem(s) (f=6), the family's being a negative role model (f=6), fear (f=5), failure to fulfill their responsibilities (f=3), and encountering dangerous content on the internet (f=2).

In the illustrated children's book coded B6, the statement *"…Kokozu suddenly appeared on the screen. She looked very angry. That big rabbit made a lot of noise, I'll teach him a good lesson. Zıpır was afraid. He pressed the buttons on the remote to turn the TV off, but that didn't work at all. The knight drew his long sword and jumped out off the screen. Kokozu was attacking the Super Rabbit. They destroyed the table, chairs, and flowers. The hall was in a mess. Zıpır was very scared. He ran to his room to hide. My mom! Help me! Zıpır shouted so strongly that he awoke to his voice. His mother had come to him. You had a nightmare, dear. Yes, it's a terrible nightmare because you watch TV too much,"* are included (Lamblin, 2013, 11-14.)

In the illustrated children's book coded B7, the *statement "…Fortunately it was all a dream. If I told you, you would be very scared too."* is included (Çiçek & Koruklu, 2013, 13).

In the illustrated children's book coded B8, the statements *"…Startled Hakan got up and ran to the mirror. He expected to see himself aged, covered in spider webs, but no, it was all just a dream. Hakan was so relieved! "Happy birthday Hakan," his mother said, handing over her gift. Come on, what are you waiting for? Unwrap it! Hakan carefully unwrapped the gift and couldn't believe his eyes when he saw what was inside. Her mother had bought the game he had seen in his dream the night before. Hakan looked around in fear, knowing that the video vampires were waiting to act. This time I won't let them, he thought,"* are included (Moore & Mazalı, 2014, 27-28).

In the illustrated children's book coded B13, the statement *"…Would you like to wear glasses with lenses like binoculars?"* is included (Oy, 2017, 6-7).

Theme 5: The State of Being Recognized

The recognition of the damages caused by the excessive use of technological devices in the analyzed illustrated children's books was presented under this heading. The data obtained regarding this theme are given in Table 5.

Table 5. Recognizing the damages caused by excessive use of technological tools

Code	Frequency (f)	Books (B)
The breakdown of the technological device/Depletion of the energy source	8	B1, B2, B3, B5, B11, B12, B14, B15
One of the family members' recognizing the issue	5	B2, B3, B4, B10, B13
Experiencing fear (dream, eyeglasses, zombie, monster)	5	B6, B7, B8, B10, B13
The child's developing health problem(s)	3	B1, B9, B10

In the illustrated children's books examined, it was observed that the damages caused by the excessive use of technological devices are noticed through the breakdown of the technological device/depletion of the energy source (f=8), one of the family members' recognizing the issue (f=5), the fear of the child (f=5) and the child's developing health problem(s) (f=3).

In the illustrated children's book coded B1, the statements *"…One day the television broke down; Mali's favorite cartoon started to look blurry. We took the TV to the maintenance service for repair. "This is solid. You had better get Mali to the doctor," he said,"* are included (Kozikoğlu, 2010).

In the illustrated children's book coded B2, the statements *"…When Brother and Sister stepped off the school bus, they burst into the kitchen without even saying hello. Then they did something they did every day: they took their glass of milk and cookies into the living room and turned on the TV. "No doubt about it," thought Anne. The kids watch TV too much!"* are included (Berenstain & Berenstain, 2011).

In the illustrated children's book coded B8, the statements *"…Hakan carefully unwrapped the gift and couldn't believe his eyes when he saw what came out of it. His mother had bought the game he had seen in his dream the night before. Hakan looked around in fear, knew that the video vampires wanted to act."* are included (Moore & Mazalı, 2014).

In the illustrated children's book coded B10, the statement *"…Look, your eyes turned red, your fingers blistered,"* is included (Artukmaç & Sürücü, 2015).

Theme 6: Prevention Method

The method of preventing technology addiction included in the illustrated children's books, was discussed under this heading. The data obtained regarding this theme are given in Table 6.

Table 6. Method of preventing technological addiction

Code	Frequency (f)	Books (B)
Playing games with friends	6	B1, B2, B3, B4, B6, B15
Time limitation/Agreement/Controlled use	6	B2, B3, B4, B10, B13, B14
Spending time with the family/the family's being a positive role model	4	B2, B3, B9, B13
Quitting because of fear	3	B6, B7, B8

In the illustrated children's books examined, it was found that technological addiction was prevented by playing games with friends (f=6), time limitation/controlled use (f=6), spending time with the family/the family's being a positive role model (f=4) and fear (f=3). It has been observed that it has been studied.

In the illustrated children's book coded B8, the statements *"…Sounds scary, right? It is. Just like vampires in horror movies, video vampires absorb actors' time and energy, making them expressionless faces and empty eyes. It makes them forget about homework and friendship. The only way to get rid of video vampires is to stop playing games altogether or limit play time. Well, easier said than done, of course,"* are included (Moore & Mazalı, 2014).

In the illustrated children's book coded B10, the statements *"…It also takes a lot of time. Let's specify a certain time limit for this,"* are included (Artukmaç & Sürücü, 2015).

In the illustrated children's book coded B13, the statements *"…For example, let's go to the movies as a family. I think it is more enjoyable to laugh or think together*" are included (Oy, 2017).

In the illustrated children's book coded B15, the statement *"…From now on, he decided to spend more time with his friends and use his tablet properly and adequately"* is included (Yeşilay, 2019, 24-25).

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

The study where the content of illustrated children's books that comprise the subject of technology addiction based on preschool period was examined. Also, what situations in the context of technology addiction were included in the mentioned books and the compliance of these situations with the literature were discussed. It was observed that TV, computer, tablet, and phone were respectively the most frequently included technological devices in the content of the books on technology addiction. Studies revealed that children have recently spent a long time on phones and tablets as much as they do on television (Ateş & Saltalı, 2019; Kızıltaş & Ertör, 2018). In this respect, it can be mentioned that the use of phones and tablets is less frequently mentioned in illustrated children's books.

When children took the actions on technological devices in illustrated children's books are examined, it was observed that children mostly performed the act of playing games and watching cartoons. Although the content covered in illustrated children's books is compatible with the literature, it cannot be sufficient. When children use technological devices, they also access the internet (Bükre, Özlem & Deniz, 2017; Tuncer, 2000). Accordingly, the fact that very few books examine the situation of children encountering harmful content on the internet has caused the inadequacy of published illustrated children's books in terms of covering technology addiction with all its dimensions.

It can be pointed out that technology addiction has many effects on children. The most important effects of technology addiction on children are health problems, not playing games, getting away from friends, decreased family communication, and experiencing anxiety and fear (Altınkılıç, 2014; Özkılıç Kabul, 2019). It can be mentioned that there is parallelism between the negativities included in illustrated children's books analysed and the literature. Despite the fact that illustrated children's books cover many issues on technology addiction, it is one of the issues that should be discussed that illustrated children's books do not contain enough content about the dangers of the internet and virtual world to which children are frequently exposed. In addition, it can be said that there are some problems in the way these negativities are passed on to the child. To illustrate, some illustrated children's books include the content that children will see bad monsters if technological devices are used too much. Such expressions should not be used as they may cause anxiety and fear among children; instead, expressions suitable for children's development should be preferred.

The state of noticing technology addiction in illustrated children's books has occurred through undesirable situations such as the breakdown of the technological device, experiencing health problems, or the state of child's getting scared. In very few illustrated children's books, one of the family members noticed the state of the problem. It should not be overlooked that the use of expressions blaming family and children in the content of the books or the contents that make readers think this may negatively affect family-child communication.

In the conclusion part of illustrated children's books that include technology addiction, methods such as directing the child to play, increasing communication within the family, playing with technological devices in a controlled and time-limited manner were preferred as a solution. It can be mentioned that these methods are widely used methods when the literature was examined. Although the methods determined for the solution were desired, it cannot be said that they were sufficiently included in illustrated children's books. Moreover, book contentsreach a solution through the act of fear that the child will experience anxiety. According to the studies conducted, the most important role in technology addiction was family members being positive role models (Ertemel & Aydın, 2015). In the illustrated children's books within the scope of the research, it was stated that family members also frequently used technological devices instead of spending time with the child. However, although the problem was solved for the child, it was observed that several parents continued to use technological devices in most of the books. In this context, it is not fair to say that the problem-solving process was done adequately and correctly in technology-themed illustrated children's books.

Technology addiction is among the issues that families have difficulty transferring to children and finding solutions (Çetinkaya, 2019). The information note and age recommendation for the families in the books about how to convey these issues through illustrated children's books or the ones that need attention is an important factor in achieving the aim of the book. When the illustrated children's books within the scope of the research were examined, it was determined that there was an age recommendation in only one illustrated children's book and an information note for the family in four illustrated children's books. In this respect, it can be pointed out that the examined illustrated children's books were not sufficient in terms of guiding families

and supporting them to choose suitable children's books in accordance with the age of the child. As a result, it was concluded that illustrated children's books on technology addiction were not sufficient to cover the negative effects of technology addiction, the state of being recognized, and problem-solving. Illustrated children's books, which contain expressions appropriate to the developmental characteristics of preschool children, is one of the most important elements that would enable the child to internalize messages (Sever, 2015). It can be mentioned that there was no information note and age recommendation for the family in illustrated children's books, which is one of the important obstacles for the books to reach their goals. In this respect, the characteristics that illustrated children's books covering technology addiction are required to possess both in terms of quality and other factors should be developed in terms of technology addiction in the light of today's conditions.

In line with this information, the following suggestions can be made;

• Expressions that create anxiety, stress, fear, and expressions that blame the family or the child should be avoided in illustrated children's books on technology addiction.

• Published illustrated children's books should be updated in line with the developmental characteristics of the child, and new illustrated children's books should be written accordingly.

• To guide parents, information notes and age recommendations can be included in illustrated children's books.

• While writing children's picture books on technology addiction, current researches, studies, and new approaches can be used.

• In the process of writing illustrated children's books on technology addiction, experts in the field can be consulted.

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I/We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

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| Research Article / Araştırma Makalesi |

Investigating Stakeholder Opinions on A Resource Room Program for Gifted Students

Üstün Yeteneklilere Yönelik Destek Eğitim Odası Programına İlişkin Paydaş Görüşlerinin İncelenmesi[1]

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Keywords

1. Gifted Students
2. Education Program
3. Resource Room
4. Stakeholders opinion

Anahtar Kelimeler

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Abstract

Purpose: The present research aims at determining the stakeholders' opinion about a resource room program for gifted students in a primary school.

Design/Methodology/Approach: Structured as a case study, the research project was carried out in a primary school in the Eskisehir province of Turkey. Participants of the research consisted of the school headmaster, the teacher of the resource room, gifted students attending the program, parents of gifted students and classroom teachers whose students attended the program. Data used in the research were collected through semi structured interviews. The research data were analyzed using the systematic analysis approach.

Findings: The findings of this research revealed that the program has generally been positively perceived by stakeholders. On the other hand, the participants expressed their concerns and some problems, especially due to the program was carried out during school hours like much homework, missed out some important lessons and restriction in curriculum.

Highlights: The study showed that in order for the gifted student pull-out programs to be efficient it should be collaboration between stakeholders. It is recommended that it should be given to schools more flexibility in organizing and operating programs for an effective program.

Öz

Çalışmanın Amacı: Bu araştırmanın genel amacı bir ilkokulda destek eğitim odası kapsamında üstün yetenekli öğrencilere yönelik yürütülen programa ilişkin okul paydaşlarının görüşlerini incelemektir.

Yöntem: Durum çalışması şeklinde desenlenen araştırma, Eskişehir ilinde yer alan bir ilkokulda gerçekleştirilmiştir. Araştırmanın katılımcıları ise okul müdürü, destek eğitim odası öğretmeni, destek eğitim odasına devam eden üstün yetenekli öğrenciler, bu öğrencilerin velileri, destek eğitim odasına sınıfından öğrenci giden genel sınıf öğretmenleridir. Araştırmada veri toplama araçları olarak yarı yapılandırılmış bireysel ve odak grup görüşmeleri kullanılmıştır. Araştırmadan elde edilen veriler sistematik içerik analiz yaklaşımı ile analiz edilmiştir.

Bulgular: Araştırma sürecinde elde edilen bulgular sonucunda okul paydaşlarının yürütülen programa yönelik olumlu algıya sahip oldukları görülmektedir. Bununla birlikte katılımcılar özellikle programın okul ders saatleri içerisinde yürütülmesinden kaynaklı olarak müfredatı yetiştirememe, fazla ödev yükü, derslerden geri kalma gibi sorunları ve kaygılarını belirtmişlerdir.

Önemli Vurgular: Araştırma sonucunda üstün yeteneklilere yönelik destek eğitim odalarında etkili programlar için paydaşların görüşleri doğrultusunda düzenlemelerin önemi ve paydaşlar arası işbirliğinin sağlanması ön plana çıkmıştır. Araştırma sonucunda etkili bir program için okullara, programların düzenlenmesinde ve işleyişinde daha fazla esnekliğin tanınması önerilmektedir.

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INTRODUCTION

The education should be appropriate for students' developmental characteristics and responsive to their needs. It is of great importance that gifted children, who constitute a small portion of the population, need educational opportunities that will enable them to develop their talents and use their capacities at the highest level. The necessity of special education for gifted students is a controversial issue (Kaufman & Sternberg, 2008; Ziegler & Heller, 2000). The basis of these discussions is the fact that gifted children are developmentally and cognitively different from their peers (Davis & Rimm, 2004). Because of these differences, it is frequently mentioned that appropriate educational opportunities should be provided for them (Colangelo, Assouline, & Gross, 2004; Renzulli & Reis, 1991; Robinson & Moon, 2003). The most distinctive feature of gifted students is their high information processing speed which allows them to learn faster, process information more effectively, and generate more new and unusual ideas than their peers (Cohen, 2006; Gagné, 2003; Gallagher, 2000). In addition, gifted students stand out in general education classes for their high level thinking skills in abstract thinking (Kettler, 2014; Persson, 2010), strong memories (Alloway & Elsworth, 2012; Geake, 2008), understanding of complex concepts and relationships (Morelock & Morrison, 1999; VanTassel-Baska, 1987). As a result of these features, gifted students comprehend quickly in class, and, consequently, have different educational needs. As a matter of fact, many researchers state that the general education class programs are insufficient for gifted students and their education should be in line with a particularly more challenging program (Callahan, Moon, Oh, Azano, & Hailey, 2015; Moon, Swift, & Shallenger, 2002; Peterson, 2009; Silverman, 1998).

The current education system is based on the assumption that all students of the same age have the same intellectual development. Therefore, most courses, teaching materials and practices are designed for "normal" students (Osin and Lesgold 1996; Rogers 2002). This makes the current educational system frequently insufficient for gifted students (Archambault, Westberg, Brown, Hallmark, Emmons, & Zhang, 1993; Osin & Lesgold, 1996). Many researchers argue that gifted students should be grouped with peers who have similar academic skills, albeit for a limited time (Brulles, Saunders, & Cohn, 2010; Hertberg-Davis, 2009; Kulik & Kulik, 1992; Neihart, 2007; Rogers, 2002). The insufficiency of the education provided in the regular classrooms negatively affects the academic success of these students. On the other hand, it is stated that being educated in private schools which separate them from their peers may also cause social emotional problems (Rogers, 2002). This situation highlights the application of resource room (RR) within schools as an intermediate solution.

Among the various educational opportunities for gifted students, one of the most widely used applications is RR which is considered as a pull-out program (Gubbins, 2013). In this program type, gifted students are removed from their classroom for a part of the week. During this time, gifted students participate in enriched educational activities with their gifted friends in a separate classroom or in a room at their school (NAGC & CSDPG, 2015; Rogers, 2002). It can be argued that in Turkey RR is the most appropriate education application for gifted students in public schools thanks to legal regulations and recommendations. The Ministry of National Education's (MoNE) Action Plan related to gifted students' education covering the years 2013-2017 recommends the RR for the gifted students in all education level as the basic education implementation (MoNE, 2013). Parallel to this, the number of resource rooms for gifted students is increasing.

Gifted students have been accepted within the scope of special education groups. So, education for these students is generally regulated by the same legislations related to other special education groups. In the Regulation on Special Education Services of the Ministry of National Education, RR is defined as a settlement designed to provide support education services to students with special needs who continue their education through full-time inclusion and gifted students in the areas they need [MoNE], 2018). In the 28th article of the same legislation, the administration process of the RR is regulated. The purpose of RR in the legislation is explained as providing special education support via using special equipment and educational materials for students who need special education and gifted students who continue their education in the same class with their peers in schools (MoNE, 2018).

Although RR is widely used in the education of gifted students, there is no consensus on its implementation (Gubbins, 2013). Different opinions are especially seen related to the time spent in RR, the content of the education and who will be the teacher there (Cox & Daniel, 1984; Davis, Rimm, & Siegle, 2011; Gallaghar, 2000; MEB, 2015; Süel, 2017; Şahin, 2015). Even though the RRs are easy to open and low in cost, they have been subjected to various criticisms. It is stated that students benefit from these programs for a short time and it is argued that this is insufficient to meet the educational needs of gifted students (Feldhusen, 1989; Murphy, 2009: Clark, 2013). Another criticism is that these programs focus on various games and activities irrelevant to the general school curriculum (VanTassel-Baska, 1987; Renzulli & Reis, 1991; Rogers, 2002; Sak, 2014). It is stated that they are also insufficient for gifted students in providing communication and education with their mental peers; moreover, RRs might cause the development of a negative attitude towards gifted students by their classmates and teachers (Belcastro, 1987; Davis, Rimm, & Siegle, 2011).

Evaluation stands out as one of the issues that should be emphasized in education programs for gifted students. In research, stakeholder views are generally taken into account when evaluating the effectiveness of programs (Campbell & Verna, 1998; Davison, Coates, & Johnson, 2005; Dimitriadis, 2011; Dimitriadis, 2012; Tortop & Dinçer, 2016; Long, Barnett & Rogers, 2015; McCulloch, 2010; Morgan, 2007; Nar & Tortop, 2017; Pemik, 2017). The views of stakeholders play an important role in the evaluation of educational practices for gifted students. The evaluations of teachers, students, parents and school administrators provide important information about the effect of the program in evaluating the benefits of such programs especially for students. Thus, different researchers also emphasize the importance of stakeholder evaluations about the applications for gifted students

(Brighton & Wiley, 2013; Matthews & Kitchen, 2007). There are studies on parents, teachers and students' evaluations of RR-like practices for gifted students (Cohen, Duncan, & Cohen, 1994; Delcourt, Loyd, Cornell, & Goldberg, 1994; Dimitriadis, 2011; Gubbels, Segers, & Verhoeven, 2014; McCulloch., 2010; Moon, Tomlinson, & Callahan, 1995; Morgan, 2007; Ritrievi, 1988; van der Meulen et al., 2014; Yang, Gentry, & Choi, 2012). The results of these studies suggest that such programs for gifted students generally affect students' friendships positively (Cohen, Duncan, & Cohen, 1994; McCulloch, 2010; Morgan, 2007), increase their academic success (Delcourt et al., 1994; Dimitriadis, 2011, 2012; Morgan, 2007; van der Meulen et al., 2014), effect social-emotional development and attitudes towards science (Gubbels et al., 2014; van der Meulen et al., 2014), and also make positive contribution to motivation and original thinking skills (Moon et al., 1995).

Several studies were conducted in Turkey about the RRs for the gifted students (Bedur, Bilgiç & Taşlıdere, 2015, Tortop & Dinçer, 2016; Nar & Tortop, 2017; Pemik, 2017). Nar & Tortop (2017) stated that the majority of classroom teachers working in RR thought that the in-service training provided to them was insufficient in gifted education. In addition, teachers emphasized that the physical environment of the RRs' should be improved, the necessary equipment and educational materials should be provided to improve gifted students' skills. Pemik (2017) revaled that students generally played intelligence games instead of academic studies in RRs. In addition, it was stated that there were some crucial problems in the programs carried out in RR, due to the lack of curriculum and teaching plan, materials and inadequate physical conditions. Another study conducted by Bedur, Bilgiç & Taşlıdere (2015) to evaluate the RRs for gifted students shows that teachers have serious problems in developing the appropriate programs to implement in the RR. Apart from these studies, it is seen that similar results were obtained in studies related to RRs where students with different special needs attend (Çevik & Yağcı, 2017; Tunalı-Erkan, 2018; Yazıcıoğlu, 2020). In these studies, it was emphasized that the implementation of RR includes uncertainties in terms of legislation and implementation, the lack of training and knowledge of teachers, and the inadequacies of RRs in terms of material, physical conditions and equipment.

Nevertheless, it is seen that RRs have an important place in the education of gifted students. In Turkey, because of legal regulations and recommendations, it can be said that the most appropriate program for gifted students in public schools is the RR. In this context, it is important to evaluate this programs, which are actively used in the education of gifted students. However, there are insufficient studies related to the views of the stakeholders on the programs for gifted students (Matthews & Kitchen, 2007). This study is expected to contribute to the literature in the context of being a qualitative study and reflecting the views of active stakeholders during the RR process. Because RR is a new program type for gifted students in Turkey, there are disagreements about practices (Bedur, Bilgiç & Taşlıdere, 2015). So, the general aim of this research is to examine the views of the school principal, teachers, parents and students as stakeholders of school regarding the education program offered in RR for gifted students in a primary school. For this purpose, the guiding research questions included the following:

1. What are the parents' views on the gifted RR program?
2. What are the opinions of the teachers about the gifted RR program?
3. What are the opinions of the gifted students about the gifted RR program?
4. What are the views of the school principal about the gifted RR program?
5. What are the opinions of the RR teacher about the gifted RR program?

METHOD

This study has been structured as a case study, which is one of the qualitative research approaches, is generally defined as the in-depth description and analysis of a bounded system (Creswell, 2014; Merriam, 2013). The bounded system expression here means that the situation can be separated from others in terms of time, place or some physical boundaries (Creswell, 2014). The case of this study is a unique gifted RR program in a primary school.

Research Environment

This research was carried out in a primary school in Eskişehir/ Turkey. The school provides full-time education between 09:00 and 14:40. The school consists of two buildings. The RR, which is the classroom for gifted students, is located on the 2nd floor of the B-block of the school. This class has a view of the garden. There are 10 single desks and tables in the classroom. This allows different seating arrangements in the classroom. RR education is conducted 4 hours per week in each grade. The course is held by RR teacher during school time.

Participants

Participants of the study were determined through purposeful criterion sampling methods. According to criterion sampling, the participants of the study should meet a predetermined set of criteria (Marshall and Rossman, 2014). Accordingly, participants were chosen between volunteers who have an interaction with the RR program at the school. In this context, a total of 33 participants, including classroom teachers who send students to the RR program (13), the RR teacher, the school principal, the gifted students who attend to the RR program (9), and the parents of these students (9), took part in the study.

The RR teacher is a classroom teacher with 8 years of experience, continuing his graduate program in the field of gifted education. The principal of the school, representing the school administration, participated in the study. The principal has 15 years

of experience in school system and he has a master's degree in "Educational Management, Inspection, Planning and Economics". There are 26 classroom teachers in the school. Among these teachers, 13 volunteer teachers who have gifted students in their class participated in the study. The characteristics of participating teachers are given in Table 1.

Table 1. Characteristics of the participating teachers

Characteristics	Participant	n
Gender		
Women	CT1,CT3,CT4,CT5,CT6,CT9,CT10,CT11,CT12	9
Men	CT2,CT7,CT8,CT13	4
Professional Experience		
10-15 years	CT7,CT9,CT10,CT11,CT12	5
16-20 years	CT4, CT5,CT13,	3
21- 25 years	CT2,CT6,CT8,	3
26-30 years	CT1,CT3	2

The students participating in the research are the fourth grade students who attended to RR program for two years. These students were accepted to the program as a result of the scanning using the Anadolu Sak Intelligence Scale (ASIS). Fourth grade students were selected considering that they are more experienced and will evaluate the program more accurately, since they have been attending the program for two years. The participant parents are those whose students have attended the program since the program started at school, and in this context, have experience with the program. Demographic information about students and their parents is presented in Table 2.

Table 2. Characteristics of the participating students and parents

Students	Characteristics	Parents	Characteristics
S1	Girl, singleton	P1	Women, Teacher
S2	Boy, one sibling	P2	Men, Doctor
S3	Girl, one sibling	P3	Women, Teacher
S4	Boy, one sibling	P4	Women, Doctor
S5	Girl, one sibling	P5	Men, Teacher
S6	Boy, one sibling	P6	Men, Teacher
S7	Boy, one sibling	P7	Women, Bank Officer
S8	Girl, two sibling	P8	Men, Shopkeeper
S9	Boy, one sibling	P9	Women, housewife

Data Collection Tool and Data Collection Processes

Semi-structured individual and focus group interviews were conducted within the scope of this research. Two focus group meetings were held with the students and individual interviews with other participants were held. Semi-structured interviews involve asking open-ended questions to the participant. Semi-structured interview technique is preferred to determine and understand the opinions of the participants on the subject by providing more in-depth data in line with the purpose of the research. In such interviews, the interviewer has the opportunity to deepen the answers given to the questions asked (Berg & Lune, 2015, p.136). The data in the study were collected in about a month. Individual and focus group interviews during the research process were conducted within the school facilities, mostly in the RR, as well as in the counselor's room and the assistant principal room. During the process, two focus group interviews were conducted with the students and individual interviews with other participants, each lasting an average of 20 minutes.

The interviews were recorded with a tape recorder by the researcher, with the permission of the participants. Before the interviews, a draft of the interview questions was prepared by the researcher. Subsequently, the draft questions were submitted to the opinions of three academicians, two of whom were experts in the field of gifted education and one of whom was an expert on qualitative research methods. After the evaluation and feedback of the experts, the last edition of interview form consists of demographic information and interview questions. Although question statements and number of questions vary according to the

stakeholder group, they are generally composed of open-ended questions that include thoughts about the program, contributions of the program, expectations from the program, problems experienced and thoughts about the RR teacher.

Analyzing of Data

The data obtained through interviews in the research were analyzed according to the steps that Creswell (2013, p. 197) suggest for the analysis process of qualitative data. Content analysis technique was used in the analysis of the data. Content analysis means gathering similar data within the framework of certain concepts and themes and interpret them in a way that the reader can understand easily. The data were analyzed in four stages: 1. Coding of data; the codes were determined by evaluation of interviews. 2. Determining the themes of the encoded data; themes were created based on the answers of the in-depth interview questions. 3. Codes and themes are arranged. 4. Finally, all data obtained are reported under appropriate headings in the findings section.

Credibility of the Study and Ethic

In qualitative research, the concept of robustness is also used instead of the concepts of reliability and validity (Gürgür, 2017). For the robustness of this study, the criteria of credibility (internal validity), transferability (external validity), consistency (internal reliability) and confirmability (external reliability) were taken into consideration (Creswell, 2014; Merriam, 2013; Miles & Huberman, 2015; Yin, 2012). In this study, data was collected from different participant groups and data triangulation was achieved. Study conducted with the coordination of field experts regularly during the research process. Researcher has been in the research environment for a long time to prevent biases. The data were documented by audio recording, and some of the randomly selected transcripts of these recordings were verified by the participants. To ensure the transferability of this research, each stage of the qualitative research process is explained in detail.

In this research process, attention has been paid to ethical rules. During the data collection process, the participants were briefly informed about the research and it was stated that they could withdraw from the study at any time. While the research was being reported, the real names of the participants were not used, instead the abbreviations given were used. These abbreviations representing the participants; RR teacher: RT, Classroom teacher: CT, Parents of students: P, Students: S, School principal: SP. Participants were informed that their identities would be kept confidential and that the data obtained would only be used in scientific studies. Finally, the collected data are presented unchanged, transferred from the records as stated.

FINDINGS

In this section, the participants' answers to the open-ended questions in the semi structured interviews were analyzed and presented in themes according to the stakeholders.

Evaluation of Parents

The themes that emerged as a result of the analysis of the data obtained from the individual interviews with the parents can be seen in Figure 1.

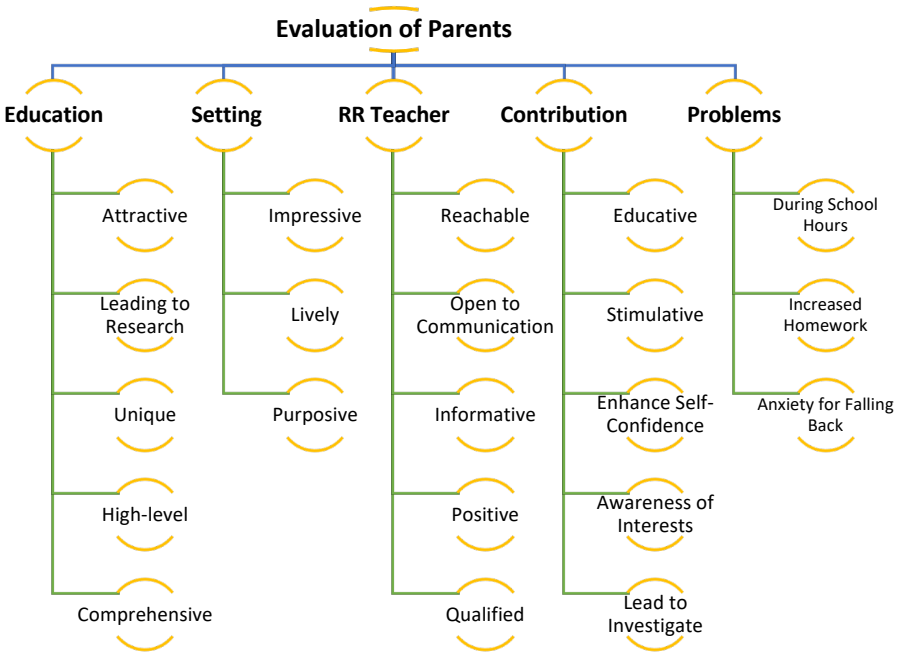

Figure 1. Themes of the evaluation of parents

Data analysis of parents' view yielded five themes as seen in figure 1. These are (1) education, (2) setting, (3) RR teacher, (4) Contribution and (5) Problems. As a result of the interviews, it is seen that the parents have a positive perception of the program

overall. During the interviews, while reflecting their views on RR, they emphasized the contribution of program to their children and willingness of their children towards to program. Accordingly, for example, one of the parents expressed their views as follows; "... my child likes to come to school that day; Monday, since it is RR day. So he would like to come to RR every day, even if it is every day." (P-3). Similarly, another parent emphasized her child's willingness towards to RR with following qouta "My daughter loves the program too much, when we are at vacation she wants to come back on Sunday, since the RR program is on Monday" (P-4). Another parent said that, " It is effective in my child's willingness to come to school, my child never said he was bored with program until now." (P-1).

Parents expressed different opinions about the education provided at RR program. However, it was emphasized that the RR program has been attracted students via conducting experiments and handling activities that differ from the general education classes. A participant referring to the sharing of his child at home explained his thoughts on the content of the lesson as; "… based on the processes he learned there, he is doing some experiments at home." (P-2). Another parent related to the education of his child received in the program said that; "The books he bought from the RR lead him to research ... There are experiments done at the secondary school and above level." (P-6). Another parent expressed his thoughts on the content of the RR program as; "I saw that it was generally based on research and learning new things." (P-3). Regarding the high level content of the education, another parent state that "It is good they learn some things in primary school which we learnt in secondary school, even in high school" (P-8).

It is revealed that the parents generally have positive thoughts about the environment of the RR. While one of the parents said "... very nice, very impressive ..." (P-9) about the RR setting, another parent expressed his appreciation with the words "it looks beautiful, fun" (P-7). Another parent emphasized the change at the setting overtime as follows “at first… there were shortcomings but later… I saw new materials being bought. A suitable classroom environment has been created for individual and group education.” (P-2).

It is seen that the opinions of the parents about the RR teacher are generally positive. During the interviews, parents emphasized that they received positive comment about RR teacher from their students. Furthermore, they emphasized the importance of the teacher being accessible and providing them with satisfactory information about their students. Regarding the RR teacher, a parent stated that he has a positive dialog with students and he created an environment which student will not hesitate to ask a question over and over, and so he is a very suitable teacher for the program (P-1). Another parent emphasized that the teacher was so polite, very good at communication, gave information to them especially in case of a mishap, and she had the impression that he had a strong communication with students (P-2). Similarly, another parent related to the RR teacher's skill in recognizing students indicated, “I think the RR teacher is very skillful in exploring different characteristics of the students. He can see the features which the class teacher cannot see. " (P-8). Regarding the RR teacher, another parent said, “… he was created for this job, because he does it with pleasure and knows the children very well. No matter how well I know my child, he tells me something that I do not know about him.” (P-5).

Another prominent issue in the interviews with the parents is the contributions of the RR to their children. In the interviews, although they did not observe an increase in students’ grades because their children were already successful academically, parents emphasized the positive change in self-confidence of students. One of the parents said about his child, “His lessons were already good, he did not change much. His self-confidence increased, he started to think differently on issues. (P-9). Another parent emphasizes the enhanced communication skills of his child regarding the contribution of the program (P-1). Another parent expressed the increase in self-confidence in her child and her sibling relationship with the following words "… my daughter was a little introverted, but now she has more self-confidence, her hand skills have also improved… she helps her twin brother especially in mathematics" (P-3). Another parent emphasizes that her child tries to solve the own problems without reflecting himself, his father or the school, and in this sense, he is a more self-confident child now (P-5). One parent who emphasized the positive change in his child's fulfillment of his duties in mainstream class after joining the RR program said, “After starting the program, he feels more comfortable in his class, what he learned here affected him. He started doing his homework on time. " (P-8). Some parents emphasized contributions of RR which mainstream class cannot provide for their children. One of these parents stated that his child learned a lot from the books given in the RR, and also learned good things from the experiments they did here because they could not do these experiments in their mainstream class (P-6).

Parents generally state that their children do not experience any serious problems due to attendance at RR. Some parents emphasized that they had concerns at the beginning of the program that their children would fall behind in classroom lessons, however, their students' overall class performance did not decrease. One of the parents explained his anxiety about his child's falling behind in class lessons as follows: “… our only fear was related to his performance of mainstream classroom. Actually, I do not think he was behind academically, his exams were good too, the boy was able to take them both fondly. " (P-7). Another parent stated that since the program is conducted at the school time, it forced their child to work more in completing the school homework, but this situation has decreased recently (P-1). Another parent emphasized that his child was already in front of the class schedule, that he did not have any problems with falling behind the classes in this sense, but if this program did not exist, he would be bored with the classroom lessons and this would be a bigger problem (P-4). Another parent stated that the school's solution-oriented initiatives plays an important role in not having too many problems in overlapping the lessons (P-5). Finally, a parent complained about the extra homework given and emphasized that in these cases, his child had difficulties in attending both programs, but he coped with their support, and suggest that especially the tasks based on writing should be reduced (P-8).

Evaluation of Classroom Teachers

In individual interviews with classroom teachers whose students attend the RR program, data on their opinions about RR, the contributions of the program, the problems encountered during the implementation, and their views related to the RR teacher were collected. The themes that emerged as a result of the analysis of the data obtained from the interviews with the teachers are given in Figure 2.

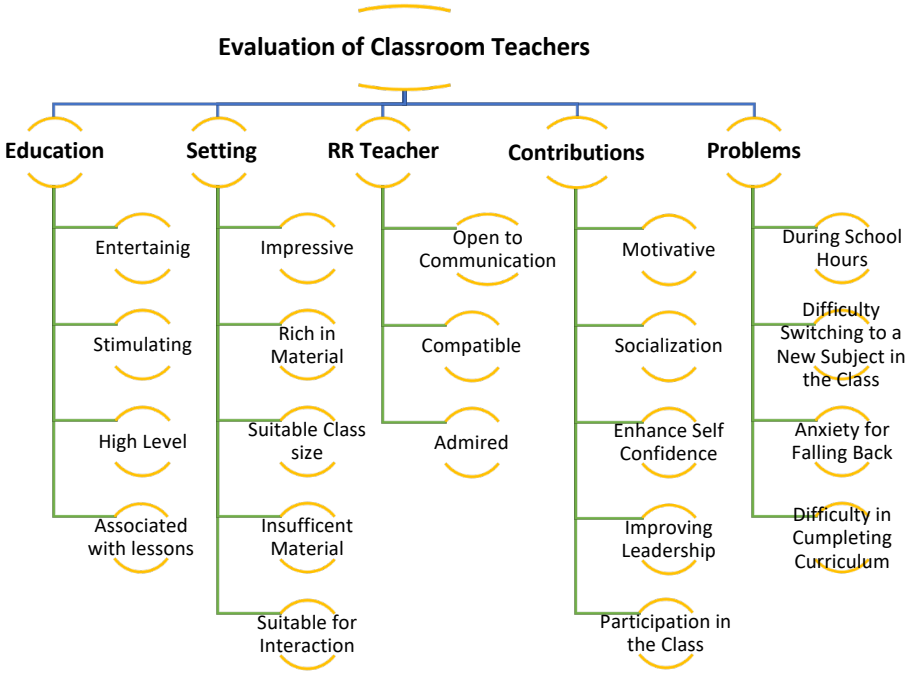

Figure 2. Themes of the evaluation of classroom teachers

Data analysis of teachers' view yielded five themes as seen in figure 2. These are (1) education, (2) setting, (3) RR teacher, (4) Contribution and (5) Problems. According to analysis of interviews, it is seen that the teachers are satisfied with the RR program although they have some criticisms in general. The most significant criticism of the program is related to the program hours, since it is conducted during school hours. Nevertheless, teachers generally approve the RR program. For example, one of the teachers expressed his appreciation of the program with this quota "The physical environment is enjoyable for the children, it is fun ... I see that they are even happier when they switch to the laboratory part." (CT-1). Another teacher described the RR program as stimulating for students (CT-2). Besides, a teacher explained his thoughts about the physical environment of the RR with the following words "There is an environment that will strengthen the interaction even more, it is rich in materials and I consider it is appropriate for education, because they also use the laboratory" (CT-6). Another teacher emphasized that the room was physically suitable, but especially the laboratory facilities should be increased (CT-8). A teacher stated that the program is successful, that his students who continue to the program are very happy, however, more students should benefit from such programs. He also stated that the RR has a nice environment that appeals to students (CT-12).

Teachers claim that the program reflects to their classroom positively, especially when gifted students share what they learned with classmates. One teacher shared the contribution of the program to the class with an experience with the following words "We worked on triangles in mathematics, they learned more there, they explained it in class, and then I explained the subject in more detail to the class." (CT-12). A teacher stated that gifted students feel better in the program because they are get bored quickly in the classroom, and they return more motivated when they come back to the class (CT-6). On the other hand, a teacher stated that the students attending the program did not carry their experiences into the classroom too much (CT-8).

During the interviews, the teachers emphasized that the program did not increase the grades of the students who attended the program because they were already successful. Nevertheless, they shared the impression that the previously timid students became more participatory in the lessons, and their self-confidence increased. For example, a teacher said, "There was no change because the children were already successful, but my shy student has socialized a lot, now he can make friendship with everyone." (CT-12). A teacher shared the impression related to his shy student as; he had been trouble making friends, but thanks to the program, he started to participate in friend groups, even, he is trying to take the leadership role in the games. (CT-2). Another teacher stated that a student, whom he described as intermediate level according to class level, became more successful academically after starting the program, and observed a remarkable improvement especially in problem solving skills (CT-5). Similarly, another teacher stated that there is a noticeable increase in the participation of her student in classes compared to the past (CT-9).

Teachers generally expressed positive opinions about the RR teacher based on both impressions from their gifted students and their own interaction with him. They emphasized that he is approachable and open to cooperation. One of the teachers stated

that the RR teacher is good in his job, he has good communication with the students, and that students love him very much. He also emphasized that the RR teacher also has a good communication with other teachers too. He also underlined the cooperation about the process of the RR program, for example, the teacher stated that he informed them about the students and he always took their opinions while setting the course hours (CT-12). Another teacher emphasized that they work in harmony with the RR teacher with following words, "We are always sharing, we share our observations in the classroom, children love their teachers very much ..." (CT-6). There were also suggestions from teachers to RR program in the interviews. For instance, a teacher stated that it would be better to take the students out of school as a recommendation for the RR teacher (CT-2). Another teacher stated that RR should include activities such as non-academic intelligence games (CT-10).

Although, teachers have a good impression related to the RR program, they also shared their opinion about the problems experienced in the process and how they were solved. During the interviews, since the program was carried out during school hours, the problems such as students 'falling behind from school lessons, teachers' inability to switch to new subjects in the classroom, difficulties in developing their own classroom programs were emphasized by teachers. For example, a teacher with following words shared his concern on the program hours, “I and the parents were also concerned about the student falling behind from the lesson. “(CT-2). Another teacher expressed his thoughts about the hours of the program with the following words: “Obviously, it would be better if it is after school. Sometimes we work on new topics in the morning, even if we try to make up for it later with the student… it is not as successful as learning in the classroom.” (CT-9). Another teacher stated that he could not switch to a new topic in the classroom as a problem, but he explained that he sometimes switched to a new topic and informed his student at the break in these situations (CT-1). Finally, another teacher stated that the absence of gifted students in class affected their class environment negatively because they cannot do entertaining activities in the classroom due to that they did not want the absence students to miss (CT-12).

Evaluations of the School Principal

A semi-structured interview was held with the school principal about the RR program for gifted students conducted at the school. In the interview, the headmaster stated that they had to open the program during school hours due to legal obligations. In addition, it was emphasized that the opening as RR program instead of a separate special class was also due to legal obligations. He stated that the program has been embraced more than when it first started. Additionally, the headmaster claim that the school has turned into a recognized and more attractive school based on the media coverage and increased number of students. However, the school principal emphasized that there should be a regular program with activities and training for gifted students, especially on weekends, outside of school class to prevent problems regarded to conducting in school hours.

Evaluations of Gifted Students Who Attended to RR Program

Two focus group interviews held with fourth grade gifted students attending RR program. In the meetings, the students’ opinions about the RR teacher, the RR program, the contributions of the program, and the problems they experienced were taken by appropriate questions. The themes obtained as a result of the analysis of the focus group interviews with the gifted students are given in Figure 3.

During the interviews, students stated that they generally liked the RR program and even preferred it rather than their classes. Students underlined that they liked experiments, mathematics and activities that led them to think differently in the program. Regarding the hours of the program, they emphasized that coming to the RR for only one day is not very attractive. Accordingly, a student with following words: "... if it is a single day, the program ends in one day, other days we wish we could go to the RR. I wish there were more program hours. " (S-3) expressed his wishes about the program hours being more. Regarding the activities, they liked in the program, another student said, “... I liked the works that goes from an event to find something different."(s-5). Another student expressed his appreciation for the RR's environment with the following words: "I think the layout of the classroom is very nice, when we enter, a different feeling surrounds us." (S-9).

In the context of contribution of the program, one of the students stated that the subjects they learned in the program were more advanced than the classroom, which gave them an advantage in the classroom like understanding subjects more easily. In addition, he emphasized that the program encouraged him to do research on subjects he is wondering, and now he starts to ask more questions (S-2). Another student said, “… I became more interested in science, and I also liked to read books more. I especially like reading about science. " (S-6) explained the change caused by the education of the program. Another student expresses his changing perception especially towards science with the following words: "... I used to say what is science lesson before, I didn't like it very much, but after I came here, my favorite lesson was science. I discovered my curiosity for it." (S-4). While students stated that the program did not have much effect on their social relations in general, some students emphasized that they observed jealousy towards them in their classmates. In addition, thanks to the program, they made new friendships, and a student expressed how to overcame his previous shyness thanks to the program as;"… I was very shy at first, but after I came here, I became more talkative. (S-1).

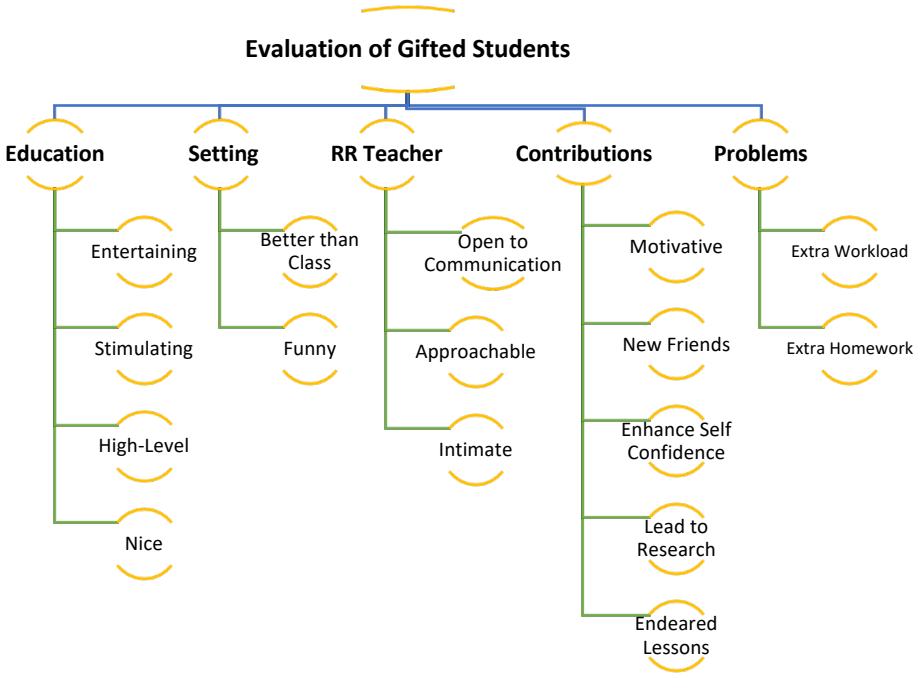

Figure 3. Themes of the evaluation of gifted students

It seems that students have positive feelings related to the RR teacher. Students stated that they were pleased with the RR teacher, he treated them warmly and sincerely, and answered the questions they asked. The students also stated that at the beginning of the program, they expected a boring classroom environment at the RR, but they have experienced very different and pleasant process. Regarding this, a student expressed his thought as following: “I thought it would be a tiny cramped classroom full of very boring, overly serious friends, even students I couldn't be friends with, but it never happened. Everything was different. " (S-5).

The students stated that although their grades were not negatively affected by the problems they experienced due to attending the program, their workload increased. They emphasized that doing homework at home is boring for them. One student said, "I didn't have a problem like not understanding the subjects, but I run out of class and I don't want to do them at home, it takes my time.” (S-7). Another student stated that since they attend the program, they were missing some lessons from their classroom especially new subjects. However, they responsible for the missing parts of the classroom, which means extra workload for them. (S-2). Some students stated that they received support from their family members, especially for homework that was easy for them but they had to write at length. One student related to his solution to extra homework said as following, "... sometimes my mother does the writing assignments for the subjects I know, which is very easy." (S-9).

Evaluation of the RR Teacher

An individual interview was held with the RR teacher related to RR program conducted in the school. The teacher claims that the program is getting better relative to beginning time. Additionally, he emphasizes that not only his own observations but also the increase in the demand for the school and the feedback of the teachers in the school indicate this development (RT). In the interview, the teacher stated that the students have a positive perception of the program and emphasizes that he observes different student profiles in each classroom and perhaps the demands of these different profiles should be taken into account in shaping educational content (RT). Regard to education of the RR program, he emphasized that activities based on reading texts and solving questions, which are similar to general education courses, are boring for students. He expressed the impressions that the students mostly liked the activities they learned new things and experimented with (RT). Regarding the course hours of the program, he stated that if the education for gifted students will be implemented in the RR format, this should not be more than four hours during school hours. He defended his ideas about the proper program time as following, "It is more efficient for students to have them during class hours in terms of their performances ... These children have different activities outside of school hours, and if the program conduct out of school hours, it will be a burden for students." (RT).

Regarding the benefits of the program to him, the RR teacher stated that he gained experience with gifted students and their education techniques, so these experiences would contribute a lot to him if he returned to his classroom teaching. He emphasized that the techniques used especially in the education of gifted students can also be used in enriching general education lessons (RT). However, he states gifted students cannot carry much of what they have learned at the program to their classrooms, additionally, he claims the reason for this may be the inability to provide students with appropriate opportunities in the classroom. He suggests that some activities in the program can be selected and implemented in the classroom too (RT). In the context of the contribution of the program to the students, he claims the students who were successful in their classes, benefited more from the program. In addition, he stated that among the students who are not at a very high level in their classes and attend the program,

their teachers want to see a serious change in their achievement level in a short time. Besides, he stated that attending the program affect students' social development more than their grades. He emphasizes that especially those who feel lonely in their own classes make friends more easily and adapt quickly to teamwork. (RT).

The RR teacher, like other stakeholders, claims that basic problems encountered during the program stem from timing of the program. In addition, he points to classroom teachers as the source of anxiety about students falling behind in classroom lessons. He explains the reason in the interview as follows: "Teachers oblige their students to take responsibility of the covered subjects while they are not in the classroom, even they want them to finish it during the breaks. And this worries the students and parents." (RT). Nevertheless, the RR teacher argues that most of the children attending the program are successful in their classes too.

DISCUSSION, CONCLUSIONS AND SUGGESTIONS

In this study, the views of school stakeholders - classroom teachers, gifted students participating in the RR program, and their parents, school principal, and the RR teacher - were examined about the RR program in a primary school. The data obtained from the interviews were gathered under five themes; education, setting, teacher, contributions, problems. Additionally, it is seen that similar sub-themes are predominant under these themes. However, since the stakeholders are affected differently from the process due to their status, there are differences between their views. For example, while the students see the increasing homework as a problem, the parents worry that the students will fall behind from the classroom lessons. Teachers, on the other hand, mostly complain about not being able to move on to a new subject when the students participating in the program are not in their classes. The findings obtained from the opinions of the stakeholders are discussed in more detail below in the context of the literature.

There are some important findings of the study. First of all, the findings of this research revealed that the programme has generally been positively perceived by stakeholders. This finding is in line with various research (Campbell & Verna, 1998; Davison, Coates & Johnson, 2005; Long, Barnett &Rogers, 2015; McCulloch, 2010; Morgan, 2007) which are on stakeholders' views about programs. Delcourt et al. (1994) and Callahan et al. (2015), as a result of their research comparing different educational programs for gifted students, state that even continuing to any program contributes positively to students regardless of the program type. The program carried out in this research is considered as an opportunity for gifted students in the school since there was not any specific program before it. Although the stakeholders express various problems and deficiencies regarding the implementation and also offer different suggestions for these students, they emphasized their appreciation for the program. The main reason for this can be considered as the fact that educational opportunities that were not available at school are now being offered. Additionally, since this program prepared with the cooperation and support of the relevant department at a university, the program welcomed and took seriously by the stakeholders. University support also eliminated the concerns mentioned in the literature (Bedur, Bilgiç & Taşlıdere, 2015; Tortop & Dinçer, 2016; Nar & Tortop, 2017; Pemik, 2017; Yavuz & Yavuz, 2016) about the education quality of the program. When evaluated in this context, the RR program can be seen as a good practice offered to gifted students, at least within the school.

Secondly, the curriculum of the program has been considered effective and useful for students. While the parents found the program generally useful in the interviews, they expressed these impressions through the contributions of the program to their children. For example, while the parents were evaluating the program, they emphasized that the students attended the program willingly. Besides since students received a different and rich content education there, these had reflections on their children such as increased self-confidence, gaining different thinking skills and recognizing their interests.

Regarding the curriculum, classroom teachers emphasize that its content is linked to the classroom curriculum, challenging and fun for students. The curriculum is consisting of enrichment and accelerated high order activities which will challenge and enhance learning outcomes for the students. These properties overlap with the features that mentioned (Belcastro, 1987; Gubbins, 2013; Hong, Greene, & Higgins, 2006; Lazzelle, 2015; McCulloch, 2010; Rogers, 2007; Yang, Gentry, & Choi, 2012) as gifted program should have in the literature. In this context, it can be said that the content of the program is effective in overcoming the problems which the researchers (Adelson et al., 2012; Belcastro, 1987; Dimitriadis, 2016; Gubins, 2013; Ritrievi, 1988; VanTassel-Baska, 2006) stated about the pull-out programs for gifted students, especially detached from the classroom program.

Studies show that students who participate in similar practices for gifted students find pull-out classes more efficient than general education classes (Dimitriadis, 2016; Hong, Greene, & Higgins, 2006; Yang, Gentry, & Choi, 2012). In this case, it is thought that the education provided in the program is appropriate to the level of the students, and the teaching of lessons with fewer students compared to the general education class is considered to be effective. In addition, the presence of activities prepared for special talents also affects the positive attitude of the students towards the program. Specially gifted students indicate that the program contributes to them in the context of academic and social development.

Thirdly, stakeholders seem teacher of the program and school administration successful and prone to cooperation. These findings are in line with other research (Baker & Friedman-Nimz, 2004; Swanson, 2007) focusing on the effects of school administration on the success of such pull-out programmes. Some researchers (Baker & Friedman-Nimz, 2004; Swanson, 2007) emphasized the effectiveness of highly motivated and caring school administrators and teachers in the success of educational practices for gifted students. Correspondingly, in this study, parents defined the RR teacher as a positive, open-to-communication

and informative person, and emphasized the solution-oriented approaches of the school administration. Additionally, classroom teachers expressed positive opinions about the RR teacher too. They stated that he works in harmony with them, is open to communication and is also liked by the students. Various studies (Dade County Public Schools, 1983; Gubins, 2013; van der Meulen et al., 2014; VanTassel-Baska, 1987), were emphasized that coordination with the general classroom teacher is important in the pull-out programs. In this sense, it is thought that the positive perception of classroom teachers towards the RR teacher is effective in providing the desired cooperation in the process. However, this positive impression was influenced by the fact that the RR teacher informs the classroom teachers about the students when necessary and also receives the opinions of the teachers about the course hours.

Another important finding is related to gifted students social-emotional features. The stakeholders agree that the program enhance these students' self-reliance, motivation and friendship relations. In this context, the results of the study are in line with the studies conducted by various researchers (Cohen, Duncan & Cohen, 1994; Delcourt, Cornell, & Goldberg, 2007; McCulloch, 2010; Morgan, 2007; van der Meulen et al., 2014; Zeidner and Schleyer, 1999). Specially gifted students state that the program contributes to them in the context of academic and social development. In particular, they emphasized that thanks to this program they make new friends, also their interest in lessons, their motivation, and their self-confidence increased, as well as the program, directs them to more scientific and inquiry-based activities.

The stakeholders seem the implementation of the program during school days as the most important problem. Teachers stated that they feel restricted in planning their regular classes since some students were taken out of classes. This situation has been emphasized in literature (Campbell and Verna, 1998; Dade County Public Schools,1983; Ritrievi, 1988) as a drawback of pull-out programs. On the other hand, parents' concerns were mostly related to the fact that their children missed out some important lessons. This is parallel to the findings of various other research in literature (Davis, Rimm and Siegle, 2011; Morgan, 2007; Ritrievi, 1988; VanTassel-Baska, 1987). However, it is seen that the problems that students complain due to participation of program are limited to the overwhelming homework as stated in the literature (Dade County Public Schools, 1983; Davison, Coates and Johnson, 2005; Morgan, 2007; Ritrieve, 1988).

In conclusion, it can be said that the program is liked and supported by stakeholders despite various problems due to the implementation of the program during school days. This study shows that getting the support of stakeholders and the relevant departments of the universities is essential for a successful pull out gifted education program. Several suggestions can be made based on the results of this research. For gifted students' RR services there should be a detailed set of guidelines. The guidelines should permit to schools for flexible arrangement in terms of implementation time and number of students in programmes. Since this study was conducted at only one RR program at an elementary school it can be a good future research direction to replicate this study, using other possible methods, across different types of RR programmes implemented at different school stages.

Limitations of the Study

During this research process, data were collected through interviews. The meeting hours are generally arranged to suit the participants. However, as the interviews with teachers coincided with lunch break or school departure times, limited data may have been collected in some interviews. There are several weaknesses inherent in interview-oriented research, for example, participants can state opinions they think are desired rather than their real opinions (Babbie, 2013). In this study, the stakeholders may have avoided mentioning some negativities, especially since the program should be considered as a part of the school.

Declaration of Conflicting Interests

This article conducted by the author with the permission of doctoral dissertation supervisor, so the author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Statements of publication ethics

All procedures performed in this study involving human participants were in accordance with the ethical standards. Research data were collected during the 2017 Spring Term within the scope of the doctoral dissertation registered in number 520145 at the Higher Education Council's National Center. I hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

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| Research Article / Araştırma Makalesi |

Determination of Curriculum Literacy Levels of School Administrators

Okul Yöneticilerinin Program Okuryazarlık Düzeylerinin Belirlenmesi

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Keywords
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Abstract

Purpose: This research was conducted to determine the curriculum literacy levels of school administrators.

Design/Methodology/Approach: In this research, survey model was used. The study group of this research consists of school administrators working in the city center of Kırşehir. In this context, the research was conducted with the participation of 106 school administrators. In the research, “School administrators curriculum literacy levels scale” which developed by Yar Yıldırım and Dursun (2019) was used as data gathering tool. This scale has four sub-dimensions which are: “Curriculum management skills”, “Attitude”, “Knowledge” and “Instructional design (project) and planning skill”.

Findings: As a result of the research, it was found that the average score obtained from the school administrators participating in the research was above the middle score of the scale. In addition, it was determined that school administrators obtained above the middle score of the scale scores from the sub-dimensions of "Curriculum management skills", "Attitude", "Knowledge" and "Instructional design (project) and planning skill".

Highlights: Within the scope of the research, it can be said that school administrators perceive themselves as good curriculum literate. One of the important results obtained in the research is that it is determined that the curriculum literacy levels of school administrators do not differ significantly according to variables such as gender, age, branch, professional seniority, management seniority, educational status, school type graduated, type of school which they work at and management status.

Öz

Çalışmanın amacı: Bu araştırma, okul yöneticilerinin program okuryazarlık düzeylerini belirlemek amacıyla gerçekleştirilmiştir.

Materyal ve Yöntem: Araştırmada tarama modeli kullanılmıştır. Araştırmanın çalışma grubunu ise Kırşehir il merkezinde görev yapan okul yöneticileri oluşturmaktadır. Bu kapsamda, araştırma 106 okul yöneticisinin katılımıyla gerçekleştirilmiştir. Araştırmada veri toplama aracı olarak, Yar Yıldırım ve Dursun (2019) tarafından geliştirilen “Okul yöneticileri öğretim programı okuryazarlık düzeyleri ölçeği” kullanılmıştır. Ölçek; “Program yönetim becerisi”, “Tutum”, “Bilgi” ve “Öğretim tasarımı (proje) ve planlama becerisi” olmak üzere dört alt boyuttan oluşmaktadır.

Bulgular: Araştırma sonucunda, araştırmaya katılan okul yöneticilerinin ölçekten elde ettikleri ortalama puanın ölçek orta puanının üzerinde olduğu bulgusuna ulaşılmıştır. Ayrıca okul yöneticilerinin “Program yönetim becerisi”, “Tutum”, “Bilgi” ve “Öğretim tasarımı (proje) ve planlama becerisi” alt boyutlarında da ölçek orta puanının üzerinde puanlar elde ettikleri belirlenmiştir.

Önemli vurgular: Araştırma kapsamında, okul yöneticilerinin kendilerini iyi birer program okuryazarı olarak algıladıkları söylenebilir. Araştırmada elde edilen önemli sonuçlardan birisi de okul yöneticilerinin program okuryazarlık düzeylerinin cinsiyet, yaş, branş, mesleki kıdem, yöneticilik kıdemi, eğitim durumu, mezun olunan okul türü, çalışılan okul türü ve yöneticilik durumu gibi değişkenlere göre anlamlı bir farklılık göstermediğinin belirlenmesidir.

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INTRODUCTION

In individul's life, most of behaviors are learned behaviors. These behaviors are performed through education (Senemoğlu, 2013). Thus, concept of education is available since beginning of the humankind. Acording to Fidan (2012), education is divided into two as İnformal and formal education. Although Informal education is a process which is carried out spontaneously in life, formal education is a process that takes place in a planned way for a certain purpose. According to Bloom (2012), carrying out education in a planned way is generally the duty of schools in all societies. Planned education in school is carried out by including previously prepared certain cirriculum (Fidan, 2012). Concept of curriculum is not as old as the concept of education. "Curriculum" meaning education program in English has ıts origin B.C 1st century. The word of "Curriculum" named after an elliptic road where horse carriages raced in Rome by Gaius Julius Caesar and his soldiers during those dates. In 21st century, this concept which educators used most and being one of the most basic school duties dated back to those dates (Oliva, 1988). The beginning of the field of curriculum is accepted as the book named "curriculum" published by Bobbitt in 1918 (Ornstein & Hunkins, 2004).

In Turkey "syllabus" was used instead of curriculum for many years (Varış, 1996). Since 1950's, the concept of curriculum was started to use (Demirel, 2015). Varış (1996) defines the concept of curriculum as "all the activities that an educational instituation provides for children, youth and adults to achieve the goals of the national education and institution"; Demirel (2015) defines the concept of curriculum as "the learning experience mechanism provided to the learner through planned activities at school and outside of school". It is possible to define the concept of curriculum in the most general sense as experiences which students gain from in and out of school as a resulf of school guide (Oliva, 1988). A curriculum consists of some certain elements regardless of how it designs. These elements are respectively objectives, content, teaching learning process and evalutation (Taba, 1962). Therefore, a curriculum is developed by taking these four elements into consideration. According to Varış (1996) developing curriculum is not preparing published materials. Producing published materials is nothing but design as long as curriculum is not implemented (Fidan, 2012). According to Ertürk (2013), just taking account of its design is not enough for deciding about efficiency of curriculum. Because well-prepared curriculum does not mean implementing the curriculum effectively at schools (Bozkurt, 2019; Dağdeler & Arseven, 2015; Doğan, 2016; Kahramanoğlu, 2019; Yeşilyurt, 2019). In other words, published curriculum; namely formal curriculum may be different from curriculum applied in classroom. The reason of this difference results from teacher's interpretation of curriculum in consideration of their own belief, attitude, experience (Posner, 1995). For this reason, the correct implementation of a curriculum depends only on the teachers who are the implementers of the curriculum to have enough knowledge about the curriculum and to interpret the curriculum correctly (Akyıldız, 2020). In other words, teachers who are the implementers of the curriculum must be curriculum literate individuals (Akyıldız, 2020; Aslan & Gürlen, 2019; Çetinkaya & Tabak, 2019; Erdamar, 2020; Erdem & Eğmir, 2018; Kahramanoğlu, 2019).

Concept of curriculum literacy is newer than the concept of curriculum. According to Keskin (2020) the concept of curriculum literacy has been started using in field of educational science since 1980's. It is possible to define the concept of curriculum literacy as curriculum implementers have kowledge about a curriculum (Akyıldız, 2020; Aslan & Gürlen, 2019; Erdamar, 2020; Keskin, 2020), accurate interpretation of curriculum (Erdamar, 2020; Çetinkaya & Tabak, 2019; Keskin, 2020), understanding curriculum correctly (Akyıldız, 2020; Çetinkaya & Tabak, 2019; Erdamar, 2020; Kahramanoğlu, 2019; Keskin, 2020) and implementing curriculum accurately (Akyıldız, 2020; Aslan & Gürlen, 2019; Çetinkaya & Tabak, 2019; Erdamar, 2020; Gündoğan, 2019; Keskin, 2020). A curriculum literate individual should also dominate the curriculum development stages (Erdamar, 2020) and the curriculum evaluation process (Akyıldız, 2020; Erdamar, 2020). Besides, having a positive attitude towards curriculum (Keskin, 2020), adapting curriculum their own condition (Çetinkaya & Tabak, 2019; Keskin, 2020) and being able to make a plan about the curriculum (Aslan & Gürlen, 2019; Keskin, 2020) are other expected qualification for curriculum literacy.

It is not enough for teachers to be curriculum literate in the effective implementation of a curriculum. According to Erdamar (2020), the ability of a teacher to perform curriculum literacy skills depends on the school administration and therefore on the school administrators. The decisions to be taken and the measures to be followed by school administrators are very important in the implementation process of the curriculum (Rençber, 2008). Therefore, school administrators have an important role in the successful implementation of educational curriculums in schools (Ornstein & Hunkins, 2004). Because it is the school administrators who are primarily responsible for the management of the education process in a school (Sağır & Memişoğlu, 2013). Therefore, the main responsibility for the successful implementation of curriculums implemented in schools also belongs to school administrators (Acar, 2015; Aslan, 2019; Aydın, 2017; Demiral, 2009; Yar Yıldırım & Dursun, 2019). In other words, school administrators have duties and responsibilities in the successful implementation of a curriculum (Acar, 2015; Aslan, 2019; Bayrak, 2009; Can, 2007; Demiral, 2009; Dağdeler & Arseven, 2015; Doğan, 2016; Erdamar, 2020; Gülbahar, 2014; Rençber, 2008; Ural & Tüfekçi Aslim, 2013; Yar Yıldırım & Dursun, 2019; Yeşilyurt, 2019; Yıldız, 2008). In this context, school administrators should first provide the necessary environment for the successful implementation of the curriculum (Aslan, 2019; Erdamar, 2020). Administrators should inform the teachers about the curriculum, create the financial resources necessary for the implementation of the curriculum, and provide teachers with the necessary guidance during the implementation of the curriculum (Aslan, 2019). The ability of school administrators to fulfill their duties and responsibilities regarding the implementation of the curriculum depends on their curriculum literacy like teachers (Yar Yıldırım & Dursun, 2019).

It is expected from administrators being manager as well as being leader (Acar, 2015; Argon & Mercan, 2009; Demiral, 2009; Doğan, 2016; Gülbahar, 2014; Özdemir & Sezgin, 2002). Instructional leadership is one of the types of leadership administrators should have (Ayık & Şayir, 2014). Therefore, it is necessary to consider school administrators as instructional leaders at the same

time (Yalçın & Erginer, 2012). Because, administrators' basic task is to lead learning and teaching process (Özdemir & Sezgin, 2002). According to Sim (2011), administrators' instructional leadership is a key role for academic success. Harlinger and Murphy (1985) describe instructional leadership as into three dimensions; "Curriculum management", "Supporting learning environment in schools", "Determining mission". Şişman (2016) also describes instructional leadership into five dimensions and explain one of these dimensions as "Managing curriculum and teaching process". Therefore, it maybe said that implementing currciculum successfully in schools depends on administrators' realizing their instructional leadership roles (Akalın Akdağ, 2009; Can, 2017; Dağdeler & Arseven, 2015; Erdamar, 2020; Gülbahar, 2014; Küp, 2011). In a relation to management of curriculum, especially teaching and education field, Harlinger and Murphy (1985) emphasizes the requirement of act in common with teachers and states that administrators' tasks is to control and evaluate teaching, coordinate curriculum and monitor students' progress. Namely, what is desired from administrators is their leading into implementing of curriculum. According to Ornstein and Hunkins (2004), it is expected that administrators to realize the task of instructional leadership as well as curriculum leadership. School administrators must be curriculum literate in order to successfully lead the curriculum implemented in schools (Yar Yıldırım & Dursun, 2019). According to Şenay (2017) administrators' ability of leading teachers during implementing curriculum also depends on administrators' knowledge on curriculum. Administrators' lack of knowledge about curriculum might cause administrators having difficulty in fulfilling their instructional leadership role (Sezer, 2017). Thus, to implement a curriculum successfully in schools, administrators just like teachers are required to interperent curriculum accurately and have knowledge about curriculum, namely have curriculum literacy.

When researches about curriculum literacy in Turkey are examined, researches have been done since 2017. According to Keskin (2020) one of the probable reasons of this is the "concept of curriculum literacy" included in teachership undergraduate program which was updated in 2017. When recent researches is reviewed, it is determined that the researches are generally about indicating level of teacher's (Aslan & Gürlen, 2019; Erdamar, 2020; Kahramanoğlu, 2019; Keskin, 2020; Kuyubaşıoğlu, 2019; Mansuroğlu, 2019; Saral, 2019) and pre-service teacher's (Aygün, 2019; Çetinkaya & Tabak, 2019; Erdem & Eğmir, 2018; Gömleksiz & Erdem, 2018; Sural & Dedebali, 2018; Yıldız, 2019) curriculum literacy. School administrators' competencies related to the curriculum were found in most studies in the context of instructional leadership (Akman, 2015; Aydın, 2017; Aygün, 2014; Bozkurt, 2019; Önder, 2010; Sağır & Memişoğlu, 2012) and in some studies in the context of curriculum leadership (Aslan et al., 2018; Demiral, 2009; Yeşilyurt, 2019) were examined. In literature, in respect to curriculum literacy there are only two researches which examining administrators' profiency about curriculum-applied in schools. One of these researches is a scale development study conducted by Yar Yıldırım and Dursun (2019). Other research is conducted by Aslan (2019) which is about determining administrator's perception towards curriculum literacy in primary and secondary school. As there are a few studies about defining level of administrators' curriculum literacy who are the most responsible for implementing curriculum, it is expected that this research will contribute the literature. In addition, in this study, it was tried to determine the curriculum literacy levels of school administrators working in all education levels (pre-school education, primary school, middle school and high school). This aspect of the study is considered to be valuable for the literature.

Purpose of this study is to determine administrators' curriculum literacy level. In accordance with this purpose, following questions will be answered:

1. What is the level of administrators' curriculum literacy?

2. Is there a significant difference administrators' curriculum literacy level in comparison with variables about gender, age, branch, professional seniority, management seniority, educational status, type of school graduated, type of school-worked, administrative status?

METHOD

Design of Study

The research was designed as survey model. Survey model is carried out to determine certain group's specific properties (Büyüköztürk et al., 2014). As this study is carried out to determine administrator's curriculum literacy level, survey model is prefered.

Study Group

The study group of research consists of the school administrators that work in city center of Kırşehir. While study group were consisted, a specific sample method was not used and it was tried to reach all of study group. Accordingly, the scale was given to 160 school administrators to fill on a volunteer basis. 114 of these scales given to school administrators were completed and delivered to the researchers. Out of 114, 8 missing and mistaken scales were excluded. In this context, study group of research consists of 106 administrators. Participants' demographic information related to gender, age, branch, professional seniority, management seniority, educational status, and type of school graduated, type of school-worked, administrative status, and school status were given in Table 1.

Table 1. Administrators' demographic information

Variables	Group	f
Gender	Man	82
	Woman	24
Age	25-29	2
	30-34	8
	35-39	29
	40-44	33
	45 and over	34
Branch	Primary school teacher	76
	Branch teacher	30
Professional senitory	1-4 year	2
	5-9 year	8
	10-14 year	29
	15 year and over	67
Management senitory	1-4 year	31
	5-9 year	31
	10-14 year	22
	15 year and over	22
Educational status	Associate degree	3
	Undergraduate	82
	Postgraduate	18
	Doctorate	3
Type of school graduated	Faculty of Education	76
	Faculty of Science and Literature	26
	Other faculty	4
Type of school	Pre-school	11
	Primary school	24
	Secondary school	21
	High School	50
Administrative status	Headmaster	17
	Head assistant principal	4
	Assistant principal	85
School status	Public school	100
	Private school	6

Data Collection Instrument

In the research, "School administrators curriculum literacy level scale" developed by Yar Yıldırım and Dursun (2019) was used to determine the curriculum literacy levels of school administrators. For the purpose of using scale, required permission was taken from related author via e-mail. The scale is five-point likert scales involving "Strongly agree (5), Agree (4), Moderately agree (3), Disagree (2) Strongly disagree (1). The highest score that can be obtained from this scale is 275; the lowest score is 55. The scale consists of four sub-dimensions, "Curriculum management skills", "Attidute" "Knowledge", "Instructional design (project) and planning skills" and 55 items. "Curriculum management skills" dimension consists of 18 items. (Sample item; "I can lead teachers for the purpose of overcoming trouble that comes out during implementing curriculum"). "Attidute" dimension consists of 15 items. (Sample item; "I care about that evaluation results obtained from curriculum have influence on process of curriculums' evaluation"). "Knowledge" dimension consists of 12 items. (Sample items; "I have knowledge about objectives of curriculum"). "Instructional design (project) and planning skills" dimension consists of 10 items (Sample items; "I can do needs analysis for the projects carried out in schools.")

Content and appearance validity were tested by way of taking nine experts' opinion by Yıldırım and Dursun (2019). Scale's construct validity was determined by explanatory factor analysis (EFA) and outcoming construct was confirmed by confirmatory factor analysis. Correlation values between each dimension of the scale vary between .580 and .763, and each dimension shows signifivant correlation with each other. Scale's Cronbach alpha reliability co-efficent for "Curriculum Management Skills" is .913; for "Attidute" dimension is .932; for "Knowledge" dimension is .935 and for "Instructional design (project) and planning skills" is

.926. The total reliability coefficient for all dimensions of the scale was calculated as .89. In this study, the reliability coefficient of the scale was determined as .97.

Data Analysis

Within the scope of the research, the mean score and standard deviation values were calculated to determine the curriculum literacy levels of school administrators. Whether the curriculum literacy levels of school administrators show a significant difference according to gender, branch, professional seniority, educational status, type of school graduated, and administrative status variables were analyzed by independent groups t test. Whether the curriculum literacy levels of school administrators differ significantly in terms of age, management seniority, and the type of school which they work at was tested with Anova analysis.

FINDINGS

Findings about First sub-problem

In relation to study's first sub- problem, mean and standart deviation scores about administrator's curriculum literacy level are shown in Table 2.

Table 2. Descriptive statistical results about administrator's curriculum literacy level

Dimension	n	$\overline{X}$	sd	Min	Max
Curriculum management skills	106	71.52	10.13	52	90
Attitude	106	60.57	9.19	41	75
Knowledge	106	47.74	6.93	32	60
Instructional design (project) and planning skills	106	39.80	5.68	28	50
Total	106	219.65	27.61	165	272

When the lowest, middle and highest scores that can be obtained for each dimension of the scale are calculated, It is determined that for the curriculum management skills the lowest score is 18(18x1), middle score 54(18x3), the highest score 90(18x5); for the attidute dimension, the lowest score is 15(15x1), middle score 45(15x3), the highest score 75(15x5); for the knowledge dimension, the lowest score is 12(12x1), middle score 36(12x3), the highest score 60(12x5); for the instructional design (project) and planning skills, the lowest score is 10(10x1), middle score 30(10x3), the highest score 50(10x5). Total score that we can obtain from scale is the lowest score 55(55x1), middle score 165(55x3), the highest point is 275(55x5). When table 2 is examined, it is observed that for the "Curriculum management skills" sub-dimension, mean score is 71.52; for the "Attitude" sub-dimension, mean score is 60.57. Besides, for "Knowledge" sub-dimension, calculated mean score is 47.74, for "instructional design(project) and planning skills" sub-dimension, mean score is 39.8. Total mean score obtained from the administrators' curriculum literacy scale is 219.65. In respect to these data, it is stated that in both all sub-dimensions and also total, mean score obtained was above the middle score of the scale.

Findings about second sub-problem

Regarding to study's second sub-problem, it was indicated in the following sub-titles whether administrator's curriculum literacy level show significant difference in terms of different variables.

a. Findings about gender variable

The analysis results of independent group t test were shown in table 3 to determine whether the level of school administrators' curriculum literacy significantly differs accordingly to gender variable**.**

Table 3. Independence group t test results about administrator's curriculum literacy for gender.

Dimension	Gender	n	$\overline{X}$	sd	df	t	p
Curriculum management skills	Man	82	71.81	10.49	104	-.540	.590
	Woman	24	70.54	8.91			
Attitude	Man	82	60.34	9.23	104	.483	.630
	Woman	24	61.37	9.18			
Knowledge	Man	82	48.1	7.05	104	-1.00	.320
	Woman	24	46.5	6.52			
Instructional design (project) and planning skills	Man	82	39.7	5.87	104	.315	.753
	Woman	24	40.12	5.09			
Total	Man	82	219.97	28.11	104	-.223	.824
	Woman	24	218.54	26.37			

When table 3 is examined, it is seen that there is no significant difference between men and women administrator's mean score obtained from total and all sub-dimension. Thus, it may be said that there is no significant difference administrator's curriculum literacy level according to gender.

b. Findings about age variable

In this study, as there are limited administrators between aged 25-29 years and 30-34 years, administrator's age ranges were divided into 3 age groups as in 25-39 years, 40-44 years, and 45 years and over. Anova analysis test results were shown in table 4 to determine whether the level of school administrators' curriculum literacy significantly differs accordingly to age variable.

Table 4. Anova analysis results about administrator's curriculum literacy for age

Dimension	Age	Source of Variance	SS	df	MS	F	p
Currriculum management skills	25-39	Between groups	244.326	2	122.163	1.194	.307
	40-44	Within groups	10538.089	103	102.312		
	45 and over	Total	10782.415	105			
Attitude	25-39	Between groups	36.267	2	18.133	.211	.810
	40-44	Within groups	8835.629	103	85.783		
	45 and over	Total	8871.896	105			
Knowledge	25-39	Between groups	140.229	2	70.114	1.470	.235
	40-44	Within groups	4911.894	103	47.688		
	45 and over	Total	5052.123	105			
Instructional design (project) and planning skills	25-39	Between groups	42.866	2	21.433	.658	.520
	40-44	Within groups	3355.973	103	32.582		
	45 and over	Total	3398.840	105			
Total	25-39	Between groups	884.150	2	442.075	.575	.564
	40-44	Within groups	79167.935	103	768.621		
	45 and over	Total	80052.085	105			

When table 4 is examined, it is seen that there is no significant difference between different aged group of administrators whose mean score obtained from total and all sub-dimension. So, it may be said that there is no significant difference administrator's curriculum literacy level according to age.

c. Findings about branch variable

The analysis results of independent group t test were shown in table 5 to determine whether the level of school administrators' curriculum literacy significantly differs accordingly to branch variable.

Table 5. Independence group t test results about administrator's curriculum literacy for branches

Dimension	Branch	n	$\overline{X}$	sd	df	t	p
Curriculum management skills	Primary school teacher	30	70.86	6.46	104	-.421	.675
	Branch teacher	76	71.78	11.28			
Attidute	Primary school teacher	30	59.40	7.17	104	-.826	.411
	Branch teacher	76	61.03	9.88			
Knowledge	Primary school teacher	30	47.26	4.77	104	-.445	.658
	Branch teacher	76	47.93	7.64			
Instructional design (project) and planning skills	Primary school teacher	30	39.53	4.39	104	-.304	.762
	Branch teacher	76	39.91	6.15			
Total	Primary school teacher	30	217.06	17.94	104	-.604	.547
	Branch teacher	76	220.67	30.64			

When table 5 is examined, it is seen that there is no significant difference primary school and branch teacher- administrator whose mean score obtained from total and all sub-dimension. Thus, it may be said that there is no significant difference administrator's curriculum literacy level according to branch.

d. Findings about seniority year variables

In this study, as there are limited administrators who have 1-4 and 5-9 seniority years, administrator's seniority years ranges were divided into 2 groups as in 1-14 years and 15 years and over. The analysis results of independent group t test are shown in

table 6 to determine whether the level of school administrators' curriculum literacy significantly differs accordingly to seniority year's variable.

Table 6. Independence group t test results about administrator's curriculum literacy for seniority years

Dimension	Seniority years	n	$\overline{X}$	sd	df	t	p
Curriculum management skills	1-14 years	39	72.64	10.23	104	.861	.391
	15 years and over	67	70.88	10.09			
Attitude	1-14 years	39	60.64	8.27	104	.056	.956
	15 years and over	67	60.53	9.74			
Knowledge	1-14 years	39	47.71	6.37	104	-.031	.975
	15 years and over	67	47.76	7.29			
Instructional design (project) and planning skills	1-14 years	39	40.30	5.01	104	.697	.488
	15 years and over	67	39.50	6.06			
Total	1-14 years	39	221.30	26.59	104	.470	.640
	15 years and over	67	218.68	28.33			

When table 6 is examined, it is seen that there is no significant difference between administrator having different seniority years whose mean score obtained from total and all sub-dimension. That is why, it may be stated that there is no significant difference administrator's curriculum literacy level according to seniority years.

e. Findings about management seniority variable

Anova analysis results of test were shown in table 7 to determine whether the level of school administrators' curriculum literacy significantly differs accordingly to management seniority variable.

Table 7. Anova analysis results about administrator's curriculum literacy for management seniority

Dimensions	Management seniority	Source of Variance	SS	df	MS	F	p
Curriculum management skills	1-4 year 5-9 years 10-14 years 15 years and over	Between Groups	571.720	3	190.573	1.904	.134
		Within groups	10210.695	102	100.105		
		Total	10782.415	105			
Attidute	1-4 years 5-9 years 10-14 years 15 years and over	Between groups	218.678	3	72.893	.859	.465
		Within groups	8653.218	102	84.835		
		Total	8871.896	105			
Knowledge	1-4 years 5-9 years 10-14 years 15 years and over	Between groups	305.297	3	101.766	2.187	.094
		Within groups	4746.826	102	46.538		
		Total	5052.123	105			
Instructional design (project) and planning skills	1-4 years 5-9 years 10-14 years 15 years and over	Between groups	220.233	3	73.411	2.356	.076
		Within groups	3178.607	102	31.163		
		Total	3398.840	105			
Total	1-4 years 5-9 years 10-14 years 15 years and over	Between groups	3015.968	3	1005.323	1.331	.268
		Within groups	77036.117	102	755.256		
		Total	80052.085	105			

When table 7 is examined, it is seen that there are no significant difference administrators having different management seniority years whose mean score obtained from total and all sub-dimension. Thus, it may be said that there is no significant difference administrator's curriculum literacy level according to management seniority years.

f. Findigs about educational status variable

In this study, as there are a few graduated associated degree or doctorate degree, administrator's educational status grouped in two as associated degree/undergraduate and postgraduate/doctorate degree. In other words, administrators were divided in two groups as in graduated from postgraduate and not graduated from postgraduate. The analysis results of independent group t test are shown in table 8 to determine whether the level of school administrators' curriculum literacy significantly differs accordingly to educational status variable.

Table 8. Independence group t test results about administrator's curriculum literacy for educational status

Dimensions	Educational Status	n	$\overline{X}$	sd	df	t	p
Curriculum management skills	Associate degree / Undergraduate	85	71.44	9.87	104	-.165	.869
	Postgraduate/doctorate	21	71.85	11.37			
Attitude	Associate degree / Undergraduate	85	61.04	9.13	104	1.063	.290
	Postgraduate/doctorate	21	58.66	9.39			
Knowledge	Associate degree / Undergraduate	85	47.61	6.89	104	-.397	.692
	Postgraduate/doctorate	21	48.28	7.25			
Instructional design (project) and planning skills	Associate degree / Undergraduate	85	39.85	5.51	104	.206	.837
	Postgraduate/doctorate	21	39.57	6.49			
Total	Associate degree / Undergraduate	85	219.96	26.74	104	.234	.815
	Postgraduate/doctorate	21	218.38	31.55			

When table 8 is examined, no significant difference is seen between graduated postgraduate and non-postgraduate administrators' mean score obtained from both total and all sub-dimension. Thus, it may be said that there is no significant difference administrator's curriculum literacy level according to educational status.

g. Findings about type of school graduated variables

In the study, as there are a few faculties except education faculty and faculty of science and literature which administrators graduated, Administrators' graduated school type is divided into two as an education faculty and other faculty. That is to say, The group of administrators who graduated from science and literature faculty was involved in the group of other faculties-graduated. The analysis results of independent group t test were shown in table 9 to determine whether the level of school administrator's curriculum literacy significantly differs accordingly to type of school graduated variable.

Table 9. Independence group t test results about administrator's curriculum literacy for type of faculty graduated

Dimensions	type of school graduated	n	$\overline{X}$	sd	df	t	p
Curriculum management skills	Faculty of education	76	72.39	10.06	104	1.408	.162
	Other faculties	30	69.33	10.14			
Attidute	Faculty of education	76	61.27	9.02	104	1.253	.213
	Other faculties	30	58.80	9.51			
Knowledge	Faculty of education	76	47.92	7.20	104	.414	.680
	Other faculties	30	47.30	6.29			
Instructional design (project) and planning skills	Faculty of education	76	40.05	5.86	104	.721	.473
	Other faculties	30	39.16	5.25			
Total	Faculty of education	76	221.64	28.08	104	1.186	.238
	Other faculties	30	214.60	26.13			

When table 9 is examined, no significant difference is seen between faculty of education and other faculty-graduated administrators' mean score obtained from both total and all sub-dimension.That is why, it may be stated that there is no significant difference administrator's curriculum literacy level according to type of faculty administrators graduated.

h. Findings about type of school-worked

The analysis results of Anova test were shown in table 10 to determine whether the level of school administrators' curriculum literacy significantly differs accordingly to type of school variable.

Table 10. Anova analysis results about administrator's curriculum literacy for type of school-worked

Dimensions	Type of school	Source of variance	SS	df	MS	F	p
Curriculum management skills	Pre-school Primary school Secondary school High School	Between groups Within groups Total	116.856 10665.559 10782.415	3 102 105	38.952 104.564	.373	.773
Attidute	Pre-school Primary school Secondary school High School	Between groups Within groups Total	210.524 8661.372 8871.896	3 102 105	70.175 84.915	.826	.482
Knowledge	Pre-school Primary school Secondary school High School	Between groups Within groups Total	175.589 4876.534 5052.123	3 102 105	58.530 47.809	1.224	.305
Instructional design (project) and planning skills	Preschool Primary school Secondary school High School	Between groups Within groups Total	53.494 3345.345 3398.840	3 102 105	17.831 32.798	.544	.654
Total	Preschool Primary school Secondary school High School	Between groups Within groups Total	1558.148 78493.937 80052.085	3 102 105	519.383 769.548	.675	.569

When table 10 is examined, no significant difference is seen between different type of schoolworking administrators' average score obtained from both total and all sub-dimension. That is why, it may be stated that there is no significant difference administrator's curriculum literacy level according to type of school.

ı. Findings about administrative status

In the study, as there are a few administrators who are worked as head assistant principal, administrator's management status is divided into two group as headmaster and assistant principal. That is to say, school administrators who are worked as head assistant principals are also in the same group with school administrators who are assistant principals. The analysis results of independent group t test were shown in table 11 to determine whether the level of school administrators' curriculum literacy significantly differs accordingly to management status variable.

Tablo 11. Independence group t test results about administrator's curriculum literacy for administrative status

Dimension	administrative status	n	$\overline{X}$	sd	df	t	p
Curriculum management skills	Headmaster Assistant principal	17 89	69.76 71.86	9.26 10.30	104	-.782	.436
Attidute	Headmaster Assistant principal	17 89	59.35 60.80	9.50 9.16	104	-.597	.552
Knowledge	Headmaster Assistant principal	17 89	49.64 47.38	5.46 7.15	104	1.237	.219
Instructional design (project) and planning skills	Headmaster Assistant principal	17 89	39.47 39.86	4.36 5.92	104	-.261	.795
Total	Headmaster Assistant principal	17 89	218.23 219.92	21.94 28.66	104	-.230	.819

When table 11 is examined, no significant difference is seen between in charge of headmaster and assistant principal administrators' average score obtained from both total and all sub-dimension. That is why, it may be stated that there is no significant difference administrator's curriculum literacy level according to administrative status.

DISCUSSION, RESULT AND SUGGESTIONS

As a result of the research, it was found that the average score obtained by the school administrators participating in the study was above the middle score of the scale. Therefore, it can be said that school administrators have high curriculum literacy levels.

In other words, it can be stated that school administrators perceive themselves as good curriculum literate. This finding can be interpreted as school administrators perceive themselves as competent enough to fulfill their duties and responsibilities for the effective implementation of curriculums in their schools. In other words, it can be stated that school administrators think that they can lead the curriculums implemented in their schools successfully. Similar results were obtained in the studies which can be found in the literature. In the study conducted by Demiral (2009), it was found that school administrators generally perform the duties required by curriculum leadership. In the study conducted by Aslan et al. (2018), it was concluded that school administrators' perceptions of curriculum leadership are high. In addition, findings similar to this study were obtained in studies conducted with teachers in the literature. In studies conducted with primary, middle and high school teachers by Keskin (2020) and Kuyubaşıoğlu (2019), it was determined that teachers considered themselves sufficient in terms of curriculum literacy. In the study conducted by Aslan and Gürlen (2019) with middle school teachers, it was concluded that teachers are highly curriculum literate. In the study conducted by Erdamar (2020) with classroom teachers, it was found that teachers' perception of curriculum literacy is high.

Participating administrators' curriculum literacy level being high in the research shows that administrator have sufficient skills and knowledge in terms of curriculum. It can be stated that this skill and knowledge administrator acquire have been gaining from pre-service training or in-service training. That is to say, there are two probable reason why administrators' literacy level is high. One of this reason can be connected with qualification of administrators' education in undergraduate degree. In this sense, It can be said that administrator participating in the research educated well enough to develop their curriculum literacy level during undergraduate years. In literature, studies conducted with preservice teacher also offer findings which prove this opinion. In conducted studies, it was concluded that preservice teacher's curriculum literacy was good level (Aygün, 2019), high level (Sural & Dedebali, 2018) and sufficient level (Çetinkaya & Tabak, 2019; Erdem & Eğmir, 2018; Gömleksiz & Erdem, 2018). One of the probable reasons why administrators' curriculum level is high might be correlated with the in-service education qualification which administrator gets during performing their duty. Accordingly, it may be stated that their in-service education activities contributed their curriculum literacy level. Findings have been found in studies in literature which supports this opinion. In the studies conducted with primary and secondary school teacher by Aslan (2019), it was concluded that administrators who educated in-service education had higher perception towards curriculum literacy. In studies conducted by Erdamar (2020) and Keskin (2020), it was defined that the teachers who attended in-service education had also higher perception towards curriculum literacy than teachers who did not attend in-service education.

One of the important findings obtained within the context of the research is that determining the curriculum literacy levels of school administrators did not show a significant difference according to variables such as gender, age, branch, professional seniority, management seniority, educational status, type of school graduated, type of school which they work at and administrative status. This finding can be interprented that administrator's curriculum literacy level does not change according to their demographic properties. This also applies to all sub-dimensions in the scale. In other words, the scores obtained by the school administrators in the "curriculum knowledge", "attitude", "instructional design (project) and planning skill" and "curriculum management skill" sub-dimensions in the scale did not differ significantly according to the variables. Similar findings were obtained in the studies found in the literature. Aslan (2019) determined that school administrators' perceptions of curriculum literacy did not differ significantly according to gender, branch, management status, education status and professional seniority variables. Again, Aslan et al. (2018), in their study, determined that school administrators' perceptions of curriculum leadership did not differ significantly according to gender, education status, branch and management status; Demiral (2009) found that professional seniority and managerial seniority had no effect on curriculum leadership behaviors. Besides, in literature, similar findings were also obtained in the studies conducted with teachers. In most of studies in literature, it is stated that variables such as gender (Aslan & Gürlen, 2019; Keskin, 2020; Mansuroğlu, 2019), age (Mansuroğlu, 2019), branch (Aslan & Gürlen, 2019; Erdamar, 2020; Kahramanoğlu, 2019; Mansuroğlu, 2019), professional seniority (Aslan & Gürlen, 2019; Erdamar, 2020; Kahramanoğlu, 2019; Keskin, 2020; Mansuroğlu, 2019), educational status (Erdamar, 2020; Mansuroğlu, 2019), type of school graduated (Aslan & Gürlen, 2019; Keskin, 2020), type of school which they work (Keskin, 2020) did not make difference in teachers' perception of curriculum level.

In the study, it was found that mean score obtained from administrators' curriculum literacy scale's "knowledge" sub-dimension is above the middle score of the scale. Thus, it can be said that average score obtained from administrators' "knowledge" dimension is high. This finding can be interprented as administrators are knowledgable about curriculum development and the curriculum elements including objectives, content, teaching and learning process and evalution. First of all, administrators should have enough knowledge to lead curriculum implementing in schools. Because administrators cannot supply necesseray support and guidance for an issue which administrators does not have any knowledge about. In this regard, administrators being well-informed about curriculum in schools is pretty valuable for implementing curriculum successfully in schools. It can be said that implementing curriculum successfully in schools will affect positively schools' academic success. As a matter of fact that conducted studies shows that schools' academic success is high where administrators are well-informed about curriculum (Cotton, 2003). In study conducted by Dağdeler & Arseven (2015), similar findings also were obtained, and It was stated that administrators thought themselves as a well-informed about curriculum. Similar findings were still obtained in the study conducted by Gündoğan (2019) and it was stated that teachers generally had enough knowledge about curriculum.

It was determined in the study that mean score obtained from administrators' curriculum literacy scale's "attidute" sub-dimension is above the middle score of the scale. Thus, it can be said that average score obtained from dimension about administrators' attidute is high. This finding can be explained that administrators are aware of responsibilities and duties for implementing curriculum successfully at schools and eager for fulfilling these responsibilities and duties. Besides, it can be said that administrators appreciate curriculum and have positive opinion for curriculum. After all, it is not expected that administrators who have negative opinion for curriculum and does not appreciate curriculum do not supply necessary support during implementing curriculum. In this respect, administrators' positive attidute for curriculum will also contribute positively to implement curriculum successfully. Similar findings were also obtained from studies conducted with teachers. Accordingly, it was determined that teachers had a positive attidute for curriculum (Gündoğan, 2019) and appreciated the curriculum (Keskin,2020).

It was determined in this study that mean score obtained from administrators' curriculum literacy scale's "curriculum instructional design (project) and planning skill" sub-dimension is above the middle score of the scale. Thereby, it can be said that mean score obtained from dimension about administrators' curriculum Instructional design (project) and planning skill is high. Implementing the curriculum successfully in schools depends on well-planned the process. If there is no well-working plan about how curriculum is applied, the possibility of facing the problems which effects negatively implementing of problem during process will also increase. In this context, high capacity of administrators' planning skills will effect positively the process of implementing curriculum. Similar findings were obtained by in the study conducted by Can (2007) and It was stated that elemantary school administrators were enough sufficient to plan the process of implementing curriculum with teachers at the beginning of term. Also, in the study conducted with teachers by Ergüneş and Mercan (2011), teachers were stated that primary school administrators were sufficient enough to plan the process of education. Besides, in the study conducted with by Aslan and Gürlen (2019) it was determined that teachers' capacity of planning was high.

It was determined in the study that mean score obtained from administrators' curriculum literacy scale's "curriculum management skill" sub-dimension is above the middle score of the scale. Thereby, it can be said that mean score obtained from dimension curriculum management skill is high. Similar results were obtained in the studies conducted in the context of instructional leadership regarding the managing curriculum and teaching process, which is considered a sub-dimension of instructional leadership in the literature. In the study conducted by Akman (2015), it was determined that school principals working in high schools saw themselves at a pretty good level in terms of the management curriculum and teaching process; In the study conducted by Aygün (2014), it was found that school administrators working in high schools perceive themselves as highly competent in this dimension. Administrators, instructional leadership at schools, having high average score obtained from curriculum management skills sub-dimension also will provide them to fulfill successfully their instructional leadership role. In this regard, findings obtained from this study can interpreted that administrators will lead successfully solution of problems which comes out during implementing curriculum, be a good guidance for teacher in this process and provide necessary environment and financial resources for the effective implementation of curriculum. In other words, it can be said that administrator will perform necessary behavior for the effective implementation of curriculum. The studies conducted in the literature also support this opinion. While it was determined in the study conducted by Önder (2010) that administrators who works primary school and high school always fulfill necessary behavior for the management of curriculum and teaching process; in the study conducted by Sağır and Memişoğlu (2012), primary school administrators usually perform these behaviours. Besides, in the literature there are also many studies teacher's opinion included about what level administrators perform necessary behaviours about management dimension of curriculum and teaching process. Findings obtained from studies conducted with teachers are similar to findings obtained from studies conducted with administrators. That is to say, administrators' opinions about dimension management of implementing curriculum at schools are also supported by teachers. The study conducted with secondary school teachers in Malaysia by Sim (2011), it was determined that the teachers found administrator successful regarding management of curriculum and instruction. In the study conducted by Aksoy, 2006; Bulduklu, 2014; Daşkın, 2019; Gülbahar and Özdemir, 2019; Karaduman, 2017; Köse, 2016; Küp, 2011; Önder, 2010; Özgün, 2018; Sağır and Memişoğlu, 2012; Sucu, 2016; Tatlıoğlu and Okyay, 2012, teachers opinion contains that administrators mostly fulfill necessary behaviors for the management of curriculum and teaching process dimension.

Within the context of this research, it can be said that school administrators should be curriculum literate in order to perform their instructional leadership roles. Accordingly, studies can be carried out to statistically determine the relationship between the curriculum literacy levels of school administrators and their level of performing instructional leadership roles. In addition, this research is designed quantitatively. Qualitative studies can also be carried out to obtain more in-depth data on curriculum literacy levels of school administrators.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with 60% contribution of the first author and 40% contribution of the second author.

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| Research Article / Araştırma Makalesi |

Thematic Review of Studies about Preschool Astronomy Education in Turkey[1]

Türkiye'de Okul Öncesi Astronomi Eğitimine İlişkin Yapılan Çalışmaların Tematik İncelenmesi

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Abstract

This study aimed to examine thematically the articles and dissertations made in Turkey about preschool astronomy education. In the research, a descriptive study was conducted, and the survey model was used. The study covered researches of preschool astronomy education that can be accessed in the national databases. Studies in analyzing data were; the type of publication, the distribution of the studies according to the years and the indexes in which they are included, the keywords used, the subject/concept of astronomy, the purpose of the studies, and the distribution according to the provinces, the methodologies used in the studies, the basic results achieved in the studies and the suggestions. The studies were first coded separately by researchers, and the reliability of the coding was ensured by forming a common opinion. As a result, most of the studies determined were articles of the year 2015 and above, and these studies are generally published in ULAKBIM indexed journals. Most repetitive keywords in research; preschool, astronomy, and mental model. The concept of astronomy focuses on studies of the Sun, Earth, and Moon. The studies mostly aimed to reveal the students' level of knowledge, misconceptions, and mental models related to basic astronomy concepts. The most preferred research method in the studies was the qualitative paradigm; the most preferred research designs were case studies and survey models. The researches were mostly carried out with the children in preschool age and the provinces of Balıkesir and Trabzon with samples smaller than 100 people. In most of the studies, interviews, drawings, and observations were used as data collection tools, and the content analysis technique was used in the analysis of the data. The general results of the studies showed that the mental models of preschool children about astronomy consist of concrete concepts and the participants lack knowledge on astronomy. In the studies, suggestions were made to researchers and practices.

Öz

Bu çalışmanın amacı, okul öncesinde astronomi eğitimiyle ilgili Türkiye'de yapılan makale ve tezleri tematik olarak incelemektir. Araştırma ulusal veri tabanlarından erişilebilen okul öncesinde astronomiye yönelik çalışmaları kapsamaktadır. Verilerin çözümlenmesinde çalışmalar farklı temalara göre incelenmiştir. Araştırmacılar tarafından çalışmalar öncelikle ayrı ayrı kodlanmış, daha sonra ortak görüş oluşturulmuştur. Sonuçta, incelenen çalışmaların çoğunluğunun 2015 yılı ve sonrasına ait makale çalışmaları olduğu ve bu çalışmaların genellikle ULAKBİM tarafından indekslenen dergilerde yayımlandığı tespit edilmiştir. Araştırmalarda en çok yinelenen anahtar kelimeler; okul öncesi, astronomi ve zihinsel modeldir. Çalışmaların yoğunlaştığı astronomi kavramı/konusu ise Güneş, Dünya ve Ay olmuştur. Yapılan çalışmalar çoğunlukla öğrencilerin temel astronomi kavramlarına ilişkin bilgi düzeylerini, kavram yanılgılarını ve zihinsel modellerini ortaya çıkarmayı hedeflemektedir. Çalışmalarda en fazla tercih edilen araştırma yöntemi nitel paradigma; en fazla tercih edilen araştırma desenleri ise durum çalışması ve tarama modeli olmuştur. Araştırmalar çoğunlukla Balıkesir ve Trabzon illerinde okul öncesi dönemdeki çocuklarla ve 100 kişiden küçük örneklemlerle çalışılarak gerçekleştirilmiştir. Gerçekleştirilen çalışmaların çoğunda veri toplama aracı olarak görüşme, çizim ve gözlemlerden yararlanılmış olup verilerin analizinde en çok içerik analizi tekniğinden yararlanılmıştır. Çalışmaların genel sonuçları okul öncesi dönem çocuklarının astronomi zihinsel modellerinin somut kavramlardan oluştuğunu ve katılımcıların astronomi konusunda bilgi eksikliklerinin olduğunu göstermektedir. Çalışmalarda genellikle araştırmacılara ve uygulamalara yönelik önerilerde bulunulmuştur.

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INTRODUCTION

Preschool children examine and search everything around them through their innate curiosity, desire for discovery, and interest in their environment. In other words, children in this period begin to do their own science and learn science by acting as a scientist. For this reason, they start to learn many science concepts in the preschool period (Kallery & Psillos, 2001). Students performing science activities at an early age enable them to develop a positive attitude towards science and make it easier for them to understand scientific concepts in the future. The use of a scientific language at an early age accelerates the development of scientific concepts in children. Children understand science concepts and their reasons scientifically. In this way, their scientific thinking skills develop. This point of view clarifies the rationale and importance of science education to be carried out in the preschool period (Eshach & Fried, 2005).

In the preschool period, children begin to see or identify the concepts related to science primarily in their natural environment (at home, street, school, etc.). Among the science concepts that children in this period encounter and curiously search for answers are concepts related to astronomy, such as stars, the Moon, the Sun, clouds, and weather events. Concepts such as astronauts and satellites that children see or hear through communication tools also attract their attention (Türk, 2018). According to Tunca (2000), astronomy can be considered a laboratory of quality and size unreachable on Earth. Therefore, astronomy has a special place among science subjects. Astronomy education supports the development of individuals' correct and logical thinking skills, helps them to love and orient themselves to science, and increases their motivation to learn science by creating interest in them with new discoveries (Trumper, 2006). In addition, astronomy helps students gain conceptual knowledge and better understand other science subjects and contributes to the improvement of their three-dimensional thinking skills (Tunca, 2000; Trumper, 2006). Application studies such as observational astronomy support children's cognitive development, affect their acquisition of scientific thinking skills, and improve their ability to establish cause and effect relationships between events (Vosniadou & Brewer, 1992). On the other hand, both adults and children consider astronomy subjects difficult due to their nature. Moreover, some false beliefs among the public and experiences in formal or informal learning environments may cause misconceptions about astronomy. In this regard, it is recommended to start astronomy education at an early age to prevent misconceptions and create correct mental structures about the subject (Ayvacı et al., 2018; Türk, 2018). Otherwise, misconceptions that occur in the preschool period continue at later ages. (Vosniadou, 1992). For such reasons, Chalufour & Worth (2003) state that children should know astronomy subjects and concepts in the preschool period. However, the extent to which astronomy education is carried out in preschool education institutions in Turkey is a separate topic of discussion. From this perspective, it is important to conduct academic studies on preschool astronomy education to guide the educational policies of Turkey.

National (i.e. Turkish) and international literature on preschool astronomy education includes limited research; yet, it has gained momentum in recent years. For example, the analysis of the full-text papers presented at “The International Astronomical Union” meetings in the 1988-2006 period indicated that the least number of studies on the subject pertained to the preschool and elementary school periods (Bretones & Nego, 2011). Similarly, in Turkey, just a limited number of studies have been conducted on preschool astronomy education, and they all seem to be recent (Aksan & Çelikler, 2017; İzgi Onbaşılı & Siper Kabadayı, 2019; Saçkes & Korkmaz, 2015; Türk, 2018). As a matter of fact, studies conducted on preschool science education in Turkey have not paid much attention to subjects such as astronomy and ecology (Güneş, 2018; Ormancı & Çepni, 2019). The scarcity of studies on preschool astronomy education despite its importance above-mentioned can be considered as a problem. To solve this problem, first of all, it would be appropriate to look at the issue holistically by analyzing the studies done so far. Based on the thematic analysis of the studies on the subject, comprehensive information will be provided to teachers, families, and education policy experts. Examining the studies on preschool astronomy education by associating them with each other will make it easier to follow the literature and enrich the field. In a similar vein, Cohen, Manion, & Morrison (2007) point out that the determination of general research trends through a periodic examination of studies on education will guide new researchers who will work on the same subject. In this context, it can be stated that thematic analysis research can lead to new original studies on the subject, allow researchers to follow current situations in their field, and provide convenience to researchers since many studies on the subject are examined holistically. In this respect, the national literature contains some thematic analysis studies covering studies on preschool education (Çifçi & Ersoy, 2019; Güneş, 2018; Karaca, Uzun & Yaşar, 2019), preschool science education (Ormancı & Çepni, 2019; Özen Uyar & Ormancı, 2016; Özpir Mantaş, 2018; Yılmaz & Altınkurt, 2012) and astronomy education (Ayvacı & Sezer, 2018; Bozdemir, Ezberci Çevik, Altunoğlu, & Kurnaz, 2017; Ezberci Çevik & Kurnaz, 2016; Doğru, Satar, & Çelik, 2019; Kurnaz, Bozdemir, Altunoğlu, & Ezberci Çevik, 2016). However, to the best of our knowledge, there is no research covering studies on preschool astronomy education among these thematic analysis studies. This being the case, there is a need for a thematic analysis of Turkish studies on preschool astronomy education in terms of purpose, methodology (sample, data collection tool, analysis method, etc.), main findings, and so on. Therefore, we believe that the current research will fill this gap in the literature, besides all the benefits of the thematic studies mentioned above. Departing from this, this study aimed to make a thematic analysis of articles and theses on preschool astronomy education published in Turkey. Sub-problems for which answers are sought for this purpose are as follows:

About preschool astronomy education;

1. Which types of published studies have been done?
2. What is the distribution of the studies done by years?
3. What is the distribution of the studies according to the indexes in which they take place?
4. Which keywords are used in the studies?
5. What is the distribution in terms of the astronomy concept/subject dealt with in the studies?
6. What is the distribution of the work done according to the purpose?
7. What is the distribution of the studies according to the provinces?
8. Which methodologies (participants, data collection tools, analysis methods, etc.) were used in the studies?
9. What are the main results obtained from the studies?
10. Which recommendations have been made in the studies?

METHOD

Research Design

A systematic literature search technique was used in this study to examine the thematic articles and theses held in Turkey about preschool astronomy education. This technique is preferred to examine studies conducted on a research subject in a certain period within the framework of certain predetermined criteria (Jesson et al., 2011). Thus, it is recommended to follow a three-stage process of planning, conducting, and reporting the research (Kitchenham, 2004). These stages are introduced below.

Planning Stage

The planning stage of the research includes the steps of determining the need and creating research questions. The present study aimed to determine research trends at the national scale through a systematic analysis of the articles and theses about preschool astronomy education. The study conducted for this purpose has sought answers for the 10 basic sub-problems mentioned above.

Conducting the Research

The stage of conducting the research includes the steps of searching for the documents to be examined, selecting the publications, analyzing the publications, and summarizing the results by reaching a synthesis from the analyses. This research includes studies on preschool astronomy education that can be accessed from the databases of Google Scholar, ULAKBIM, and YOK (The Turkish Council of Higher Education) Thesis Center. These databases were scanned by using the keywords "preschool science," "preschool astronomy," "early childhood science," "early childhood astronomy" for the studies carried out until 2019, without limiting the starting year. The scanning yielded 20 studies on preschool astronomy education.

The data were collected through document analysis. This method refers to the process of collecting existing documents related to the addressed subject and reviewing them based on certain criteria (Yıldırım & Şimşek, 2011). The present study applied document analysis in that the articles and theses on preschool astronomy education were collected and reviewed. In this process, the researchers created an article review form in MS EXCEL within the framework of the research questions to examine the studies on preschool astronomy education. While creating this form, Bacanak, Değirmenci, Karamustafaoğlu, & Karamustafaoğlu (2011), Çalık, Ayas, & Ebenezer (2005), Ünal, Çalık, Ayas, & Coll (2006), Kurnaz and Çalık (2009), Kurnaz & Sağlam-Arslan (2011), İslamoğlu, Ursavaş & Reisoğlu (2015) and Ezberci Çevik, & Kurnaz (2016) matrices were used. To investigate the content validity of the matrix, opinions of two science education experts, one assistant professor in science education and one in preschool education, were taken. The domain experts did not recommend making any changes, stating that the created matrix was suitable for the research.

As a result, using this matrix consisting of different basic elements, all studies were analyzed according to 10 basic themes: type of publication, year of publication, indexing, keywords, the addressed astronomy subject/concept, purpose, the province of implementation, methodology, main results, and recommendations). Thus, general trends, differences, and common points were revealed.

The collected data were prepared for analysis before the analysis step. First of all, the researchers entered and edited the 20 studies in a matrix prepared in the MS EXCEL format. Then, the two researchers subjected the data to content analysis. The researchers were in constant agreement during the coding, and they coded based on a common view. The findings that emerged after the reliability was provided are presented through tables and graphs. The research is reported in the following sections.

Validity and Reliability

•To ensure the validity of the study:

Detailed explanations on data collection and analysis methods were provided.

Analyses stored in the computer environment were preserved for possible confirmation in the future.

•To ensure the reliability of the study:

The results of the data analysis were first given directly without interpretation. This forms a basis for interpretations and explanations to be made later on.

For data analysis, the categories were determined based on the theoretical structure.

To help researchers who will conduct similar studies, the situation focused on and the methods used in the study were presented in detail in the relevant sections.

FINDINGS

Distribution of Studies on Preschool Astronomy Education in According to the Type of Publication

Table 1 presents the studies conducted on preschool astronomy education and the distribution by type of publication.

Table 1. Distribution of the studies examined in the research by publication type

Author(s)	Publication Type
Aksan & Çeliker (2017)	Article
Aydın & Güney (2017)	Article
Ayvacı (2010)	Article
Ayvacı, Bülbül, Özbek, & Ünal (2018)	Article
Baysan & Aydoğan (2016)	Article
Çetin, Yavuz, Tokgöz, & Güven (2012)	Article
Doğru & Şeker (2012)	Article
Güçhan Özgül, Akman, & Saçkes (2018)	Article
İyibil (2010)	Master thesis
Kalkan, Ustabaş, & Kalkan (2007)	Article
Kaya (2018)	Master thesis
Kurnaz, Kıldan, & Ahi (2013)	Article
Küçüközer & Bostan (2010)	Article
Küçük & Laçin Şimşek (2017)	Article
Saçkes (2015)	Article
Saçkes & Korkmaz (2015)	Article
Saçkes, Smith, & Trundle (2016)	Article
Sağlam Arslan & Durukan (2016)	Article
Türk (2018)	Article
Saka (2018)	Master thesis

As shown in Table 1, three studies were master thesis, and 17 studies were national articles, and there was no doctoral thesis on the subject.

Distribution of Studies on Preschool Astronomy Education by Years

Figure 1 shows the distribution of the studies on preschool astronomy education by type of publication and year.

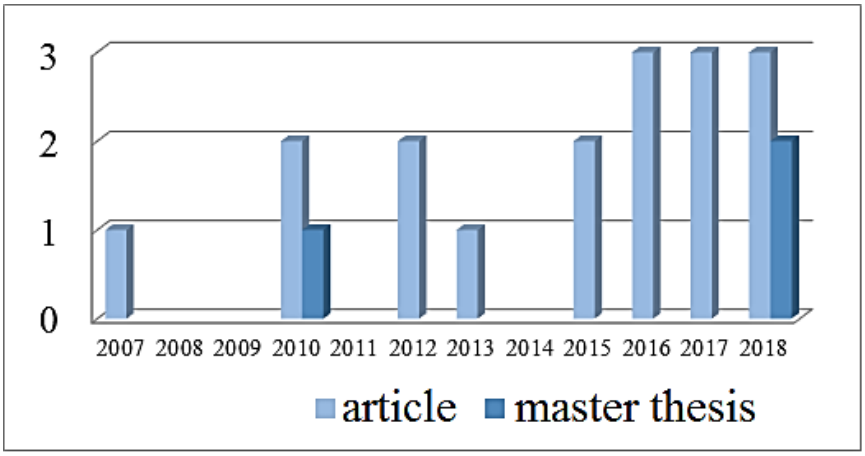

Figure 1. Distribution of the studies examined in the research by publication type and years

Figure 1 indicated that the studies on the subject started in 2007 but gained speed as of 2015. It is also noteworthy that there were few master thesis and no doctorate thesis on the subject. The first master thesis on this subject was published in

2010, and then two more thesis studies were conducted in 2018. Considering the absence of doctoral theses on the subject and the time elapsed between the years when the limited numbers of the master thesis were written, it can be said that the subject of preschool astronomy education is an area that has not yet been focused on in postgraduate studies.

The Distribution of the Articles on Preschool Astronomy Education by Indexes

Figure 2 presents the distribution of the articles on preschool astronomy education by indexing.

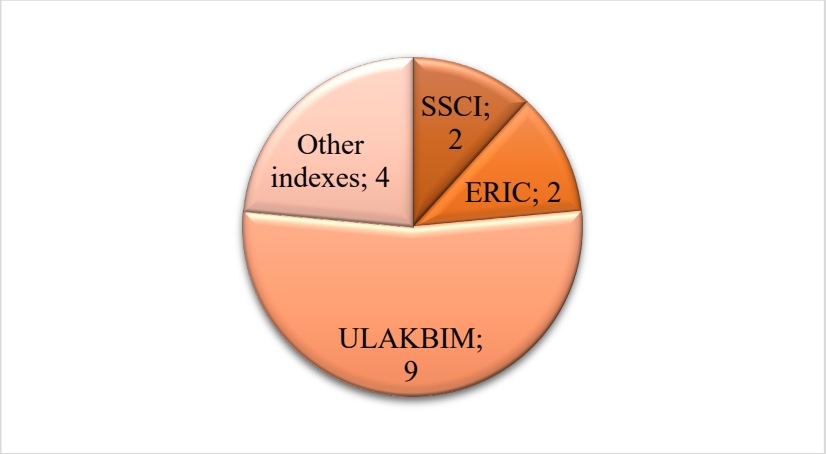

Figure 2. The distribution of the articles examined in the research according to the indexes in which they take place

Figure 2 indicated that nine of the articles on preschool astronomy education had been published in journals indexed by ULAKBIM, two in those indexed by ERIC, two in those indexed by SSCI, and four in those indexed by others.

Distributions of Keywords Used in Studies on Preschool Astronomy Education

Keywords are also among the examined themes as they provide information about the content of the studies and are used in the literature review. Figure 3 gives the distribution of the keywords used in the studies on preschool astronomy education.

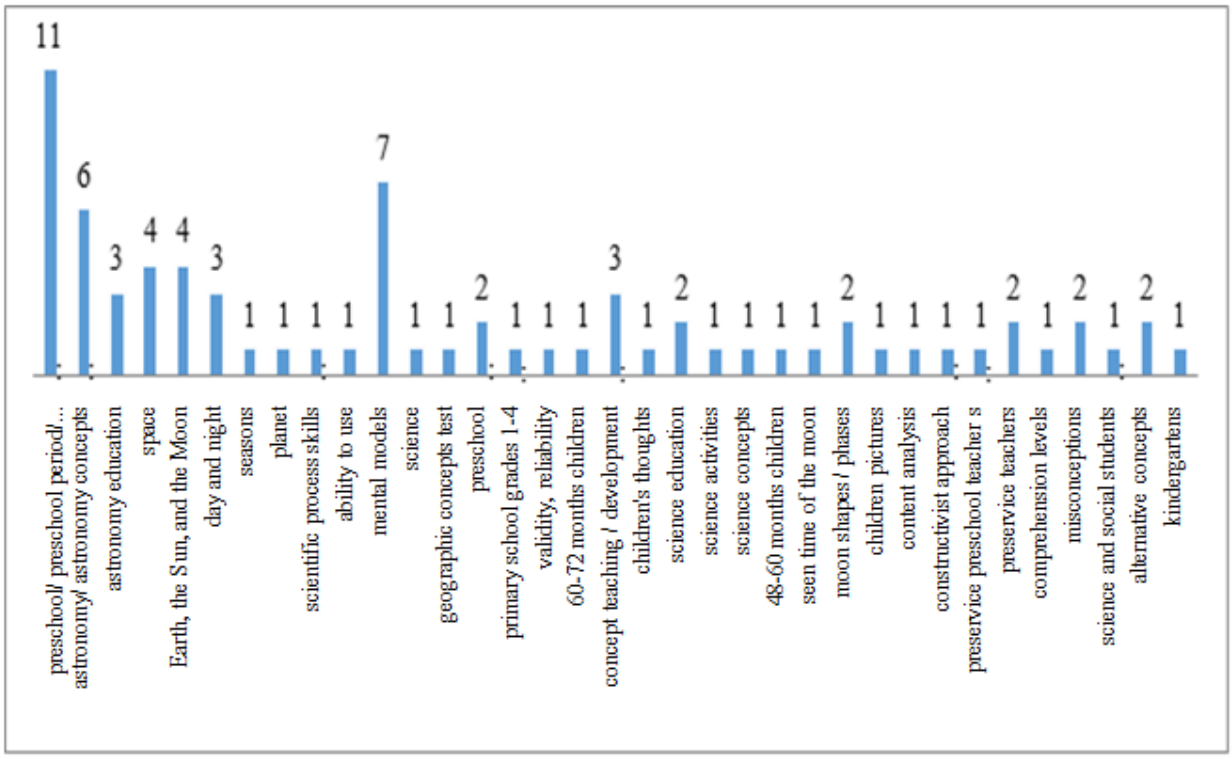

Figure 3. Distributions of the keywords used in the studies examined in the research

As shown in Figure 3, the most frequently used keywords in the examined studies were "preschool"/"preschool period"/ "preschool education"/ "early childhood" (f=11), "mental models" (f=7), "astronomy" / "astronomy concepts" (f=6), "space" (f=4), "Earth, the Sun, and the Moon" (f=4), "astronomy education" (f=3), and "day and night" (f=3).

Distribution of Astronomy Concepts and Subjects Considered in the Studies on Preschool Astronomy Education

Figure 4 gives the distribution of the astronomy concepts and subjects considered studies on preschool astronomy education.

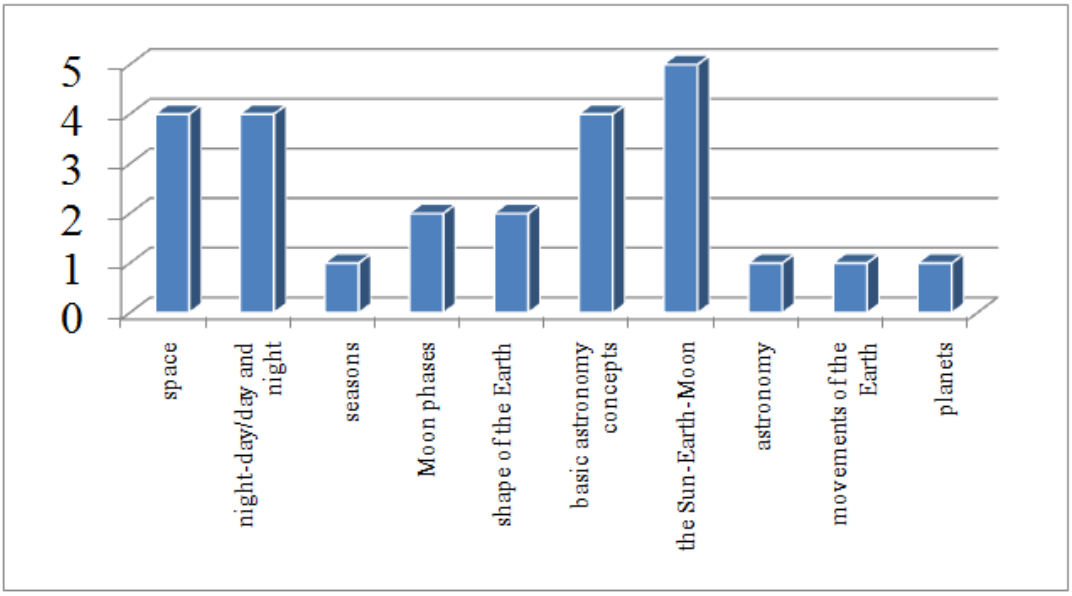

Figure 4. Distribution of astronomy concepts and topics considered in the studies examined in the research

Figure 4 showed that the examined studies were mostly about the Sun-Earth-Moon (f=5), followed by basic astronomy concepts (f=4), space (f=4), and day and night (f=4).

Distribution of Studies on Preschool Astronomy Education According to the Purpose

Table 2 presents the distribution of the studies according to the purpose.

Table 2. Distribution of the studies examined in the research according to the purpose

Category	Author(s)	Purpose(s)
Activity-Based Studies	Aksan & Çeliker (2017)	Planning an activity for astronomy education for preschool children, implementing it, and determining its effect on children
	Ayvacı (2010)	To determine whether the scientific process skills of children are developed by planning activities suitable for preschool children
	Çetin, Yavuz, Tokgöz, & Güven (2012)	To compare the effect of enriched activities prepared according to the student-centered teaching approach on student achievement in teaching space concepts and the effect of teacher-centered teaching on student achievement
	Doğru & Şeker (2012)	To determine the effect of scientific activities on the development of the concept of "Earth, Sun and Moon" in preschool children aged 5-6
	Kaya (2018)	Examining the teaching situations of the concept of the moon with the help of activities
	Aydın & Güney (2017)	Determining the effect of the activities developed in accordance with the constructivist approach on the science concept achievement of preschool teacher candidates, determining the knowledge level of science concepts, determining and eliminating the missing/erroneous knowledge
Studies on Determining Mental Model	Ayvacı, Bülbül, Özbek, & Ünal (2018)	To determine the mental models of preschool children and primary school students for the concept of space and to examine the change they show according to grade level
	Güçhan Özgül, Akman, & Saçkes (2018)	To reveal the mental models of 60-72 month-old children regarding the shape of the Earth and the concepts of Day and Night
	Kurnaz, Kıldan, & Ahi (2013)	To determine the mental models of preschool children regarding the concepts of the Sun, Earth, and Moon
	İyibil (2010)	To determine the understanding levels and mental models of preservice teachers studying in different programs about basic astronomy concepts
	Sağlam Arslan & Durukan (2016)	To determine preservice teachers' mental models about basic astronomy concepts
	Saçkes & Korkmaz (2015)	Examine children's conceptual understanding of the shape of the world and their cognitive representation
	Saçkes (2015)	To examine the mental models of kindergarten students regarding the day and night cycle and to make suggestions aimed at pedagogical practices regarding concepts related to space in preschool classes

Category	Author(s)	Purpose(s)
Studies on Misconceptions / Alternative Ideas	Kalkan, Ustabaş, & Kalkan (2007)	To identify astronomy concepts and misconceptions about these concepts
	Saka (2018)	To identify alternative ideas of preschool teachers regarding basic astronomy concepts
Studies on Developing Measurement Tool	Baysan & Aydoğan (2016)	To develop a valid and reliable measurement tool that reveals its achievements regarding geographical concepts
Studies on determining existing knowledge	Türk (2018)	To investigate the current situation of preschool teachers in the field of astronomy from various perspectives
	Saçkes, Smith, & Trundle (2016)	The purpose of this cross-cultural study is to describe and compare observational knowledge of the US and Turkish children about the day and night cycle, as well as to identify the similarities predicted by the frame theory
	Küçüközer & Bostan (2010	Identifying preschool students' ideas about day and night, the seasons, and the phases of the Moon
	Küçük & Laçin Şimşek (2017)	Determining children's thoughts about space

Table 2 indicated that seven of the 20 studies examined in the study were for determining mental models, six were activity-based, and four aimed to determine existing knowledge. Also, one study aimed to determine the misconceptions/alternative ideas, and another study was for developing a measurement tool. In general, it can be stated that the general tendency of the studies conducted so far had been to determine how astronomy concepts were understood and to test the effect of activities related to astronomy.

The Distribution of Studies on Astronomy in Preschool According to the Provinces

As to the distribution of the studies on preschool astronomy by the province of implementation, most studies have been conducted in Trabzon (f=3) and Balıkesir (f=3), but one study has also been conducted in Antalya, Aydın, Muş, Sakarya, and Samsun. On the other hand, a study was also conducted in the USA and a comparative study involving the USA and Turkey. Six studies gave no information about the province of implementation. Thus, it can be said that the studies on this subject were not widespread across Turkey.

Distribution of Studies on Preschool Astronomy Education According to Research Methods and Designs

The distribution of the studies on preschool astronomy education according to the research methods is presented in Figure 5, and the distribution according to the research designs is presented in Figure 6.

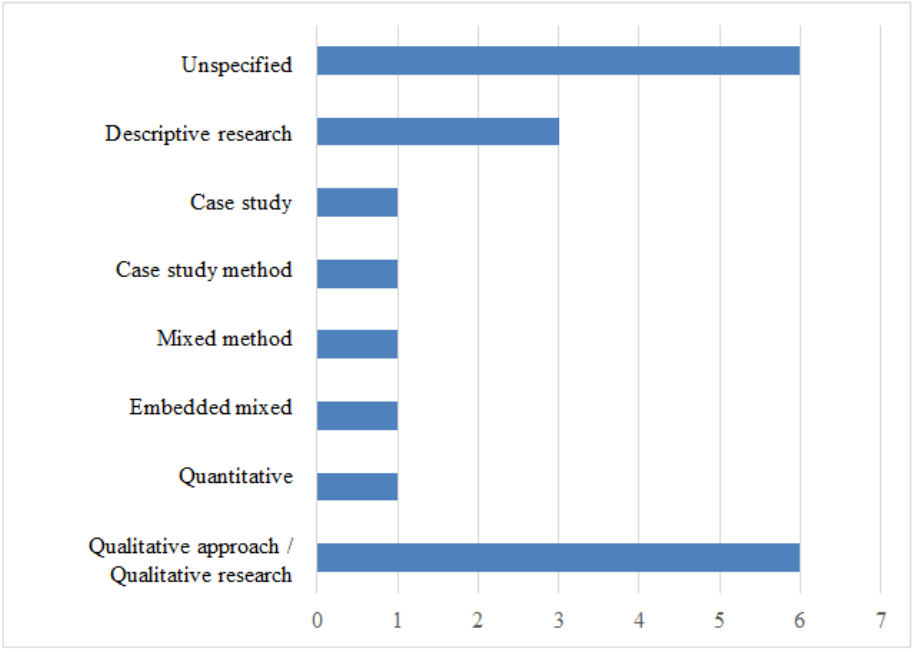

Figure 5. Distribution of the studies examined in the research according to research methods

As shown in Figure 5, six of the 20 studies specified the method as qualitative research, one as quantitative research, and another as mixed research. Six studies gave no information about methodology.

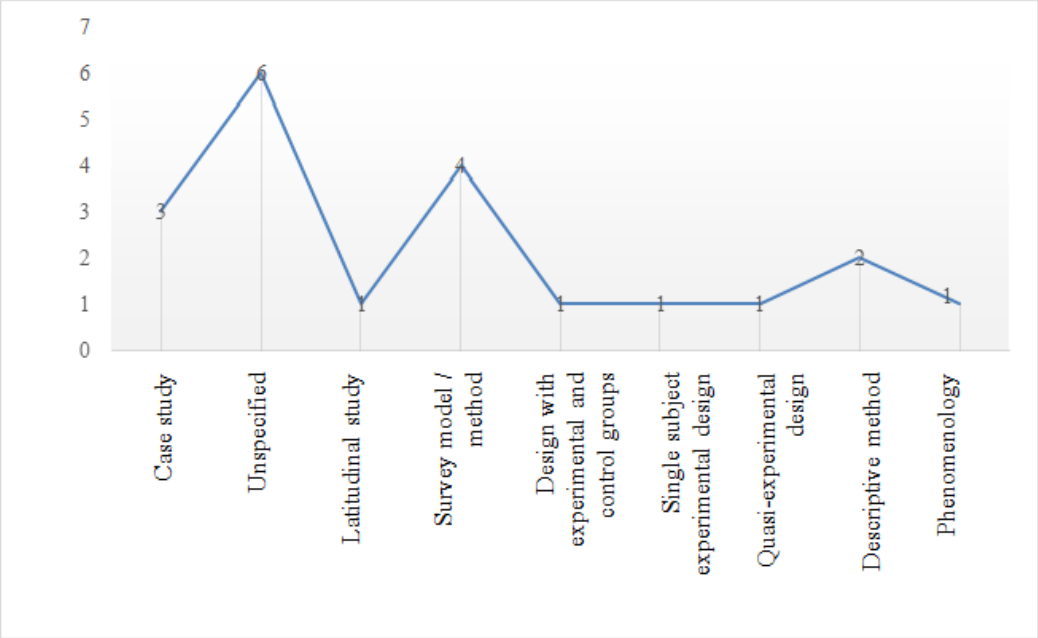

Figure 6. Distribution of the studies examined in the research according to research design

Figure 6 shows that the studies had frequently been designed in a survey model (f=4), case study (f=3), experimental design (f=3), and descriptive method (f=2).

Distribution of Participants in Studies on Preschool Astronomy Education

Figure 7 shows the distribution of the studies on preschool astronomy education according to the participants.

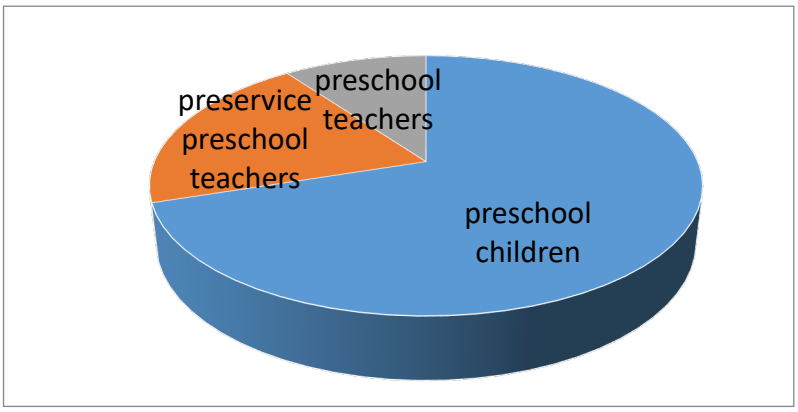

Figure 7. Distribution of participants in studies examined in the research

Figure 7 indicated that most of the studies had been conducted with preschool children (f=14). There were also studies conducted with preservice preschool teachers (f=4) and preschool teachers (f=2). Thus, it is clear that the studies have generally been carried out with preschool children, followed by the studies carried out with preservice teachers.

Information about the sample size in the studies examined in the research is shown in Table 3.

Table 3. Information on the sample size of the studies examined in the research

Author(s)	Sample size
Aksan & Çeliker (2017)	12
Ayvacı (2010)	15
Ayvacı, Bülbül, Özbek, & Ünal (2018)	113 (17 preschool)
Baysan & Aydoğan (2016)	743 (200 preschool)
Çetin, Yavuz, Tokgöz, & Güven (2012)	39
Doğru & Şeker (2012)	48
Güçhan Özgül, Akman, & Saçkes (2018)	56
Kaya (2018)	27

Author(s)	Sample size
Kurnaz, Kıldan, & Ahi (2013)	200
Türk (2018)	20
Aydın & Güney (2017)	74
İyibil (2010)	293
Kalkan, Ustabaş, & Kalkan (2007)	100
Sağlam Arslan & Durukan (2016)	293
Saçkes, Smith, & Trundle (2016)	29 (Turkish preschool children)
Saçkes & Korkmaz (2015)	20
Saçkes (2015)	46
Küçüközer & Bostan (2010)	52
Küçük & Laçin Şimşek (2017)	9
Saka (2018)	36

As shown in Table 3, 15 studies had been conducted with less than 100 people. This may be considered normal considering that the examined studies are mostly based on a qualitative paradigm.

Distribution of Studies on Preschool Astronomy Education According to Data Collection Tools

The distribution of studies on preschool astronomy education according to data collection tools is given in Figure 8.

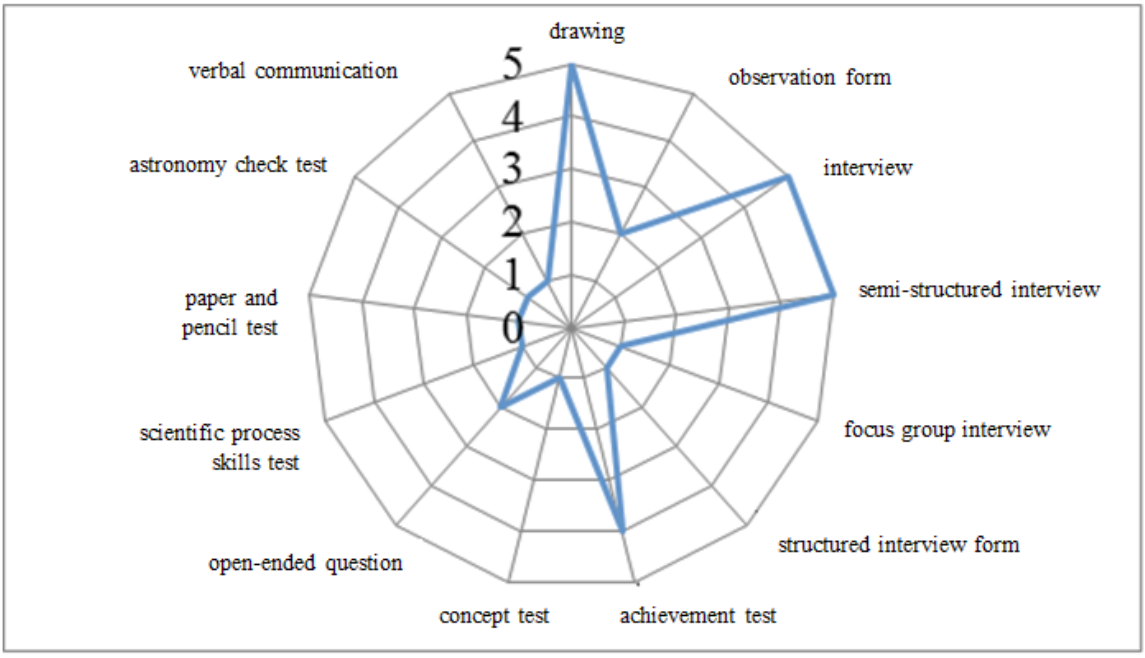

Figure 8. Distribution of the studies examined in the research according to data collection tools

Figure 8 indicated that the examined studies had employed various data collection tools: interview (f=12), drawing (f=5), achievement test (f=4), observation form (f=2), concept test (f=2), open-ended question form (f=2), astronomy control test (f=1), scientific process skills test (f=1), paper and pencil test (f=1), and verbal communication (f=1).

Distribution of Studies on Preschool Astronomy Education According to Data Analysis Method

The distribution of studies on preschool astronomy education according to the data analysis method is given in Figure 9.

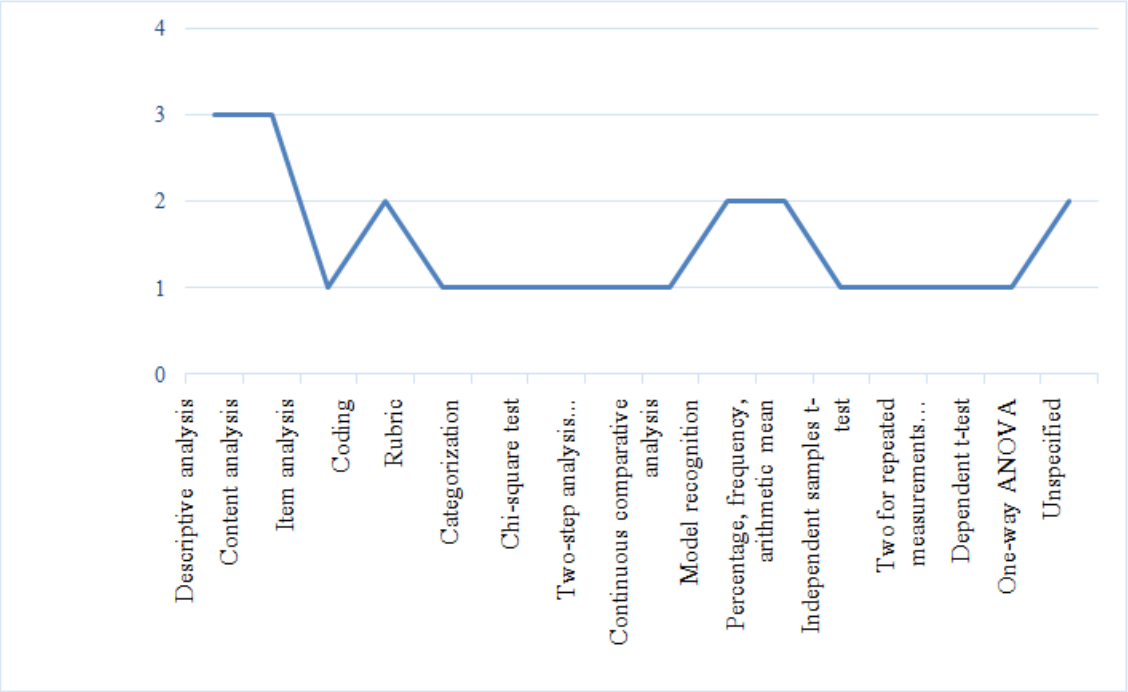

Figure 9. Distributions of data analysis methods used in studies examined in the research

Figure 9 shows that descriptive analysis and content analysis were the most frequently used analysis methods in the examined studies (f=3), followed by coding, model recognition, and percentage/frequency/arithmetic mean calculations (f=2). Other data analysis methods such as item analysis, rubric, chi-square test, and tests based on differences between means had been used in one study each.

Main Results Obtained From Studies on Preschool Astronomy Education

The main results obtained from the studies on preschool astronomy education are given in Table 4.

Table 4. Main results obtained from studies examined in the research

Category	Author(s)	Main Result(s)
Activity-Based Studies	Aksan & Çeliker (2017)	The combination of various teaching methods and techniques in the planned activity increased the interest, desire, and curiosity levels of the children and positively affects their active participation in the activity.
	Ayvacı (2010)	There was a positive relationship between the activities organized and the ability to gain scientific processes.
	Çetin, Yavuz, Tokgöz, & Güven (2012)	51.3% of the children stated that they first learned the concepts of space from their parents.
	Doğru & Şeker (2012)	Science / scientific activities were an effective technique in the acquisition of basic concepts related to the Earth, Sun, and Moon, as well as positively affect the development of existing concepts in children.
	Kaya (2018)	Some basic features of the Moon can be learned through activities organized according to the ages of 48-60 months old children.
	Aydın & Güney (2017)	There was a significant difference in favor of the science concepts achievement test post-test with the activities aimed at eliminating the participants' missing information.
Studies on Determining Mental Model	Ayvacı, Bülbül, Özbek, & Ünal (2018)	Concrete concepts made up the mental models of preschool students.
	Güçhan Özgül, Akman, & Saçkes (2018)	Findings regarding the formation of day and night showed that children mostly attribute these concepts and phenomena to the movements of the Sun, and a limited number of children associate these concepts with God.
	Kurnaz, Kıldan, & Ahi (2013)	The attributes of the child's drawings were basically divided into two categories, scientific and non-scientific. There was no significant difference between the gender of the children, the correct drawing of the entire Sun, Earth, and Moon, and other variables.
	İyibil (2010)	The preservice teachers could not explain the concepts adequately, the science and physics teacher candidates' level of understanding is better, and the mental models of these branches were more scientific.
	Sağlam Arslan & Durukan	None of the pre-service teachers was an ideal model for the astronomy concepts in

	(2016)	question, the most common model was not the appropriate model, the preservice teachers from different branches had similar mental models.
	Saçkes & Korkmaz (2015)	Most of the children had naive models of the shape of the world.
	Saçkes (2015)	More than half of the children had the naive model, and the distance model was also common.
Studies on Misconceptions / Alternative Ideas	Kalkan, Ustabaş, & Kalkan (2007)	Preservice teachers had persistent misconceptions.
	Saka (2018)	It has been observed that preschool teachers had alternative ideas for the concepts of Star, Planet Satellite, Earth, Sun, Moon, including definition, motion, brightness, structure, and shape elements.
Studies on Developing Measurement Tool	Baysan & Aydoğan (2016)	It was not a measurement tool in the age range of 5-10 to measure geographic concepts before, but it was developed with this study.
Studies on determining existing knowledge	Türk (2018)	The teachers found themselves partially competent in astronomy subjects. Most of the teachers did not find the astronomy activities in the preschool education program sufficient.
	Saçkes, Smith, & Trundle (2016)	Observational data of preschool students from the two countries showed many similarities. Although science concepts were more common in the US early childhood program, no performance difference has been detected between Turkish and US children.
	Küçüközer & Bostan (2010	Children had a wide variety of ideas about each concept, generally had naive ideas; students had learned these concepts from their families, daily life, and observations.
	Küçük & Laçin Şimşek (2017)	Children were curious about space and described it as emptiness. They stated that there were sun, moon, earth, stars, and planets in space, and the earth is round.

As shown in Table 4, the examined studies had reached some striking results. The studies on preschool teachers had revealed that the teachers considered themselves partially competent in astronomy subjects, regard the undergraduate curriculum inadequate in this respect, and had alternative ideas about astronomy subjects. The studies conducted with preservice teachers also reported similar results. They had determined that preservice teachers could not explain astronomy concepts adequately, had persistent misconceptions about these concepts. Also, they held inappropriate mental models. The results of the studies on preschool children, on the other hand, showed that children often have naive ideas about astronomy concepts. Lastly, the activities prepared as part of the examined studies for teaching astronomy to preschool children have always achieved their purpose and have been effective for children.

Recommendations Offered in the Studies on Astronomy in Preschool

Recommendations offered in studies on preschool astronomy education are shown in Table 5.

Table 5. Recommendations offered in studies examined in the research

Themes	Recommendations
Recommendations for teachers	Developing activities to improve children's scientific process skills
	Creating a rich interactive environment for children
	Giving more importance to creating science learning environments in the preschool period
Recommendations for preservice teachers	Creating a comfortable environment where they can explain what they know about science
	Making activities where they can complete their missing information about the subject
	Practical processing of science education lessons
Recommendations for researchers	Conducting studies with large samples
	Covering different astronomy topics
	Using different data collection tools and diversifying data sources
Recommendations for curriculum developers	The addition of Turkey Geography and Geography classes for undergraduate programs
	Increasing the number of courses related to science education in the undergraduate program

As shown in Table 5, recommendations made in the analyzed studies were grouped under four themes: recommendations for teachers, recommendations for preservice teachers, recommendations for researchers, and recommendations for

curriculum developers. The recommendations for teachers focused on conducting activities and setting an environment for children to learn science in general and astronomy in particular. As to the recommendations for preservice teachers, the examined studies stated that science teaching should be done in a comfortable learning environment and in a practical-oriented way to eliminate their deficiencies. Recommendations for researchers can be listed as increasing the sample size and diversifying the addressed astronomy subjects/concepts and data collection sources. Finally, the examined studies recommend that curriculum developers include courses related to astronomy and/or increase the number of existing courses in the undergraduate curriculum.

CONCLUSION AND DISCUSSION

The present study aimed to make a thematic analysis of the articles and theses about preschool astronomy education published in Turkey. In this context, 20 studies in the national literature were reviewed. The review was on the themes of publication year, publication type, indexing, keywords, the addressed astronomy subject/concept, purpose, province of implementation, research method and design, the number and group of participants, data collection tool, data analysis method, results, and recommendations.

The findings of the present study showed that the studies on preschool astronomy education were mostly in the form of articles, and there were few postgraduate studies with no doctoral thesis. Similarly, Ezberci Çevik & Kurnaz (2016), conducted a thematic analysis of the studies on stars published in Turkey, and determined few master thesis studies and no doctoral thesis on the subject. They found that the first study on the subject was conducted in 2007 as an article, and relatively more studies were carried out after 2015. The first master's study on preschool astronomy education was conducted in 2010. By examining the theses on astronomy education, Doğru, Satar, & Çelik (2019) found that the number of theses published on astronomy education gained momentum as of 2012. This finding is consistent with Ezberci Çevik and Kurnaz (2016) work reporting that studies on stars increased after 2010. In the study conducted by Kurnaz et al. (2016) to make a thematic analysis of national articles on astronomy education, the number of studies on the subject increased between 2011 and 2015. Özpir Mantaş (2018) also made a systematic analysis of the studies on preschool science education in Turkey and detected that the first study on preschool science education was conducted in 2005, followed by an increase in research on this subject in 2006, 2009, and 2010, but, overall, there was no stability. Özen Uyar & Ormancı (2016) reported that studies on preschool science education increased as of 2012. Considering these studies, it can be stated that astronomy education studies have lately gained popularity as a result of the researchers' inclination towards preschool science education studies in recent years.

As to indexing, the present study found that nine of the examined articles have been published in journals indexed by ULAKBIM, and four in journals indexed by prominent international databases (ERIC and SSCI). This finding is also consistent with those of the relevant studies in the literature (Kurnaz, Bozdemir, Altunoğlu & Ezberci Çevik, 2016; Özen Uyar & Ormancı, 2016).

When the distribution of the studies on preschool astronomy education based on keywords was examined, the keywords preschool, mental models, and astronomy concepts were seen to be frequently used. This reflects that the examined studies mainly focus on mental models and astronomy concepts.

The examined studies had frequently addressed the Sun-Earth-Moon, basic astronomy concepts, space, and day and night. Since the focus of the study is astronomy for preschool children, it is quite natural that such astronomy subjects had been addressed in line with the student level. This is because modern astronomy topics such as the Big Bang and the expansion of the universe are not suitable for preschool studies. similar to the findings of the present study, the articles on astronomy education stated that focus was mostly on basic astronomy concepts, the concepts of solar system and space (Kurnaz, Bozdemir, Altunoğlu, & Ezberci Çevik, 2016).

The study also determined that as the findings of the analysis of keywords indicated, the studies on the subject had been carried out to determine the mental models, check conceptual knowledge, detect and eliminate misconceptions, and test the effect of astronomical activities. Considering that the main purpose of determining the mental models related to astronomy concepts is to determine the misconceptions, it can be stated that the studies examined in the present study mainly focused on astronomy concepts. Teaching a concept related to a subject and revealing and eliminating misconceptions while doing this is the basis of teaching (Ayvacı & Sezer, 2018). Based on this, it can be said that astronomy education studies for preschool children are at the beginning level in Turkey. Similarly, Satar and Çelik (2019) concluded that most studied subjects in national (i.e., Turkish) theses on astronomy education are concepts and concept maps. The same study also reports that the foreign (i.e., non-Turkish) theses mostly focus on student motivation. These results are in accordance with the findings of the thematic analysis study carried out by Ayvacı and Sezer (2018) and Kurnaz et al. (2016). The research trend in preschool science education studies is quite different from that in astronomy education studies. The trend of these studies is for teacher training (Özpir Mantaş, 2018). In the present study, the studies on the misconceptions about astronomy were followed by the intervention studies to determine the effects of the astronomy activities on students. These studies point to the need to determine the methods and techniques for how to make astronomy education, which has started to attract attention in Turkey in recent years, stronger.

The examined studies had mostly been carried out in Trabzon and Balıkesir provinces. On a regional scale, the studies had generally been conducted in provinces in the Black Sea Region of Turkey (Samsun and Trabzon). Studies on stars had mostly been conducted in Ankara, Trabzon, Balıkesir, and Istanbul (Ezberci Çevik & Kurnaz, 2016). Based on this, one may think that there are researchers studying astronomy education in Trabzon and Balıkesir provinces.

The study also found that research designs were not clearly stated in the methodology sections of some quantitative studies and many qualitative studies, in which general explanations were made about how the studies were carried out, and research designs were not specified in many studies. Ezberci Çevik & Kurnaz (2016) and Kurnaz et al. (2016) also emphasized this, mentioning the studies in which methodology was not explained. Among the studies specifying their methodology, the studies employing the qualitative method outnumbered, followed by the studies involving descriptive survey and experimental design. Doğru, Satar, and Çelik (2019), on the other hand, determined that 40.6% of the national thesis studies on astronomy education used an experimental design and that experimental design was mostly preferred in foreign theses too. The most preferred designs in national articles on astronomy education are quasi-experimental and case study designs (Kurnaz et al., 2016). While the case study is most preferred in national studies on stars (Ezberci Çevik, & Kurnaz, 2016), the quantitative method is the most preferred in preschool science education studies (Özpir Mantaş, 2018). The scarcity of mixed-method studies involving the combined application of qualitative and quantitative paradigms in the examined studies can be considered as a methodological deficiency in the field.

As more than half of the examined studies were seen to be carried out with preschool children, it can be said that such studies will contribute to the evaluation and improvement of preschool astronomy education. The examined studies aimed to determine conceptual learning and mental models may have led researchers to work with preschool students. Similarly, the analysis of the studies on astronomy education revealed that they were mostly conducted with middle school students (Doğru, Satar & Çelik, 2019; Kurnaz et al., 2016). Unlike these results, Ayvacı & Sezer (2018) found that the theses and articles on astronomy education were mostly conducted on science teachers, followed by seventh-grade students. This difference may be because their analysis involved articles in addition to the national theses. It is reported that national preschool science education studies mostly take preschool teachers as samples (Özpir Mantaş, 2018).

Ten different data collection tools had been used in the examined studies. Among these, the most frequently used ones wereinterview, drawing, and achievement tests. As a result of the thematic analysis of the thesis studies on astronomy education, such studies had mostly used open-ended question forms and multiple-choice tests for data collection (Ayvaci & Sezer, 2018). The distribution of the articles on the subject by data collection tool indicated that the studies on stars had mostly employed multiple-choice achievement tests (Ezberci Çevik & Kurnaz, 2016). Considering the high number of studies involving preschool children among the examined studies, the illiteracy of these children may have led the researchers to use interviews and drawing as data collection tools. As a result of this situation, the most frequently used data analysis methods in the studies had been descriptive analysis and content analysis. Ayvacı & Sezer (2018) also obtained similar findings. Advanced statistical methods such as Structural Equation Modeling (SEM), MANOVA, and regression had not been preferred inquantitative methodology studies.

A holistic view of the main results of the examined studies showed that preservice and in-service preschool teachers hade a lack of knowledge and misconceptions about astronomy subjects, and thus, their mental models were also inappropriate. This may be due to the abstract structure of the subject of astronomy and incorrect associations in daily life and maybe fed by the inadequacy of astronomy education. The thematic study by Ayvacı & Sezer (2018) also found that most teachers had misconceptions about astronomy subjects. In the thematic study carried out specifically for stars, the participants were seen to have misconceptions and imperfect knowledge about stars (Ezberci Çevik, & Kurnaz, 2016). A common result of the studies conducted to determine preschool children's mental models is that the children have naive ideas about the subject. In the intervention studies testing their effect, astronomical activities had been found to have a positive effect. Ayvacı & Sezer (2018) also reached a parallel result.

Recommendations offered in the examined studies parallel with these results are as follows: increasing the number of courses related to science/astronomy in the undergraduate curriculum and conducting practice-oriented teaching aimed at eliminating preservice teachers' imperfect knowledge. Recommendations for future studies include enriching the astronomy subjects addressed, enriching data sources, and working with larger samples. The thematic study carried out by Ayvacı & Sezer (2018) found that the recommendations of the examined studies fell under the themes of better training of teachers on astronomy and providing students with strong learning environments.

RECOMMENDATIONS

1- National studies on preschool astronomy are limited. Based on this, it may be suggested to raise the number of studies on the subject. Increasing studies on the subject will enrich the literature and provide important data for educators. Moreover, increasing the qualitative and quantitative studies in the field may lead to a rise in the importance given to astronomy for preschool children within educational policies.

2- Postgraduate studies on preschool astronomy education are few and only include a master thesis. Therefore, it may be suggested to increase postgraduate studies, especially doctoral dissertations. Doctoral studies will definitely be of great value as they provide the field with unique knowledge.

3- Four of the studies on preschool astronomy education had been published in journals included in prominent indexes (ERIC and SSCI) on an international scale, while nine are indexed by ULAKBIM, holding a significant position in the national field. Hence, future studies should also be of adequate quality to be included in prominent indexes.

4- The studies on preschool astronomy, which are already few, have not spread across Turkey and had been conducted in just some provinces. For this reason, studies can be carried out in other provinces, and their results can be examined comparatively.

5- The studies have mostly preferred preschool children as a sample. This may contribute to the evaluation and improvement of preschool astronomy education. Including other stakeholders in future studies along with preschool children and even diversifying data sources in each study, if possible, will both strengthen the studies and enrich the literature by allowing the subject to be viewed from different angles.

6- Most of the examined studies do not provide a thorough explanation of research design as part of the methodology. A detailed explanation of the methodology should be considered to ensure validity in future studies.

7- Research designs are not clearly stated in the methodology sections of some quantitative studies and many qualitative studies; general explanations are made about how the studies were carried out, and research designs are not specified in many studies.

8- In the context of qualitative data analysis, it is desirable to use content analysis along with descriptive analysis. However, it may be considered as a deficiency that the quantitative studies using survey and experimental designs have not used advanced statistical methods such as regression. Thus, it can be recommended to use strong statistical methods in future studies.

Researchers' Contribution Rate

The study was conducted and reported with equal collaboration of the researchers. Ebru EZBERCİ ÇEVİK and Nagihan TANIK ÖNAL agreed on the research problem together. Ebru EZBERCİ ÇEVİK contributed to the study in the sections of the research model, data collection, data analysis and explanation of the findings. Nagihan TANIK ÖNAL contributed to the conceptual framework, data collection, data analysis and presentation of findings sections in the study. Then the authors discussed the results and contributed to the final manuscript.

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| Research Article / Araştırma Makalesi |

Analysis of School Principals' Views on Parent Involvement in Education

Okul Müdürlerinin Ebeveynlerin Eğitime Katılımı Konusundaki Görüşlerinin Analizi

Hasan TABAK[1]

Keywords

Participation in education, parental involvement, parental involvement models, school principals' views

Anahtar Kelimeler

Eğitime katılım, ebeveyn katılımı, ebeveyn katılım modelleri, okul müdürü görüşleri.

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Abstract

Purpose: This study aimed to reveal the views and perspectives of school principals about the scope of parent involvement in education, how it can be encouraged, and the positive and negative outcomes of the involvement.

Design/Methodology/Approach: This is a qualitative study using a phenomenological design. The study group was formed according to the maximum variety sampling method falling within the purposive sampling classification. The study group created using the maximum variety sampling method, which included school principals working in Ankara, Istanbul, Yozgat, Zonguldak, and Van provinces, were administered a Parent Involvement Interview Form, which was developed by the researcher. The data obtained were analyzed using content and descriptive analysis.

Findings: The findings of the study indicated that school principals defined parent involvement as supporting school-parent association activities that cover procedures and works for establishing, executing, and accomplishing school-parent association bureaucratically. The opinions of school principals in the context of parent involvement models, on the other hand, are observed to center on the consumer and delivery models.

Highlights: Consequently, although parent involvement is considered like the help with homework given, it can be said to be a multivariate and comprehensive issue. Therefore, some recommendations have been made based on raising awareness that children's education does not only occur in learning environments such as schools or classrooms, but it also continues in the family and out of school environment.

Öz

Çalışmanın amacı: Araştırmada okul müdürlerinin eğitimde aile katılımının kapsamı, ailelerin eğitime katılımına nasıl teşvik edilebileceği, eğitime aile katılımının olumlu ve olumsuz sonuçları hakkında görüş ve bakış açılarını ortaya koymak amaçlanmıştır.

Materyal ve Yöntem: araştırma olgubilim deseninde nitel bir çalışmadır. Çalışma grubu amaçlı örnekleme sınıflamasında yer alan maksimum çeşitlilik örnekleme yöntemine göre oluşturulmuştur. Bu doğrultuda Ankara, İstanbul, Yozgat, Zonguldak ve Van illerinde görev yapan okul müdürlerine Aile Katılımı Görüşme Formu araştırmacı tarafından geliştirilerek uygulanmıştır. Elde edilen veriler içerik ve betimsel analiz yöntemi kullanılarak çözümlenmiştir.

Bulgular: Araştırma bulgularında, okul müdürlerinin aile katılımını bürokratik olarak okul-aile birliğini kurma, yürütme ve sonuca götürme iş ve işlemlerini kapsayan okul-aile birliği faaliyetlerine destek olma olarak tanımladıkları sonucuna ulaşılmıştır. Okul müdürlerinin aile katılım modelleri bağlamında görüşleri ise tüketici ve iletim modelinde yoğunlaştığı dikkati çekmektedir.

Önemli Vurgular: Sonuç olarak her ne kadar aile katılımı çocuklara verilen ödevlere yardım etme gibi düşünülse de çok değişkenli ve kapsamlı bir konu olduğu söylenebilir. Bu nedenle çocuklarının eğitiminin sadece okul veya sınıf gibi öğrenme ortamlarında değil aynı zamanda çevre ve ailede de devam ettiği farkındalığının oluşturulması temelinde önerilerde bulunulmuştur.

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INTRODUCTION

As is known, education is a process that is dynamic and open to external influences. Making an epistemological explanation alone makes it often difficult to understand. Thus, it is necessary to refer to different disciplines and phenomena to understand and define them. Also, education cannot be explained by a single actor or variable in itself beyond an interdisciplinary approach. In this context, three basic dimensions of education, namely, school, environment, and family, can be mentioned. Families generally provide social, cultural, and emotional support that students need to do well at school. Education refers to the critical period in a student's life. Therefore, schools and families should collaborate (DePlanty, Coulter-Kern, & Duchane, 2007). This relationship is expected to occur reciprocally, not one-sided, that reinforces what is learned at school in the family and vice versa. Besides, the earlier a parent's involvement in a child's education begins, the stronger its effects on the educational process are (Kutlu Abu & Kayar, 2020). Hence, experts often point out the critical role of support provided in the home environment in determining children's school success. Therefore, strong parental involvement components come to the fore in early childhood education (Cotton & Wikelund, 1989). Schools expect parents to actively participate in the educational activities of the students in all respects. The literature indicates that student variables, such as status of doing homework, perceived personal competence, and self-regulation strategies, are positively affected by the extent of parental involvement in education (Hoover-Dempsey, Battiato, Walker, Reed, DeJong, & Jones, 2001). Due to these justifications, we can recommend that factors affecting parents' involvement in education should be addressed first, and then models that will allow their involvement in education should be implemented.

Factors Affecting Parent Involvement

Parent involvement is related to the variables, such as student success, family income, psychological status of parents, willingness to communicate with the school and the teacher, and wondering about the progress of the education of the student (Tabak, 2020). More fundamentally, the expectations of the family from education are shaped basically by the positive and valuable experiences during their formal education (Fan, 2001). According to teachers' views, parent involvement in school affects the social and cognitive development expected of the child depending on the characteristics of the child and the family (Barnard, 2004). One of the leading reasons why parents are unable to be involved in school is their working life. Most parents state that the time they can devote to the child usually coincides with the time they need to rest: the time out of working hours. Hence, the difficulty of taking care of the child in the period devoted to rest, which is their personal needs, manifests itself. This situation becomes part of the complex social and economic picture of the issue of sparing time (Harris & Goodall, 2008).

One of the most important predictors of parents' family structure and school involvement is communication and the direction of communication. In general, the presence of two parents will facilitate children's intellectual growth as a result of a) receiving help with homework, b) getting emotional support when necessary, c) having a sense of family stability that facilitates showing good performance academically, and d) interaction with close adults (Jeynes, 2011). For this reason, parent involvement does not only mean helping children with their homework. Quality time spent with the family contributes specifically to the personality and psychological development of the child. According to the results of a meta-analysis obtained from studies, parental involvement emphasizes developing well-designed approaches to increase participation in school invitations (Anderson & Minke, 2007; Hoover-Dempsey, Battiato, Walker, Reed, DeJong, & Jones, 2001). In this respect, it can be said that beyond structuring the child's time outside the school environment, it could be more appropriate to know the characteristics of the child and parental structure involvement according to these characteristics.

One of the factors that affect family involvement which is overlooked, is the belief and attitude of parents. It can be said that families who know the importance of spending time with the child develop positive beliefs. The developed positive belief contributes to the child's success and other characteristics (Hornby & Lafaele, 2011). Parent involvement based on the parents and the child's expectations of achievement highlights the teacher's leadership and psychological process management (Epstein, 1986). Therefore, teacher-parent meetings through various organizations can increase awareness in the process of parent involvement in education. Parent involvement programs are stronger in self-sufficient classes. Since the classes that make their general organizations themselves determine the number of students, it can affect the frequency of students' communication with their parents. Simultaneously, the low number of students provides quality communication opportunities by establishing frequent and various contact possibilities with parents (Epstein & Dauber, 1991).

Parent Involvement Models

There are traditional approaches to parent involvement that tend to be culturally and socially inclusive. Traditional approaches focus on middle and upper-class values and behaviors about what parents can do for school, such as homework support, helping school expectations, and volunteering (Latunde, 2016). A common approach that some teachers find helpful is to involve parents in learning activities with their children at home. The main feature of parents' involvement in learning activities refers to the time allocated to educational activities that parents and children spend together at home and the quality of this time. Accordingly, when educational research on family involvement is examined, it is possible to see that various models have been introduced over time (see Figure 1 / Becker & Epstein, 1982; Cunningham & Davis, 1985; Swap, 1993; Hornby, 2000). When the literature is examined, the parent as the first role model draws attention. This model is based on the idea that the parent is a natural teacher

with various skills and acts as a role model. In addition to those taught at school, the child can also acquire many skills at home. They can imitate parents or adopt these skills by distinguishing between what kind of parental skills are important, interesting, or fun (Becker & Epstein, 1982). When considered in a basic sense, the parent model as a role model can be interpreted as a combination of education concepts that starts in the family and is a role model in education. As can be seen in Figure 1, when parent involvement models are examined, it can be said that they have spearheaded the emergence of these models in the historical process.

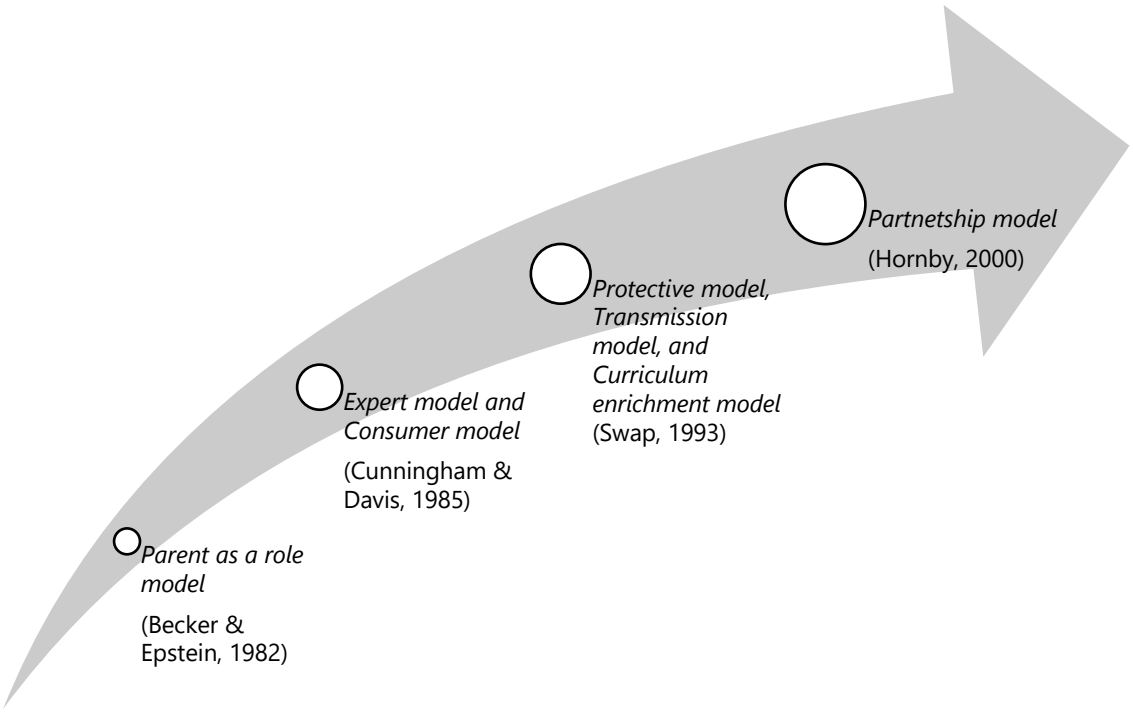

Figure 1. Chronological category of family involvement models

The development of parent involvement models, which started with the parent model as a role model in the early 1980s, continued with the expert model and consumer model in the mid-1980s, the protective model, the transmission model, and the curriculum enrichment model in the early 1990s, and the partnership model in 2000. The foundations of approaches that increase family involvement in education are based on parent, student, and teacher relationships. In this context, the basic characteristics of family involvement models, namely, (1) the expert model, (2) the consumer model, (3) the protective model, (4) the transmission model, (5) the curriculum enrichment model, and (6) the partnership model, can be examined in the following way: (1) The expert model: While teachers have control over decisions, the role of parents is to receive information and instructions about their children. The biggest problem with this approach is that it encourages parents to be obedient and dependent on teachers (Cunningham & Davis, 1985). (2) The consumer model: Parents are considered consumers of educational services. While the teacher acts as a counselor, the parent decides what action to take. While the parent has control over the decision-making process, the teacher's role is to provide them with relevant information and a range of options (Cunningham & Davis, 1985). (3) The protective model: In the model that avoids conflict by separating the roles of teachers and parents, the education of children is carried out by teachers at school. The role of parents is to ensure that children get to school on time with the right equipment (Swap, 1993). (4) The transmission model: Teachers see themselves as the main source of expertise for children. It is the type of model in which teachers inform parents that they should take an intermediate role in being a model for children (Swap, 1993). (5) The curriculum enrichment model: It involves expanding the school curriculum by including the contributions of parents. It is based on the assumption of increasing interaction of parents with teachers in terms of curriculum content, process, and material application (Swap, 1993). (6) The partnership model: It is a model in which teachers are seen as experts in education and parents as experts in understanding and knowing the child. The relationship between teachers and parents can be defined as a partnership that includes sharing expertise and control to ensure optimal education for all children. Parents and teachers add different strengths to their relationships and thus increase the potential of a partnership (Hornby, 2000). From the historical perspective, models have progressed from the separation of the role of parents and teachers in the early days to the cooperation of the family and the school, and even the teachers.

The Importance and Purpose of the Research

It is noteworthy that majority of studies on family involvement are on the preschool field and preschool teachers (Bayraktar, Güven & Temel, 2016; Çakmak, 2010; Şahin & Özbey, 2009), which is followed by parent involvement in private education (Gül, 2007; Keçeli-Kaysılı, 2008; Sucuoğlu, 1996). On the other hand, studies on parent involvement in terms of school management have been carried out under sub-headings, such as school-parent associations (Akbaşlı & Kavak, 2008; Özbaş & Badavan, 2010; Yıldırım & Dönmez, 2008) and student-parent-school contract (Ereş, 2010). There are also studies on family, student, teacher, and administrator views (Erdoğan & Demirkasımoğlu, 2010; Lindberg, 2014; Ünal, Yıldırım, & Çelik, 2010; Şad & Gürbüztürk, 2013) regarding the involvement of families in the education process. On the other hand, school principals are primarily responsible for the bureaucratic order and hierarchy of schools (Sönmez, Güçlü, Şahin, & Tabak, 2016). Therefore, considering that schools are the smallest building unit of education at a micro level, school principals are the primary responsible person for the decision-making of the applications to be carried out in schools. Thus, it is important to reveal and painstakingly examine the opinions of school principals or school administrations on the involvement of parents, who are a stakeholder of education. When the literature is examined, considering that no studies on the opinions of school principals on the involvement of parents in education have been carried out before and teachers have a role in encouraging parent involvement in education, this study is thought to provide bureaucratic convenience, as well as filling the gap in the field. Beyond filling the research gap in the field, it is thought that there is a need to reveal what can be done in practice by determining the existing perceptions of school principals regarding family involvement in education. In this context, the main importance of the study is that it reveals the knowledge of school administrations about the awareness and functions of family involvement in education in general and in school and class. The study aimed to reveal the views and perspectives of school principals about the scope of family involvement in education, how it can be encouraged, its positive and negative consequences in terms of (1) perceived parent involvement, (2) views in the context of parent involvement models, and (3) the necessity of family involvement.

METHOD

Research Model

This research, which aimed to evaluate the scope of family involvement, how it can be encouraged, and its positive and negative outcomes according to the opinions of school principals, was carried out as a qualitative study using a phenomenological design. One of the qualitative research methods' main concerns of phenomenological design research is not generalizing but obtaining in-depth findings within the scope of variables (Marton, 1988). Therefore, qualitative research can be defined as a research process that reveals perceptions and phenomena realistically and holistically in the natural environment and can be designed with observation and interview data collection methods (Yıldırım & Şimşek, 2008). In phenomenological research, data sources are individuals or groups who experience and can express or reflect the phenomenon that the research focuses on (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2012).

Participants

The study group was selected according to the maximum variation sampling method that falls in the purposive sampling method classification. Purposive sampling has emerged within the tradition of qualitative research and involves several sampling methods. The maximum variation sampling handles large-scale phenomena and significant common patterns to determine differences (Yıldırım & Şimşek, 2008). In this study, participants' sex constitutes the main similarity variable. Also, the selection of schools with a size not exceeding 30 students per teacher represents another similar situation in the study group. The reason sex and the number of students per teacher considered the basic similarity variables, is that the majority of school principals are male, and the optimal number of students per teacher in Turkey coincides with the properties of the study group. The demographic characteristics of the participants in the study are given in Table 1. Accordingly, the study group consists of school principals from Ankara, Istanbul, Yozgat, Zonguldak, and Van provinces. Both the regional diversity at the national level and the populations of the provinces were taken into account in providing the provincial diversity of the study group. The maximum variation sampling aims to provide diversity and obtain in-depth data. Diversity in the study sample was increased in terms of both provinces and education levels. The majority of the principals who participated in the study were from primary and secondary school levels except for three. All the principals were male, and their work experience varied between two and 15 years as a principal and one and 24 years as a teacher. As a result, 13 school principals participated in the study.

Table 1. Demographic characteristics of the participants

	Sex	Province	Level of education	Seniority as a principal (year)	Seniority as a teacher (year)	Number of students	Number of teachers	Number of students per teacher
Y1	Male	Ankara	Elementary school	15	15	1210	54	22
Y2	Male	Yozgat	Elementary school	14	1	355	21	16

	Sex	Province	Level of education	Seniority as a principal (year)	Seniority as a teacher (year)	Number of students	Number of teachers	Number of students per teacher
Y3	Male	Zonguldak	Elementary school	3	11	430	20	21
Y4	Male	Ankara	Middle school	2	14	950	36	26
Y5	Male	Ankara	Middle school	4	12	940	38	24
Y6	Male	Ankara	Elementary school	11	5	390	30	13
Y7	Male	Van	Primary school	3	3	280	17	16
Y8	Male	Ankara	Middle school	3	11	384	30	12
Y9	Male	İstanbul	Elementary school	3	8	480	27	17
Y10	Male	Istanbul	Primary school	5	14	1040	44	23
Y11	Male	Van	Middle school	5	11	330	25	13
Y12	Male	Istanbul	Primary school	9	21	1150	51	22
Y13	Male	Yozgat	Middle school	15	24	260	18	14

The Data Collection Tool and Process

In the study, a semi-structured Parent Involvement Interview Form for School Administrators (Appendix 1) was developed by the researcher, and it was administered to school principals to collect data. Some basic steps were followed in the development process of the semi-structured interview form. First of all, a pool that involved 10 open-ended questions regarding parent involvement was created. The items in the pool aimed to question and collect data about the scope of parent involvement in education, ways of encouraging parent involvement in education, practices that support parent involvement, and the positive and negative aspects of parent involvement in education. The pool questions were submitted to three experts in the field: measurement and evaluation and one language expert. According to the experts' feedback, it was found that the interview form could have five questions. A form's trial, which was finalized according to the views of the experts, was conducted with a school principal who was not in the study group. As a result of the opinions of the field experts and the findings of the pilot administration of the form, it was decided that instead of direct questions, questions could be based on a sample school profile and that two questions could be combined to make a probe question. Accordingly, the interview form was made up of four questions and two probe questions in its final form.

Learning is not a phenomenon that can take place only at school, but a phenomenon with many variables, including family. A qualitative research process was followed to examine this phenomenon in depth. When qualitative research methods are examined, it can be seen that interviews have an important place (Marton, 1988; Yıldırım & Şimşek, 2008). An Interview allows collecting in-depth data about a phenomenon, selecting the sample to be studied both as a group and individually, and the possibility to test the hypotheses (Cohen, Manion, & Morrison, 2007). Special care was taken to determine collecting the data by considering the school principals' workloads. Accordingly, the interviews were held at the most convenient times by making necessary appointments. The interviews were held online in the first half of 2019, and the duration of the interviews varied from 22 to 34 minutes. School principals did not allow voice recording, so the content of the interview was written down by the researcher. The interview text was reviewed by the researcher, and spelling errors were corrected.

Data Analysis Procedures

The data obtained in line with the purpose of the study were analyzed using the content analysis method, and the descriptive analysis of the analyzed data showed the themes that the participants concentrated on. While content analysis is based on the classification of similar and related concepts and phenomena, the descriptive analysis provides themes and codes and reveals their frequency in the opinions of the participants (Yıldırım & Şimşek, 2008). Before analyzing the data, the raw data obtained from the interview forms were read, and the meaning integrity of the conversations was reviewed. At the end of the basic reading, theoretically related concepts were elicited. In this way, the themes and codes were determined and organized. Besides, data were theoretically analyzed to make a parent involvement classification in terms of protective model, curriculum enrichment model, transmission model (Swap, 1993), expert model, consumer model (Cunningham & Davis, 1985), and partnership model (Hornby, 2000). Finally, in the analysis of school principals' views on the necessity of parent involvement, the advantages and disadvantages of parent involvement were separately questioned and analyzed. Since some of the school principals stated that parent involvement had both advantages and disadvantages, both views were reflected in the analysis.

To increase the validity and reliability in the analysis of the obtained data, special care was taken first to ensure the data were free from errors. The data text was read over and over again and submitted to the approval of the participants. In addition, three

independent field experts, including the researcher, were asked to create themes to achieve internal consistency in the research. In this way, the consensus of independent field experts was calculated, and the theme reliability that emerged in the data analysis of the research was achieved (Miles & Huberman, 1994). The level of consensus was examined by comparing the themes created by the field experts with those created by the researcher. The consistency correlation of the opinions was found to have a high similarity level, with a correlation of .85 between expert one and expert two, .79 between expert one and expert three, and .89 between expert two and expert three. In this way, the researcher achieved cross-checking with the consistency of findings obtained from the experts and increased the reliability in creating themes by preventing possible systematic errors.

INTERVIEW FINDINGS

Under the findings section, the analysis of school principals' perceived parent involvement, their views in the context of parent involvement models, and their views on the necessity of parent involvement are presented.

Perceived parent involvement in education obtained from the interviews with school principals within the scope of the research is given in Table 2.

Table 2.Analysis of school principals' perceived parent involvement

Theme	Participants expressing opinion	*n*
Supporting parent-teacher association activities	Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7, Y_8, Y_9, Y_{10}, Y_{11}, Y_{12}, Y_{13}	13
Organizing social activities	Y_3, Y_4, Y_6, Y_7, Y_8, Y_{10}, Y_{11}, Y_{12}, Y_{13}	9
Taking part in various commissions established in schools	Y_1, Y_3, Y_5, Y_6, Y_7, Y_{11}, Y_{12}, Y_{13}	8
Contributing financially and morally to the development of schools	Y_1, Y_2, Y_5, Y_6, Y_7, Y_{10}, Y_{11}, Y_{13}	8
Getting to know the parents of the teacher and guiding the students	Y_1, Y_8, Y_{12}	3
Conscious parents' cooperation with the school administration	Y_3, Y_5, Y_8	3

The analysis of the school principals' perceptions of parent involvement indicated that their views were mainly under the supporting parent-teacher association activities theme (n = 13). School principals stated that they regarded parent involvement more bureaucratically as establishing and operating parent-teacher association and realizing its objectives. For example, the school principal coded as Y3 defined it as follows: "To contribute to the development of schools financially and morally. In addition to organizing activities with teachers and students, it can be defined as taking part in the management of the parent-teacher association and various commissions established in schools." Also, the following themes were elicited from the views of the participants: organizing social activities (n = 9), taking part in various commissions established in schools (n = 8), and contributing financially and morally to the development of schools (n = 8). The school principal's view is coded as Y3, "education is based on the balance of these three legs: school, student, and parent. The strong communication between these legs strengthens the educational environment. Family/parent involvement should be in line with specific goals that increase students' commitment to the school. Parents should be present in all class activities and excursions. "Parents should organize some activities" refers to the following themes: getting to know the parents of the teacher and guiding the students (n=3) and conscious parents' cooperation with the school administration (n = 3). In addition, the featured views of school principals based on the themes are given below:

Getting to know the parents of the teacher and guiding the students

Y1: Family involvement should aim at increasing students' success, ensuring that children gain positive behaviors based on teacher-parent cooperation, guiding students by getting to know the parents of the teacher, revealing students' skills, and acting together.

Contributing financially and morally to the development of schools

Y2: Parents who have a particular job can be invited to lessons as exemplary figures. Also, parents are expected to take a positive approach to school-related events. Conscious parents can hold meetings to prevent negative behaviors in cooperation with the school administration.

Supporting parent-teacher association activities

Y4: I think parents or families should be actively involved in school activities during the education life of their children.

Organizing social activities

Y7: They can make financial contributions through the parent-teacher association. Also, they can take responsibility for arranging social activities, such as going to the cinema and theater, which students can do with their parents.

Cooperation of conscious parents with the school administration

Y8: The biggest problem in primary schools is parents' unconscious involvement in school. Parents bring their children to school every day, and when they come to school, they want to go into the classrooms. This is the problem seen in almost all primary schools. Parents' presence in the classroom poses a security risk for students. We try to prevent parents from entering school as much as possible. In this case, parents think that they cannot be involved in the education. This is the point that is misunderstood. As the school administration, we ask parents to help school staff, students, and teachers by coming to the school when necessary. However, they must do all of these under the permission and supervision of the school administration.

Taking part in various commissions established in schools

Y12: Getting involved in education by taking part in the commission organizing the training programs for parents or families at school; expressing their views in decisions made about the school; meeting with the teacher to help their child to adapt to the school culture.

Table 3 presents the comparison of the school principals' views with parent involvement models.

Table 3. Analysis of school principals' views in the context of parent involvement models

	Theme/Code \ Parent involvement models	protective model	consumer model	transmission model	expert model	partnership model	curriculum enrichment model
Positive	Increasing students' success	✓	-	-	✓	✓	-
	Helping gain positive behaviors	✓	✓	✓	-	✓	✓
	Taking part in the management of the parent-teacher association	-	-	-	✓	✓	-
	Organizing awareness training	-	✓	✓	✓	✓	✓
	Getting parents involved in decision-making in school	-	-	✓	✓	✓	-
	Social activity organizations of school stakeholders and parents	✓	✓	-	-	-	-
Negative	Security risks	✓	✓	✓	-	-	-
	Conducting activities under the permission and supervision of the school administration	✓	-	✓	✓	✓	-
	Utilizing the school for individual interests	-	✓	-	-	-	-
	The intervention of parents too much in minor problems	✓	✓	✓	-	-	-
	Attempting to change the internal order of the school	-	✓	✓	-	-	-

Some of the school principals' views in the context of parent involvement models were under the consumer and transmission model, followed by the protective, partnership, and expert parent involvement models. On the other hand, it was found that there were fewer views within the scope of the curriculum enrichment model. The views classified within the involvement models included themes and codes, such as (positive) increasing students' success, organizing awareness training, social organizations activity of school stakeholders and parents, (negative) security risks, utilizing the school for individual interests, and attempting to change the internal order of the school. It was observed that the themes formed under the curriculum enrichment model, which was referred by the fewest number of principals within the parent involvement models, included helping gain positive behaviors and organizing awareness education. The curriculum enrichment model indicates a desired and high level of involvement. However, parent involvement is not considered independently as the duties of the family and the duties of the school and stakeholders and as integrated into interaction. Thus, the views were observed to gather under the protective, consumer, and transmission models more. Based on codes, the following themes, which emphasize reducing the negative effect of family-parent involvement on the bureaucratic process of the school, come to the fore: helping gain positive behaviors, the importance of organizing awareness education, and doing activities under the permission and supervision of school management. A school principal said, "A parent involved in every business can distract management from their business. Some parents intervene in teachers' decisions about their classroom order, and some parents want to use the possibilities of the school for their interests", which proved parents' desire to utilize the school for their interests. The featured views of school principals in the context of parent involvement models are given below:

Positive views on parent involvement models:

Y1: I would make the school entrance just a normal entrance. I would be in the garden every day when parents come and go and have conversations with parents. I would find leading people in the neighborhood and contact them. I would conduct home visits with my teachers. I would organize social activities for students at school.

Y3: I would organize trips and dinner, breakfast, charity, cinema, or theater activities, in which parents are involved. I would organize various events promoting the school so that parents' perspectives on the school could change positively. I would take into account parents' suggestions to show that their opinions are valuable.

Y4: As a manager, who works in a complex environment, I can organize a meal program, including school teachers and administrators, to involve parents in education.

Y10: Since we are a primary school, we communicate with students' parents through our class mothers. Parent involvement is higher to the extent that we can motivate class mothers. We give a certificate of appreciation to class mothers at the meetings. Especially when class mothers believe in the work's sincerity and usefulness, they try to make an effort for the school and involve other parents in the class in the process.

A13: I would offer parents opportunities to improve themselves. I would encourage parents who support behaviors not involving crime/violence. I would convince them that parent involvement increases the child's success.

Negative views on parent involvement models

Y6: I think that most of the problems students have are caused by parents and the environment. In a school with such a problematic parent profile, keeping parents away from school will at least keep students away from their undesirable effects during school hours.

Y7: I think it would be a problem to call people involved in so many crimes to school. I think home visits, if possible, will be more effective.

Y8: Parent involvement is very limited in disadvantaged areas. In such areas, students must spend their time at school in the most efficient way. The parents in the mentioned areas are already unconscious, and it would be the biggest mistake to involve these parents in education. The best thing to do in such places is visiting parents. It is necessary to understand the children by keeping parents away from school. Frankly, I do not make any special efforts to get parents involved in such places.

Y11: I think parents will participate in all the activities and educational activities they think are in the best interests of their children. The only problem is whether the parent is convinced that "this activity and educational activity are in the interests of the student." Here, the teacher should step in and explain this to parents according to their social/cultural status.

Y12: I think it would be better if parents were not involved in education during this period. After a while, parents put themselves in the position of a teacher and start to interfere with everything. They try to get involved in things that are not their business. Creating a healthy home environment for students and themselves automatically enables them to get involved in education.

The school principals' views regarding the advantages and disadvantages of parent involvement in education are given in Table 4. More than one appearance is a requirement of the analysis, as some principals' views mention both advantages and disadvantages of parent involvement in education.

Table 4. The analysis of school principals' views on the necessity of parent involvement

Necessity of parent involvement	School principles expressing their views	*n*
Advantages	Y_1, Y_3, Y_7, Y_8, Y_9, Y_{10}, Y_{11}, Y_{12}, Y_{13}	9
Disadvantages	Y_2, Y_6, Y_8, Y_9, Y_{11}, Y_{12}, Y_{13}	7

Considering the analysis of school principals' views on the necessity of parent involvement, it was found that the number of school principals who considered it as an advantage (n = 9) was higher than those who considered it as a disadvantage (n = 7). However, it can be said that the views were not superior to each other, but the distribution of the views was similar. Regarding the advantages, the school principal coded as Y8 said, "Parent involvement facilitates the business of teachers and administrators. They assist teachers and administration in activities and organizations. They can contribute to the development of their children at home in coordination with the teacher." It is noteworthy that besides evaluating family or parent involvement positively, this view emphasizes that the family is another variable of education by also helping school management and processes. Regarding the disadvantages, it was emphasized that some parents were involved in every business, negative behaviors of parents were transferred to the school, or that some parents tried to interfere with the teacher's business due to not knowing where they needed to stop. For example, the school principal coded as Y9 said, "Some students feel unsafe because parents come to school too often (...), teaching /learning is disrupted as a result of conflicting opinions between parents and between parents and teachers

(...), and parents make a fuss due to trivial problems among students." Some of the views of school principals about the advantages and disadvantages of parent involvement are given below:

Featured views on the advantages of parent involvement

Y1: Having strong communication can strengthen the education environment. Besides, parents take on the burden of the teacher in planning and implementing the educational activities, facilitating the teacher's job. It motivates students who see their parents at school.

Y3: Making parents and students feel valued ensures that school and students' problems are solved more quickly and easily. Eventually, it contributes to increased trust in teachers.

Y7: If the teacher knows the parent and the student's environment, it allows the teacher to know the causes of the student's problem. Accordingly, education or health measures can be taken.

Y13: As a result of the training programs not only for children but also for families, the development of all segments of the society is achieved.

Featured views on the disadvantages of parent involvement

ST6: In addition to the fact that negative behaviors caused by parents can be transferred to the school, there may be conflicts/jealousy among parents if the teacher cannot achieve the balance. It can negatively motivate students who see other parents at school but cannot see theirs.

St8: They can prevent teaching at school. They can try to change the school's internal order and turn it into a street environment by gossiping or chatting inside the school.

Y11: We can see that some parents try to interfere with the teacher's job due to not knowing their limits. We can see that they reduce the motivation of the teacher by making irrelevant complaints through BIMER by organizing other parents by claiming they support education. They try to make up for the lack of attention they face in the family environment at home and try to use the school as a socialization environment.

CONCLUSION AND DISCUSSION

The data obtained from the interviews with school principals were analyzed qualitatively within the scope of this study, which aimed to reveal school principals' perceptions regarding the awareness, mindfulness, and functions of parent involvement in education. The data obtained indicated that school principals defined parent involvement as bureaucratically supporting parent-teacher association activities, including establishing and executing parent-teacher association and realizing its objectives. Accordingly, Kocabaş (2016) pointed out that parent involvement had not reached a widely feasible level in Turkey yet. When reviewing studies conducted worldwide including our country (Turkey) considering this inadequacy, it was found that parent involvement programs were mostly prepared for parents with children at preschool and primary education levels;meaning that school principals attach to parent involvement in education at the basic level can show that we, as a country, are not prepared in this regard. As the main findings of this study, family relationships can affect children's personality traits, their perspective of the future, in short, their psychological factors. However, it can be understood that the only variable is not psychological factors. The factors that prevent parents from getting involved in the education process can be listed as follows: low educational and cultural levels of families, poor economic conditions, the busy work place of the working parents, fatigue, the environment in which the family lives, family problems, and the high number of children (Argon & Kıyıcı, 2012). On the other hand, in the study on the involvement of mothers of children with special needs who attend preschool and primary school, Akmeşe & Kayhan (2014) found that the monthly income level of the family, the education level of the mother, and the sex of the child did not affect the involvement of mothers in education, but that employment status of the mother and the education level of the children caused a difference in the involvement levels of mothers. For these reasons, school principals must consider the function and relationship of the family with education before considering parent involvement. Besides, studies (Barnard, 2004; Cotton & Wikelund, 1989; Epstein & Dauber, 1991; Hornby, 2000; Özbaş, & Badavan, 2010) support both theoretically and with findings that parent involvement encourages schools and classes as educational settings. However, school principals' perspectives seeing this support solely as parent-teacher association activities may naturally prevent the structuring of the process in the desired way. Correspondingly, in the study with preschool parents, Yavuz Konokman and Yokuş (2016) pointed out that parents had a high level of preschool education involvement. This situation may explain the discomfort of school principals because parents may perceive involvement in education as taking care of the child at school. Considering that this perception is realized, it can be thought that various problems may arise, including especially the role confusion of the functioning within the school itself. While the amount of time spent with the child is important, the quality of this time should also be taken into account. In this regard, the literature emphasizes the necessity of ensuring parent involvement of children who receive education in preschool (Bayraktar, Güven & Temel, 2016; Çakmak, 2010) and special education (Gül, 2007; Keçeli-Kaysılı, 2008).

Considering the school principals' views in parent involvement models, the views were gathered under the consumer and transmission models. Of the parent involvement models, the least mentioned by the school principals was the curriculum enrichment model. This model indicates a desired and high level of involvement. Contrary to expectations, it was found that a school principal described parent involvement in education as a bureaucratic interference with the business and functioning of

the school. Similarly, in the study with teachers and school managers, Erdogan and Demirkasımoğlu (2010) defined the concept of parent involvement in the education process as regular communication with the school and exchanging information with the teacher about the student. Some school managers perceived this issue as parents' provision of financial support to the school. Also, both teachers and school administrations emphasized that parent involvement in education was unnecessary because they complained that families acted unconsciously during the education process. Some teachers and administrators stated that they were uncomfortable with some parents' intervention in their field of expertise and pressure on what to do and how to do it. The curriculum enrichment model assumes that the interaction between parents and teachers in applying the curriculum material increases (Swap, 1993). However, school principals do not want families in the school environment due to their intervention in the business and functioning of the school environment, which contradicts the theory.

On the other hand, one school principal stated that parents' unplanned arrival in the school was a problem and that their involvement needed planning and programming, which supports the curriculum enrichment model. This thought may be related to the teacher education system when considering both demographic and appointment criteria of school principals and their previous professional experience as a teacher. According to research conducted on prospective teachers, participants stated that they felt somewhat ready to use parent involvement strategies regarding parent involvement in education. They also stated that they did not have the opportunity to gain enough knowledge, skills, and experience on this subject during their education. Knowledge of the techniques, methods, and strategies used in family involvement practices and how to plan and program the involvement can help prospective teachers start their profession more confidently (Lindberg, 2014). Based on the research findings obtained, one reason for the finding mentioned above may be a failure to provide necessary awareness and knowledge in teacher training. More than half of the school principals stated positive opinions about the necessity of parent involvement, though the rates were similar. The leading negative opinion of the school principals about parent involvement was that negative behaviors of the parents were transferred to the school and that some parents did not know their limits and interfered with teachers' business. While giving homework support and helping school expectations are expected behaviors of parents (Latunde, 2016), the existing perception of the school principals and the distribution of opinions according to family involvement models do not match. This is due to the type of the perceived family or parent involvement.

RECOMMENDATIONS

Increasing family or parent involvement in schools is seen as a challenging goal because, in the basic sense, there is no legal obligation to support and contribute to the education that takes place in the school and classrooms. Even if it existed, it would be a challenging objective to achieve its control and enforcement. For these reasons, it is important first painstakingly to examine the school stakeholders' views and even the principals in charge of the school to develop actions and strategies to ensure school-based parent involvement. Within the scope of the findings, a series of recommendations aiming to increase parent involvement to strengthen out-of-school learning were made to primarily school administrators, teachers, families, parents, decision-makers, and various parties. These recommendations are as follows:

1. Although parent involvement is considered a kind of help for doing homework, it is expected to create awareness in the environment, especially in parents, as it is a multivariate and comprehensive subject.

2. It may be important to classify schools, which are micro-level education units, considering the actions to be taken, regional, or variables. Parent involvement may vary from region to region and according to the socio-cultural and socio-economic characteristics. Thus, it may be important to develop an action plan by making an internal classification to start school-based actions to increase parent involvement.

3. While direct parent involvement is expected in preschool and special education, students' needs at the primary school level change.The interest of the family at the secondary school level is considered pressure on students for various reasons, such as adolescent psychology. It may be recommended to design activities to ensure parent involvement, considering both the education level and the characteristics and needs of the student's age period.

4. It may be recommended to establish communication channels with parents by establishing a school-based family information system or interview committees or commissions. In this way, communication with the school and family can be increased, it can be transformed into interaction, and families can take on complementary roles.

5. It may be recommended that school principals provide the necessary support and infrastructure to enable both the school and teachers to communicate with the family because findings revealed that school principals did not complete the infrastructure deficiencies for providing the necessary communication.

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Statements of publication ethics

I hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

This research was conducted with a single author. I declare that all actions taken during the research process belong to me.

Ethics Committee Approval Information

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APPENDIX 1. Parent Involvement Interview Form for School Administrators

Section I. Information about the interview

Dear Participant,

This study aimed to collect and evaluate the views of school administrators about parent involvement in education. As it is known, school administrators, including school principals and vice-principals, are the stakeholders who are mainly responsible for the functioning of the school. For this reason, school administrators' perspectives on family/parent involvement in education are of significance. All data obtained within the scope of this research will be used **only within the scope of the research and by the researcher**. Participant information will not be shared with third parties.

We would like to express our thanks for your volunteer participation.

About the school administrator:

1. Province that the school is located:
2. Seniority in management:
3. Seniority in teaching:
4. Students population of the school:
5. Teacher population of the school:
6. Level ( ) Elementary ( ) Middle (Mark both options if they coexist)

Section II. Interview questions

Family/parent involvement in education is usually understood as involvement in parents meeting and fulfilling duties requested by the school. Can you explain what the scope of family/parent involvement in education includes?

2- If you were a school administrator in the sample school below, how would you involve families/parents in the school? Can you explain it in detail?

Sample school profile:

This is a school located in one of the neighborhoods in Ankara with the highest rates of crime and student absenteeism. The high retaining walls of the school were built to reduce the impact coming from the environment as much as possible, and even the entrance to the school garden is provided through an overpass. Besides, the family profile of the students in the school includes disadvantageous groups with individuals who have been involved in various crimes, including substance abuse or supply, and have broken families. The school administrators working in this school try to find a solution to organize parents' meetings that teachers haven't been able to hold or to realize school organizations in which parents are included. Teachers have conveyed the solution that they have not been able to find alone to the school administration, so they try to achieve parent involvement in the school and education.

In your opinion, what are the factors that can encourage family/parent involvement in education?

What are the

(a) advantages and

(b) disadvantages of family/parent involvement in education in this example? Please explain.

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| Research Article / Araştırma Makalesi |

Levels of Elementary Mathematics Teacher Candidates Determination Levels of Image Sets of Functions in R^2 and R^3

İlköğretim Matematik Öğretmeni Adaylarının R^2 ve $R^{3\prime}$teki Fonksiyonların Görüntü Kümelerini Belirleme Düzeyleri

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Keywords
two variable function
multivariable function
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Anahtar Kelimeler
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Abstract

Purpose: This study aimed to reveal the relationship between elementary school mathematics teacher candidates' determination levels of image sets of functions in R^2 and R^3.

Design/Methodology/Approach: This study was conducted with 49 elementary mathematics teacher candidates and the correlation design from quantitative approaches was used. For the given purpose, the data were collected by 2D and 3D tests. The 2D test was used to reveal the students' level of determining the image sets of the functions in R^2 and the 3D test was used to reveal that in R^3. In the data collection process, the graphics of the questions in 2D and 3D tests drawn with the support of GeoGebra were presented to the students together with the tests. Correlation analysis was used to compare the levels of students in determining image sets of functions in R^2 and R^3.

Findings: According to findings, it was found that there was a high level, positive, and significant relationship between the students' levels of determining the image sets of the functions in R^2 and R^3. Another conclusion about the study was that the students were more successful in determining the image sets of functions in R^3 than in R^2. This is thought to be a result of the dynamic feature of the GeoGebra software.

Highlights: It was observed that the GeoGebra program was important in determining the image set of a function, especially in R^3. For this reason it is thought that using activities designed with the GeoGebra program in related lessons can be effective in teaching two-variable functions.

Öz

Çalışmanın amacı: Bu çalışmanın amacı ilköğretim matematik öğretmeni adaylarının R^2 ve $R^{3\prime}$teki fonksiyonların görüntü kümelerini belirleme düzeyleri arasındaki ilişkinin ortaya konmasıdır.

Materyal ve Yöntem: Nicel yaklaşımlardan korelasyon deseninin kullanıldığı bu çalışma 49 ilköğretim matematik öğretmen adayıyla yürütülmüştür. Çalışmanın amacı doğrultusunda veriler, 2D ve 3D testi ile toplanmıştır. 2D testi öğrencilerin $R^{2\prime}$deki, 3D testi ise öğrencilerin $R^{3\prime}$teki fonksiyonların görüntü kümelerini belirleyebilme düzeylerini ortaya koymak için kullanılmıştır. Veri toplama sürecinde 2D ve 3D testindeki soruların GeoGebra desteğiyle çizilmiş grafikleri, testlerle birlikte öğrencilere sunulmuştur. Öğrencilerin R^2 ve $R^{3\prime}$teki fonksiyonların görüntü kümelerini belirleme düzeylerini karşılaştırmak için korelasyon analizi kullanılmıştır.

Bulgular: Elde edilen bulgulara göre öğrencilerin R^2 ve $R^{3\prime}$teki fonksiyonların görüntü kümelerini belirleme düzeyleri arasında yüksek düzey, pozitif yönlü ve anlamlı bir ilişki olduğu bulunmuştur. Çalışmaya dair bir diğer sonuç ise öğrencilerin $R^{3\prime}$teki fonksiyonların görüntü kümelerini belirlemede $R^{2\prime}$den daha başarılı olduklarıdır. GeoGebra programının dinamik özelliğinin bu sonucu doğurduğu düşünülmektedir.

Önemli Vurgular: GeoGebra programının, özellikle $R^{3\prime}$teki bir fonksiyonun görüntü kümesini belirleme sürecinde etkili olduğu görülmüştür. Bu nedenle iki değişkenli fonksiyonların öğretiminde, GeoGebra programıyla tasarlanmış etkinliklerin ilgili derslerde kullanılmasının etkili olabileceği düşünülmektedir.

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INTRODUCTION

There are numerous studies conducted in the field of mathematics which show that the concept of function is one of the most basic concepts, and that those who want to learn advanced mathematics will not be able to learn mathematics without fully understanding this concept (Eisenberg, 1992; Harel & Dubinsky, 1992; Selden & Selden, 1992; DeMarois, 1996; Hollar & Norwood, 1999; Yerushalmy, 2000; Bell, 2001; Kalchman, 2001; LeVeque, 2003; Sajka, 2003; Fest, Hiob-Viertler & Hoffkamp, 2011). According to Kleiner (1989), the concept of function is one of the elements that distinguishes modern mathematics from classical mathematics. For this reason, many studies have been carried out and continue to be conducted on the teaching of the concept of function. A study conducted by DeMarois and Tall (1996), stated that the concept of function had been the focus of the studies conducted by mathematics educators in the last 10 years. Considering that DeMarois and Tall's study was conducted in 1996, it can be said that the concept of function had an important place in mathematics education until the 2000s. Just as function is at the core of analysis, it is also a prerequisite for technology, science, and advanced mathematics (Johari, 1998). Hence, a student who hopes to be successful in the analysis course must primarily grasp the concept of function very well (Harel & Dubinsky, 1992). Due to the importance of the concept of function in school mathematics (NCTM, 2000), not only students taking the analysis course but also teachers need to know the basic features to make sense of the function (Cooney, Beckmann, & Lloyd, 2010).

Although the place and importance of the concept of function in mathematics are indisputable, it is also a fact that there are some problems regarding the teaching and learning of this concept. Becker (1991) stated that only a few of the concepts that make up school mathematics include the concept of function, and those very few concepts of school mathematics are misunderstood or not fully understood as the concept of function. After the concept of function was considered to have an important place in school mathematics (Selden & Selden, 1992), it was aimed to develop students' processes of understanding the concept of function that would prepare the precondition for other concepts in the analysis, especially in high school mathematics curricula (NGA / CCSS0, 2010). Using different representations in teaching the concepts of analysis contributes to making meaning of these concepts (Berry & Nyman, 2003). On the contrary, students experience difficulties in making sense of the concept of function because of the different representations of the function, which is one of the concepts of analysis, and the difficulty of establishing relationships between these representations (Sierpinska, 1992).

The concept of function is one of the concepts that students have difficulty in learning and misunderstand. Güveli and Güveli (2002) pointed out that alternative methods should be used in teaching this concept and raised the question of how we could provide a better education. Elia and Spyrou (2006) stated that students' definitions of functions, students' daily life examples of functions, and different representations of functions should be used in order for students to understand the concept of function better. It is argued that one of the most important factors in learning the analysis course concepts, including the function, is visualization (Darmadi, 2011; Darmadi, 2015). Today, computer technologies are used for visualization. With the abandonment of the use of computers as effective calculation tools, now they are started to be seen as tools that allow the concretizing of abstract concepts in the electronic environment (Baki, 2008).

Software engineers and educators have tried to integrate traditional teaching methods in mathematics into technology and they have made it. (Baki, 2001). For this purpose, countless studies have been conducted on technology-assisted mathematics teaching. In addition, the main purpose of the studies suggesting the use of technology in teaching the subject of function concerns how to teach the concept of function to the students with the help of computer or graphic plotters in a conceptual way (Ayers, Davis, Dubinsky & Lewin, 1988; Wilson & Krapfl, 1994; O'Callaghan, 1998; Schwarz & Hershkowitz, 1999; Saidah, 2000; Mackie, 2002; Patterson & Norwood, 2004; Rider, 2004; Fest, Hiob-Viertler & Hoffkamp, 2011). Zukhrufurrohmah (2018), who used technology to reveal the graphical properties of second-order functions, mentioned the necessity of creating learning steps in this process. Also, Fest, Hiob-Viertler and Hoffkamp (2011) stated that interactive learning is important in teaching function since functions can be explained with more than one representation, but they emphasized that feedback should be planned well in this process. Mai and Meyer (2018) used a program that includes an evaluation system that provides feedback for drawings of functions. Using common information and communication technologies such as EBA and Vitamin, Urhan, Kuh, Günal and Arkün-Kocadere (2018) conducted function teaching with these applications. As a result of the study, it was seen that this application made an important contribution to the learning and teaching process of functions. In the study of Taylor (2013), who used GeoGebra in function teaching, it was stated that this teaching positively affected students because GeoGebra supported visualization. Again in the same study, contrary to most studies, it was argued that teaching multiple representations of functions together with GeoGebra-assisted teaching was not beneficial.

With all these and similar studies, the concept of function was tried to be visualized, and it was aimed that students learn the concept of function from a conceptual perspective. It was observed that the functions that were the subject of these studies were generally one-variable functions. In studies conducted with twovariable functions, it has been tried to reveal how students made sense of these functions by using APOS theory (Trigueros & Martínez-Planell, 2010; Şefik, 2017). In another study conducted with two-variable functions, the conceptual knowledge levels of mathematics teacher candidates about limits in one- variable and two-variable functions were compared (Biber & Argün, 2015). In that study, the authors stated that the teacher candidates used the same situations they used to find the limit of one-variable functions when they were finding the limit of two-variable functions, if they included generalizations for the extension. However, it was observed that the teacher candidates could not generalize the information they used in one-variable functions to two-variable functions in situations requiring generalization for restructuring.

Kabael (2011) revealed that the level of understanding the concept of function regarding one-variable functions is important in creating the concept of two-variable functions. Yerushalmy (1997) attributed the students' inability to generalize one-variable functions to multivariable functions to the presence of multiple representations in functions. Weber and Thompson (2014) created a conceptual analysis scheme for the situations of extending students' existing graphic images to the graphs of two-variable functions. Within this scheme, which is called the predictive learning roadmap, it has been revealed that covariational reasoning plays an important role in students' generalization processes. In addition to that, Trigueros and Martínez-Planell (2010) stated that there were many studies on the visualization of functions, but there were very few studies on the visualization of two-variable functions. In addition to the scarcity of related studies, Martinez-Planell and Trigueros-Gaismann (2009) stated that students had difficulty in graphical representations of two-variable functions. Their study revealed that the geometric visualization performed on two-variable functions supported conceptual understanding in students. Therefore, it can be said that the visualization of two-variable functions plays an essential role in conceptual learning. Martínez-Planell and Trigueros-Gaisman (2012), on the other hand, presented a schematic structure for two-variable functions for these functions to be comprehended. In this schematic structure, which is based on moving the structure from R2 to R3, there are also domains and image included. Therefore, it is considered significant to reveal the relationship between determining the image set of a function in R^2 and R^3. Based on these, this study aimed to determine the relationship between elementary mathematics teacher candidates' levels of determining image sets of functions in R^2 and R^3. Within the framework of this purpose, the research questions of the study are given below.

- What are the levels of elementary mathematics teaching program third-year students in terms of determining the image sets of the functions in R^2?
- What are the levels of elementary mathematics teaching program third-year students in terms of determining the image sets of the functions in R^3?
- What is the relationship between the levels of elementary mathematics teaching program third-year students in terms of determining the image sets of the functions in R^2 and R^3?

METHOD

The correlational research design, which is one of the quantitative approaches, was used in this study since the relationship between the levels of elementary mathematics teacher candidates in terms of determining the image sets of the functions in R^2 and R^3 was investigated. There is no guidance and intervention in correlational research. In addition, the correlational research method tries to find out to what extent some types of relationships exist (Büyüköztürk et al., 2011). In this study, where there was no experimental intervention; the correlational research method was adopted since the relationship between students' mathematical information which they use to determine the image sets of the functions in R^2, and the mathematical information which they use to determine the image sets of the functions in R^3 was examined. In the simple correlation in the correlational research method, the results of two variables taken from the same group were compared, and then the correlation coefficient is determined by using them. While doing this, different data collection tools can be used (McMillan & Schumacher, 2006). Considering in this context, the simple correlational method was used in the study, since two data collection tools were used, and the correlation coefficient was determined.

Sample

The study sample consisted of 49 third-year students studying in the elementary mathematics teaching program. They attended all courses that could contribute to the formation of the concept of image sets in functions. Therefore, it can be thought that they had sufficient knowledge about the concept of image set in functions. They took courses that support three-dimensional thinking skills such as Geometry, Abstract Mathematics, Linear Algebra I, Linear Algebra II, and Introduction to Algebra. Besides, the majority of the students were over the age of twenty. Considering these, it can be said that the students readiness in three-dimensional thinking skills was at a sufficient level. Codes such as EK, EA, DA consisting of the initials of the names and surnames of the students who voluntarily participated in the study were given and used in the study.

Data Collection Tools

To identify the students' levels of determining the image sets of the functions in R^2, the 2D test was used, whereas the 3D test was employed to reveal their levels of determining the image sets of the functions in R^3 (Annex 1 and Annex 2). Prepared by two specialists, these tests were applied to a different group of 40 people. Each of the 2D and 3D tests finalized with this pilot application consists of ten open-ended questions. The questions under the same question numbers in the prepared tests contain similar function structures. The students were asked to determine the image set of the given function in R^2 in the 2D test and the image set of the given function in R^3 in the 3D test.

Data Analysis

The answers given by the students to the 2D and 3D tests were categorized as "correct", "partially correct," and "incorrect". These categories were scored as 0-5-10, respectively. When the questions in the tests are examined, the determined image sets consist of intervals, real numbers and single point sets. In the questions involving functions whose image set is an interval, those who can determine neither the starting value nor the ending value of the interval get 0 points, those who can determine only one get five points, and those who can identify both get 10 points. In the functions whose image set is real numbers, those who can

determine the image sets as real numbers get 10 points, and those who cannot determine that get 0 points. If a student determined the image set algebraically but showed it incorrectly on the graph, this student's answer deserved five points. Those who determined the single point forming the image set were scored as 10, those who determined the image set consisting of that single point received five, and those who could not determine the image set at all got 0 points.

Descriptive statistics were used while analyzing 2D and 3D tests data. The scores received from the two tests were subjected to correlational analysis since the students' levels of determining the image sets of functions in R^2 and R^3 were compared in this study. Criteria were created to observe the change in each question in the tests. The scores received from the first and second tests were used while creating these criteria. For each question, these criteria are 0-0, 0-5, 0-10, 5-0, 5-5, 5-10, 10-0, 10-5, 10-10, as the first one is the score received from the 2D test and the second one is from the 3D test. These criteria, created for each question in the two tests, were included in the categories named C1, C2, … C9, respectively. Percentage and frequency were used for the analysis. In the study, statistical analyses were performed using the SPSS/PC package program.

Process

The data obtained were collected in two stages. In the first stage, the questions in the 2D test given in Appendix 1 and in the second stage, the questions in the 3D test were directed to the students. In the pilot application conducted before the data collection process, it was observed that the 30-minute time given to the students for each test was not sufficient. The time given for each test was then increased to 50 minutes.

In the first part of the study, the 2D test was administered to the students. The students were asked to determine the image sets of functions. The graph of the function for each question was included in the test. In addition, the graphs of functions created with GeoGebra were projected on the board simultaneously while the students were thinking about the answers to the questions. Students saw the function graphs for each question both on the test and on the board. No guidance was provided to the students during the application. They then wrote down the image sets they identified in the section left blank to write their answers on the test. A section of the application is included in Figure 1 during the answering of the 2D test.

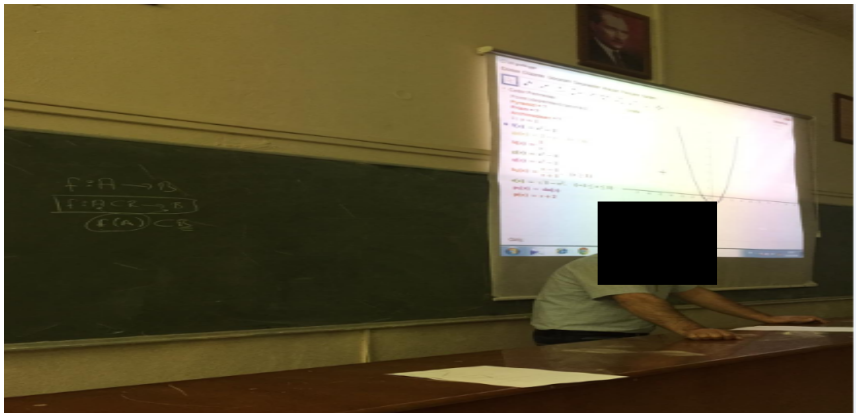

Figure 1. A section from the application moment of the 2D test

After the data for the 2D test was collected, the 3D test was distributed to the students. In this part, a similar process was followed. Unlike the first part, images of the function graphics in R^3drawn with the GeoGebra program from different angles were projected on the board. During the application, in which no guidance was provided, students saw a 3D graph of a function with this feature of the GeoGebra program. Students determined the image sets of functions. Afterwards, students were asked to write their answers to the place specified in the 3D test. An image of the moment the 3D test applied is presented in Figure 2.

Figure 2. A section from the application moment of the 3D test

FINDINGS

The scores obtained from the 2D and 3D tests were firstly subjected to descriptive statistics. The findings of the data analysis are presented in Table 1.

Table 1. Descriptive statistics regarding scores obtained from 2D and 3D tests

Tests	N	Minimum	Maximum	X	Sd	Level
2D Test	49	0	0	60.61	26.9	Partially Sufficient
3D Test	49	100	100	68.57	30.20	Sufficient

According to the findings obtained, some students received a minimum score of 0 and a maximum score of 100 in both tests. Since the tests were evaluated as "Insufficient", "Partially Sufficient" and "Sufficient", three groups were formed while forming a grouped frequency distribution. The range 0-33 was insufficient, 34-67 was partially adequate, and the range 68-100 was sufficient. In the total score evaluated out of 100, students' mean score on the 2D test was 60.61, while it was 68.57 on the 3D test. In this case, it is seen that the students were at a partially sufficient level in the 2D test and at a sufficient level in the 3D test. Therefore, it can be said that students were more successful at determining the image sets of the functions in R^3than those in $R^{2.}$

Correlation analysis was used to compare the students' levels of determining the image sets of the functions in R^2 and R^3. The findings of the correlation analysis are given in Table 2.

Table 2. Correlation analysis results for the relationship between students' 2D test scores and 3D test scores

		2D Test Score	3D Test Score
2D Test Score	r	1	.762**
	p		0.00
3D Test Score	r	.762**	1
	P	0.00	

(N:49) **. The correlation is significant at 0.01 level.

As shown in the table 2, there is a significant relationship between students' levels of determining the image sets of functions in R^2 and R^3. Büyüköztürk (2011) stated that the r-value obtained as a result of the correlation analysis being between 0.00 and 30 points to a low relationship, values between 30 and 70 indicate a moderate relationship, and values between 70 and 1.00 indicate a high-level relationship. Based on this information, when Table 2 was evaluated, it was found that there was a high level, positive, and significant relationship between the students' levels of determining the image sets of functions in R^2 and R^3 [r(49)=0.762; p<0.01]. Accordingly, students with high success in determining the image sets of the functions in R^2also had a high success in determining the image sets of the functions in R^3. Similarly, the students' low level of success when determining the image sets of the functions in R^2 was also low in R^3.

Functions with the same question numbers are similar. For example, the first question of the 2D test and the first question of the 3D test consist of similar functions. While students were asked to determine the image set of this function in R^2 in one question, they were asked to identify it in R^3 in the other. Based on the scores obtained from the two tests, a criterion were created to determine in which questions the students were able to transfer their mathematical knowledge from $R^2$to $R^{3.}$ For each question, these criteria were 0-0, 0-5, 0-10, 5-0, 5-5, 5-10, 10-0, 10-5, 10-10 as the first one was the score received from the 2D test and the second one was from the 3D test. These criteria were included in these criteria were included in the C1, C2, C3, C4, C5, C6, C7, C8 and C9 categories, respectively. The findings of the analysis are presented in Table 3.

Table 3. Frequency and percentage table regarding students' ability to transfer their mathematical information for each question

QUESTION	1	2	3	4	5	6	7	8	9	10
CATEGORY	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)
C1	6 (2.9)	7 (3.43)	7 (3.43)	4 (1.96)	6 (2.94)	8 (3.92)	11 (5.39)	7 (3.43)	12 (5.88)	7 (3.43)
C2	2 (0.98)	1 (0.49)	0 (0)	3 (1.47)	3 (1.47)	0 (0)	2 (0.98)	0 (0)	1 (0.49)	1 (0.49)
C3	6 (2.94)	5 (2.45)	6 (2.94)	0 (0)	6 (2.94)	2 (0.98)	12 (5.88)	4 (1.96)	7 (3.43)	6 (2.94)
C4	2 (0.98)	3 (1.47)	0 (0)	2 (0.98)	4 (1.96)	1 (0.49)	0 (0)	6 (2.94)	6 (2.94)	0 (0)
C5	3 (1.47)	0 (0)	0 (0)	2 (0.98)	1 (0.49)	7 (3.43)	1 (0.49)	1 (0.49)	9 (4.41)	1 (0.49)
C6	9 (4.41)	2 (0.98)	1 (2.94)	2 (0.98)	1 (0.49)	4 (1.96)	8 (3.92)	6 (2.94)	3 (1.47)	7 (3.43)

QUESTION	1	2	3	4	5	6	7	8	9	10
CATEGORY	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)	frequency (%)
C7	1 (2.94)	1 (0.49)	5 (2.45)	6 (2.94)	2 (0.98)	4 (1.96)	2 (0.98)	0 (0)	2 (0.98)	2 (0.98)
C8	7 (3.43)	1 (0.49)	0 (0)	3 (1.47)	2 (0.98)	3 (1.47)	3 (1.47)	0 (0)	3 (1.47)	0 (0)
C9	13 (6.37)	29 (14.21)	30 (14.7)	27 (13.23)	14 (6.86)	20 (9.8)	10 (4.9)	25 (12.25)	6 (2.94)	25 (12.25)

As shown in the table 3, the students were mostly in the C1 and C9 categories. This situation supports the determined correlation. This situation can be interpreted as "the students who were successful in determining the image set in R^2 also had a high success in R^3, and that the students who were unsuccessful in R^2 also had low success regarding R^3."

When category C9 was evaluated, it was seen that the students were able to transfer their mathematical knowledge in question 3 the most. The third question in both tests was related to linear functions. It can be said that the students were successful in determining the image sets of the functions both in R^2 and R^3. The graphics of the linear functions being easier to comprehend might be the reason for this fact.

When the answers of the students in category C1 were examined, it was found that the students had the most difficulty in determining the image sets of the functions in the ninth question. While the function in the 2D test was $f(x) = \sqrt{(1-x^2)}, -1 \leq x \leq 1$, the function in the 3D test was $f(x,y) = \sqrt{(1-x^2-y^2)}, -1 \leq x \leq 1, -1 \leq y \leq 1$. With the help of the GeoGebra program, the graph of the function in the 3D test was shown to the students from different angles. However, it was observed that the students who could not determine the image set of the function in the 2D test could not determine the image set of the function in the 3D test, either. The solutions of HZ to the ninth question are given in Figure 3 and Figure 4.

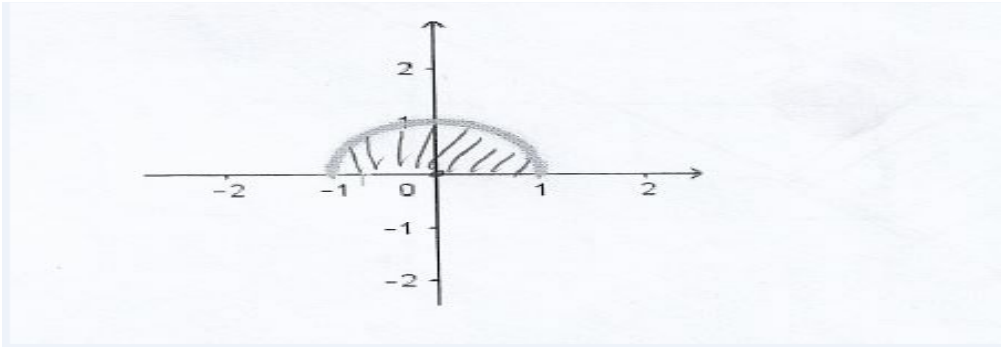

Figure 3. Solution of HZ to the ninth question in the 2D test

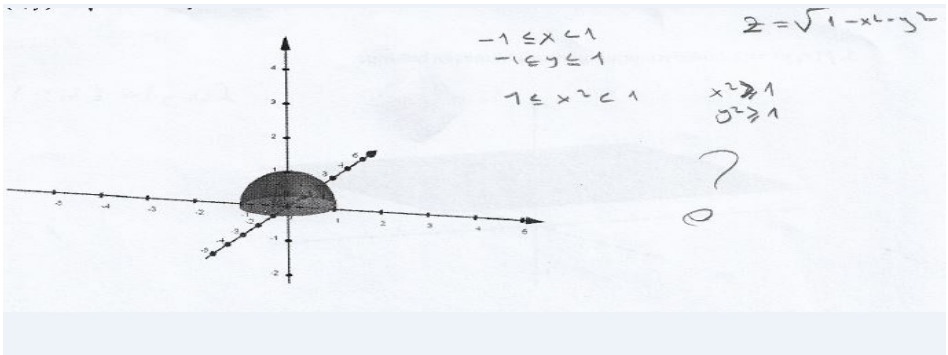

Figure 4. Solution of HZ to the ninth question in the 3D test

As shown in the figure 3, HZ indicated the image set as an area, similar to the study of Özkaya and İşleyen (2012). In Figure 4, similar to the other students who gave a wrong answer to this question, HZ tried to find the image set by algebraic operations without examining the function graph. Considering this situation, it can be said that the students did not use visualization, which is an important step in three dimensions. It can be considered that the students used the same processes that they used in determining the image set in R^2 and R^3 as well.

DISCUSSION

This study aimed to determine the relationship between the levels of elementary mathematics teacher candidates in identifying the image sets in R^2 and R^3. In this context, descriptive statistics were first employed. Statistical analysis revealed that while the students were partially sufficient in terms of determining the image sets of the functions in R^2, they were sufficient in determining those in R^3. In this case, it can be claimed that students were more successful in determining the image sets of the functions in R^3than in R^2. The underlying reason for this situation can be that the dynamic feature of GeoGebra program was used to display the function graphs in $R^3$from different angles. Considering the literature, it was emphasized that GeoGebra efficiently provides effective mathematics teaching (Hohenwarter, Preiner & Yi, 2007) and visualizing the concepts (Hohenwarter, Preiner, & Yi, 2007; Guncaga & Majherova, 2012). In addition, it was observed that students had difficulty making sense of geometric processes while performing algebraic processes for the concept of function (NCTM, 2000) included in the field of algebra learning (Berry & Nyman, 2003). The situation in question can explain why the students were not sufficient to determine the image sets of the functions both in R^2 and R^3. In the context of the answers given to the 2D test, it was determined that most of the students followed a correct process while determining the image sets. This result is incompatible with the study of Özkaya and İşleyen (2012). In their study, they determined that most of the first-year elementary mathematics teaching students had misconceptions while determining the domain and image sets of the functions in R^2. In this study, only one of the misconceptions identified was "Specifying the domain and image set as an area under or above the graphic." It is believed that the reason why the situations stated as misconceptions were so rare in this study is the GeoGebra application. In the context of the answers given to the 3D test, most of the students performed similar solutions to the solutions they found in the 2D test. This finding in the study is similar to the study of Martínez-Planell and Trigueros-Gaisman (2012). These authors put forth a structure for better interpretation of two-variable functions and mentioned the importance of transferring the structure in R^2 to R^3. Considering that visualization is important in two-variable functions (Trigueros & Martínez-Planell, 2010), it can be said that the GeoGebra program used in this study contributed to the students' success in determining the image sets of the functions included in the 3D test. In addition, it is understood that the students left the geometric representation aside because they focused on the algebraic representation. This is thought to be because, as Elia and Spyrou (2006) stated, the algebraic representation of the function is more understandable than its geometric representation. This situation shows that students could not think of the transition between the algebraic and geometric representation of functions although GeoGebra was used to support the visual. This result coincides with the study of Nagel (1994) who, revealed that transitions between different representations of functions could not be provided by technology.

CONCLUSION AND RECOMMENDATIONS

According to the data obtained, the students were more successful in determining the image sets of the functions in R^3 than in R^2 due to the dynamic feature of the GeoGebra program. It was observed that there was a high level of a positive and significant relationship between the students' levels of determining the image sets of the functions in R^2 and R^3. That is to say, a student who succeeded in determining the image set of the function in R^2 was also successful in R^3, and a student who failed to determine the image set of the function in R^2 also failed in R^3. It was observed that most of the students used the same approach they used when finding the image sets of the functions in R^2 and R^3.

This study determined that there was a parallelism between the students' levels of determining the image set of a function in R^2 and R^3. It was also observed that the GeoGebra program was important in determining the image set of a function, especially in R^3. Considering both the conclusions of the study and the effect of visualization in teaching the concept of function (Fest, Hiob, & Hoffkamp, 2011; Taylor, 2013; Mai & Meyer, 2018; Zukhrufurrohmah, 2018), future researchers may seek an answer to the question “What is the effect of a teaching designed with the GeoGebra program on making sense of two-variable functions?"

Ethics Committee Approval Information

The article data were collected in 2019, and there is no conflict of interest between the authors. It is declared that the practices were carried out in accordance with all ethical rules and publication ethics have been observed carefully. The authors received no financial support for the research, authorship and publication of this article.

Authors’ Contribution

M.Ö. and T.İ. carried out misconceptions related to functions study. So M.Ö. and T.İ. conceived of the presented idea. They collected data together. All authors discussed the results and contributed to the final manuscript. The study was conducted and reported with equal collaboration of the researchers.

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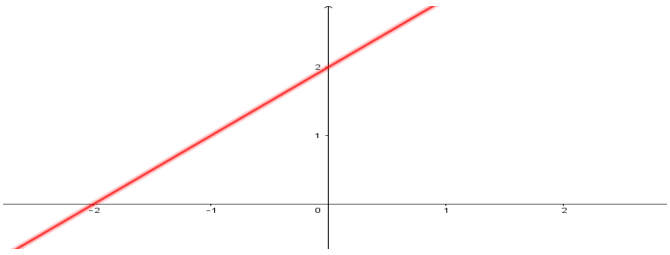
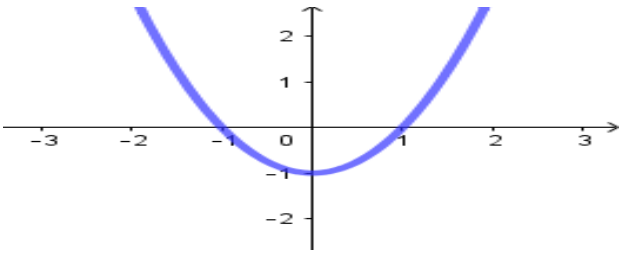
Appendix 1. 2D Test

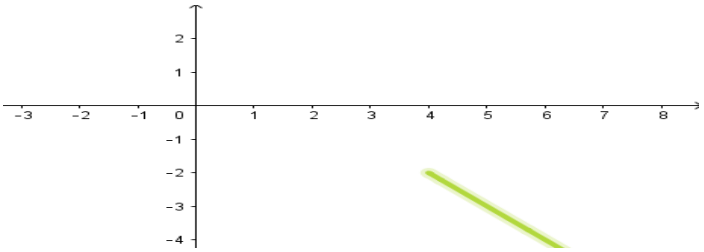
1. Find the image set of the function f(x)=x+2.



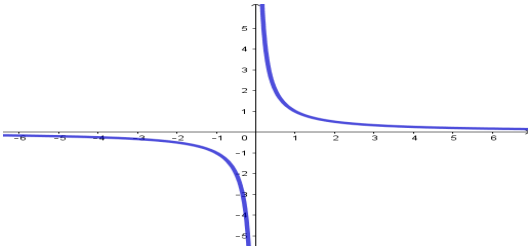
2.Find the image set of the function $f(x) = x^2$-1.



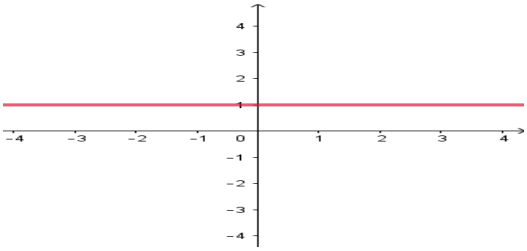
3. Find the image set of the function f(x)= 2-x, x≥4.



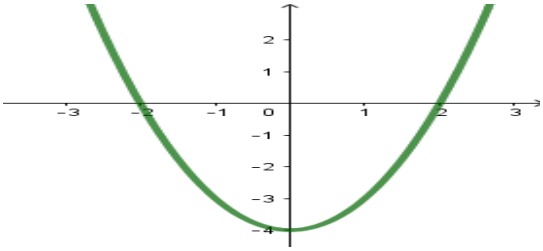
4. Find the image set of the function $f(x) = \frac{1}{x}$, x≠0.



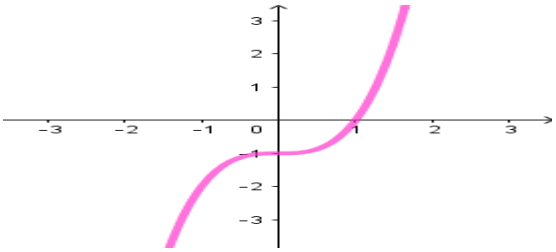
5. Find the image set of the function f(x) = 1.



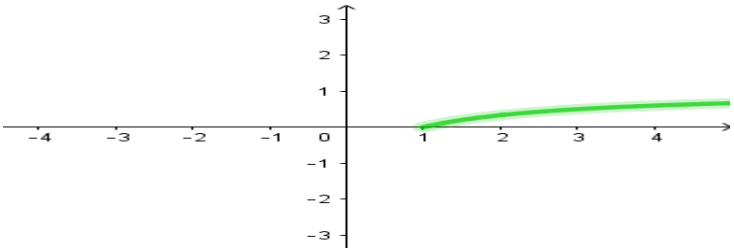
6. Find the image set of the function $f(x) = x^2$-4.



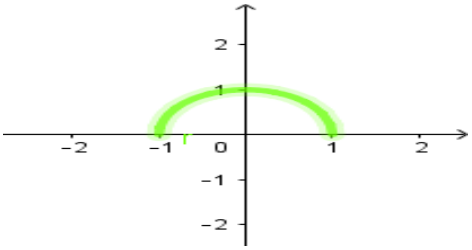
7. Find the image set of the function $f(x) = x^3 - 1$.



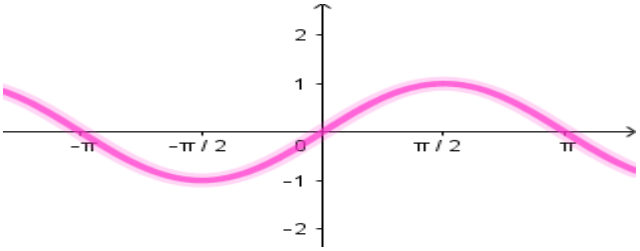
8. Find the image set of the function $f(x) = \frac{x-1}{x+1}$, x≥1.



9. Find the image set of the function f(x)= $\sqrt{1-x^2}$, -1≤ x ≤ 1.

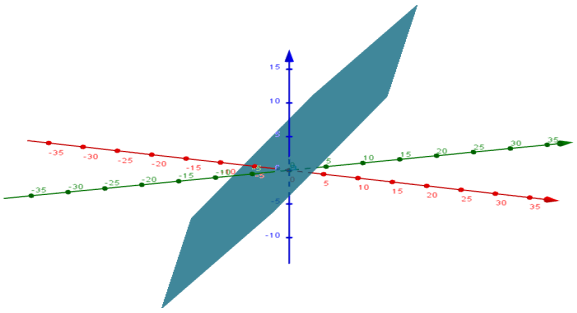


10. Find the image set of the function f(x)= sinx.

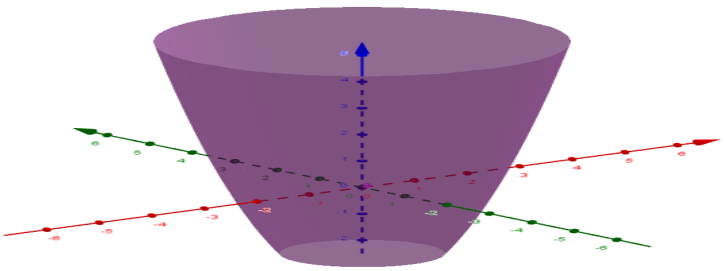


Appendix 2. 3D Test

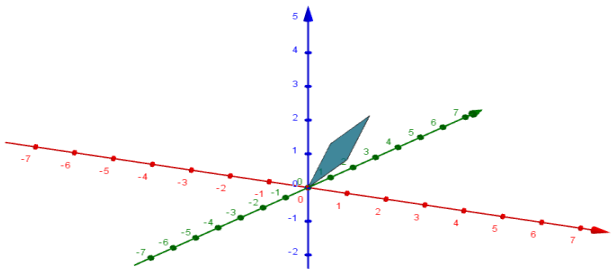
1. Find the image set of the function $f(x,y) = x + y + 2$.



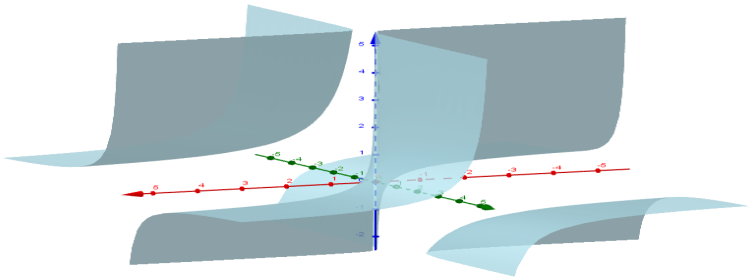
2. Find the image set of the function $f(x,y) = x^2 + y^2 - 4$.



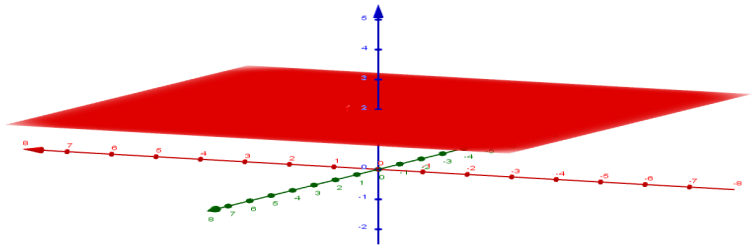
3. Find the image set of the function $f(x,y) = x + y\,, 0 \le x \le 1, 0 \le y \le 1$.



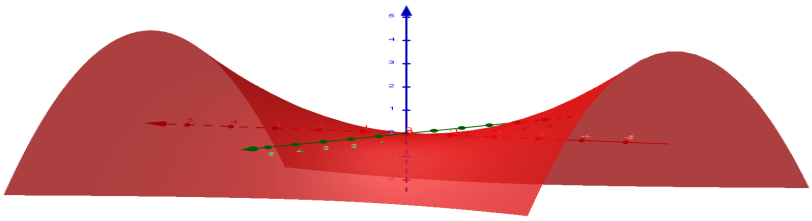
4. Find the image set of the function $f(x,y) = \frac{1}{x} - \frac{1}{y}\,, x \neq 0, y \neq 0$.



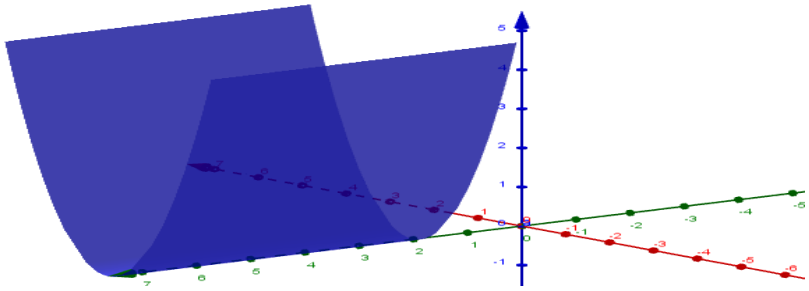
5. Find the image set of the function $f(x,y) = 2$.



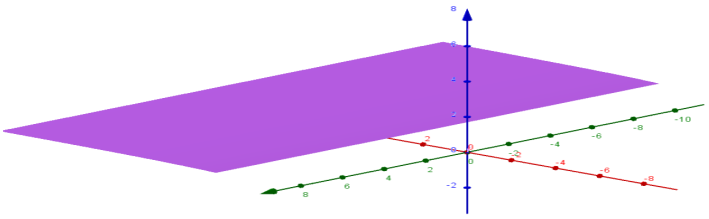
6. Find the image set of the function $f(x,y) = \frac{x^2}{9} - \frac{y^2}{4}$.



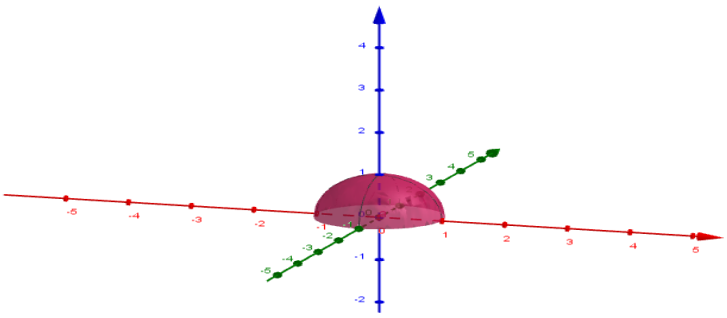
7. Find the image set of the function $f(x,y) = x^2, y \ge 2$.



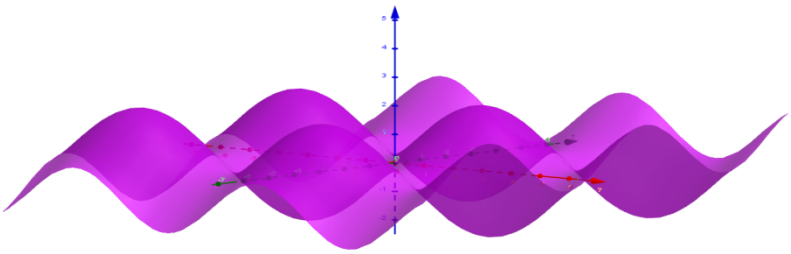
8. Find the image set of the function $f(x,y) = \frac{x+1}{x+2}, x \ge 2$.



9. Find the image set of the function $f(x,y)=\sqrt{1-x^2-y^2}, -1\leq x\leq 1, -1\leq y\leq 1$.



10. Find the image set of the function $f(x,y)=sinx+siny$.



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| Research Article / Araştırma Makalesi |

Prospective Teachers' Metaphoric Perceptions of "*Student, Teacher* and *School*"

Öğretmen Adaylarının *"Öğrenci, Öğretmen* ve *Okul*" Kavramlarına İlişkin Metaforik Algıları

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Keywords
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Abstract

This study aimed to determine pedagogic formation students' metaphorical images of "*students, teachers, and schools*." The study sample consisted of 101 pedagogical formation students of the University of Bolu Abant İzzet Baysal in the 2019-2020 academic year. Participants were recruited using convenience sampling. Metaphors were used as a means of qualitative data collection. Data were collected using a semi-structured metaphor form and analyzed using content and descriptive analysis. Participants generated 48 different (80 in total), 45 different (86 in total), and 42 different (82 in total) metaphors for "*students, teachers,* and *schools*" respectively. Conceptual categories concerning *students, teachers,* and *schools* were developed based on literature and participants' justifications for their metaphors. Conceptual categories were ranked based on their frequency. The categories for students were *"Students as individuals who are molded, Students as information providers/receivers, Students as developing individuals, Students as obedient individuals, Students as unique individuals, Students as inhibited individuals, Students as individuals who are on their way/looking for a way,* and *Students as selfless individuals."* The categories for teachers were *"Teachers as guides, Teachers as sources and transmitters of knowledge, Teachers as sources of love and trust, Teachers as sources of authority, Teachers as role models, Teachers as molders, Teachers as self-sacrificing individuals,* and *Teachers as sources of improvement."* The categories for schools were *"Schools as sources of information, Schools as part of life, Schools as places of change, development, and maturation, Schools as places of trust and happiness, Schools as places of inclusion, Schools as places of inhibition, Schools as places of molding, Schools as places of guiding and leading, Schools as indispensable places, Schools as complex places, Schools as places of socialization,* and *Schools as places that have lost their purpose."* The following are suggestions based on the results: *Prospective teachers' metaphoric perceptions of students, teachers, and school should be used to develop better teacher training policies*. *Possible causes of negative metaphors should be addressed to reform education policies*. *Future studies should use different research methods and recruit larger groups of participants from different cities to analyze the concepts of student, teacher, and school*.

Öz

Bu araştırmanın amacı, pedagojik formasyon programına katılan öğrencilerin *"öğrenci, öğretmen* ve *okul"* kavramlarına yönelik sahip oldukları zihinsel imgeleri metaforlar aracılığı ile ortaya koymaktır. Araştırmanın çalışma grubu, 2019-2020 eğitim ve öğretim yılında Bolu Abant İzzet Baysal Üniversitesi'nde pedagojik formasyon programına katılan ve kolay ulaşılabilir durum örneklemesi yoluyla belirlenen 101 pedagojik formasyon öğrencisinden oluşmaktadır. Nitel araştırma yöntemlerinden biri olan mecazlar yoluyla nitel veri toplama deseninde yürütülen araştırmada yarı yapılandırılmış metafor formu aracılığıyla toplanan veriler, içerik ve betimsel analiz yöntemleriyle analiz edilmiştir. Yapılan analizler sonucunda, katılımcıların *öğrenci* kavramına ilişkin 48'i farklı olmak üzere 80 metafor ürettikleri; *öğretmen* kavramına ilişkin 45'i farklı olmak üzere 86 metafor ürettikleri; *okul* kavramına ilişkin 42'si farklı olmak üzere 82 metafor ürettikleri tespit edilmiştir. Bu sonuçların yanı sıra katılımcıların metaforları oluştururken ifade ettikleri gerekçelerden yola çıkılarak alanyazındaki çalışmalar doğrultusunda "*öğrenci*, *öğretmen* ve *okul"* kavramlarına ilişkin kavramsal kategoriler ortaya çıkarılmaya çalışılmıştır. Yapılan analizler sonucunda ortaya çıkarılan kavramsal kategoriler sıklık derecesine göre sıralanmıştır. Öğrenci kavramına ilişkin ortaya çıkarılan kavramsal kategoriler *"Şekillendirilen bir birey olarak öğrenci, Bilgi yükleyen/yüklenilen bir birey olarak öğrenci, Gelişen bir birey olarak öğrenci, İtaatkâr bir birey olarak öğrenci, Kendine özgü bir birey olarak öğrenci, Kısıtlanan bir birey olarak öğrenci, Yola çıkan/yolunu arayan bir birey olarak öğrenci, Özverili bir birey olarak öğrenci"*; öğretmen kavramına ilişkin ortaya çıkarılan kavramsal kategoriler *"Yol/yön gösterici olarak öğretmen, Bilgi kaynağı ve aktarıcısı olarak öğretmen, Sevgi ve güven kaynağı olarak öğretmen, Otorite kaynağı olarak öğretmen, Rol model olarak öğretmen, Şekillendirici olarak öğretmen, Fedakârlık örneği olarak öğretmen, Gelişim kaynağı olarak öğretmen"*; okul kavramına ilişkin ortaya çıkarılan kavramsal kategoriler ise *"Bilgi kaynağı olarak okul, Yaşamın bir parçası olarak okul, Değişim, gelişim ve olgunlaşma yeri olarak okul, Güven ve mutluluk veren bir yer olarak okul, Kapsayıcı bir yer olarak okul, Kısıtlayıcı bir yer olarak okul, Şekillendiren bir yer olarak okul, Yol gösterici ve yönlendirici bir yer olarak okul, Vazgeçilmez bir yer olarak okul, Karmaşık bir yer olarak okul, Sosyalleşme yeri olarak okul, Amacını yitirmiş bir yer olarak okul"* biçiminde adlandırılmıştır. Araştırma sonuçlarına dayalı olarak geliştirilen öneriler şöyledir: *Öğretmen adaylarının öğrencilere, öğretmenlere ve okula yönelik metaforik algıları öğretmen yetiştirme politikalarının geliştirilmesi süreçlerinde göz önüne alınabilir*. *Olumsuz metaforların nedenleri ortaya çıkararak eğitim politikalarına ilişkin reform çalışmalarında değerlendirilebilir*. *Gelecekteki çalışmalarda, farklı araştırma yöntemleri kullanılabilir; öğrenci, öğretmen ve okul kavramlarını analiz etmek için farklı şehirlerden daha büyük katılımcı gruplarının algıları incelenebilir*.

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INTRODUCTION

Every society needs policies to plan its future. Those policies depend on the area, place, and time. Education policies are determined and implemented to turn students into the macro-and micro-level workforce of the future. Educational policies are expert-based decisions and activities implemented to meet political, social, and financial needs and expectations (Bakioğlu & Korumaz, 2019). Education policies are implemented by teachers in schools for students, who are the workforce of the future. Human is the most important wealth of nations shaped mostly by educational institutions (Can, 2018; Sezgin, 2013). It is necessary to regularly determine stakeholders' (*students, teachers, administrators, and parents*) perceptions, emotions, and views of educational aspects for the sustainable effectiveness of educational organizations. Possible problems in educational processes may sometimes be difficult, and even sometimes impossible to compensate. Metaphors are, therefore, instruments that can be used to understand stakeholders' emotions and opinions better and help to find solutions to possible problems (Berliner, 1990; Botha, 2009; Tulunay Ateş, 2016).

The Turkish Language Association (TLA, 2020) defines a metaphor as "a figure of speech in which a word is used in place of a different kind of object or action to suggest a likeness or analogy or as a word or a phrase used to mean something other than what it originally means" while Arslan & Bayrakçı (2006) defines it as a figure of speech used to describe a phenomenon or a concept with more common terms. Metaphors are powerful instruments that strengthen expression, enrich the language, and turn opinions into linguistic actions (Sezgin, Koşar, Koşar & Er, 2017; Thayer-Bacon, 2000; Yob, 2003). Metaphors make thoughts more vivid, clear, and intelligible (Çelikten, 2006). Therefore, metaphors draw a clear picture of facts, events, and situations in organizational research (Yıldırım & Şimşek, 2016) and help us had better understand the structure and functioning of organizational processes (Hamilton, 2016; Örücü, 2014). In recent years, metaphors have become popular instruments employed to analyze various organizational phenomena (Akan, Yalçın & Yıldırım, 2014; Akbaba Altun & Apaydın, 2013; Çırak Kurt, 2017; Çobanoğlu & Gökalp, 2015; Çocuk, Yokuş & Tanrıseven, 2015; Eroğlu & Özbek, 2018; Kalyoncu, 2012; Korkmaz & Çevik, 2018; Lala, Yazar & Çolak, 2017; Memişoğlu & Kaya, 2016; Memişoğlu & Yılmaz, 2019; Özdemir, 2018b; Saban, 2008; Tekin & Yılmaz, 2012; Yıldız & Ertürk, 2019). This study employed metaphors to determine prospective teachers' perceptions of "schools, teachers, and students."

Schools are the most important organization of education systems, and teachers are the most visible employees of schools, and students are the raison d'être of schools (Can, 2018). Students are individuals who are provided with opportunities to acquire learning outcomes in a certain period of time based on an education program organized according to education policies (Balcı, 2016). Özdemir and Erol (2015) argue that although teachers see students as raw stones with an insatiable desire for knowledge and ready to be fashioned into special jewelry, their potential can only be unlocked by attention, compassion, and affection. It can, therefore, be stated that teachers' views of students are important and that they play a key role in promoting positive behavior development in students (Thomson, 2015).

Teachers are the strategic and key elements of school, which is a social system (Bursalıoğlu, 2010a). They are primarily responsible for promoting the main objectives of a policy-based education system in general (Alım, Şahin & Meral, 2018; Turan, Yıldırım & Tıkman, 2016) and helping students acquire learning outcomes in particular (Akın Köstereliođlu, 2018). The teaching profession is challenging in line with its responsibilities (Ishumi, 2013). Therefore, prospective teachers should be prepared for its challenges (Calderhead & Robson, 1991; Johnson et al., 2014).

Another concept discussed in this study is school, which is both an organization that hosts cooperative activities and interactive socialization (Sezgin, 2013) and a place that encourages students to acquire knowledge and develop skills and positive behaviors in line with the objectives and principles of the education system (Balcı, 2016). Schools are where planned educational activities can be implemented, monitored, and tested (Akın Köstereliođlu, 2018). Metaphors for schools show that schools systematically prepare students for life and provide them with knowledge and culture and help them discover their potential (Özdemir & Erol, 2015). Teachers are primarily responsible for achieving those learning objectives (Yıldız, Akgün & Özdemir, 2017). It is, therefore, of paramount importance to identify prospective teachers' views of the school and the meanings they attribute to it for early detection and prevention of possible problems (Buchanan, 2015; Kara & Bozbayındır, 2019; Massengill-Shaw & Mahlios, 2008).

Significance of the Study

This study focused on student, teacher, and school as three main components of an education system. Rapid global developments warrant regular research on stakeholders' views of those three components. Holistic approaches to data allow us to control the effectiveness of the system and to make some guiding implications for educational policies (Akan & Yarım, 2019; Çelikten, 2006; Güçlü & Duran, 2017). Prospective teachers' perceptions of teachers give significant clues about their attitudes towards the teaching profession (Tannehill & MacPhail, 2014; Thomson, 2015; Yılmaz, Göçen & Yılmaz, 2013). Data can also be used to correct false knowledge concerning the profession. Prospective teachers' perceptions and attitudes towards their profession directly affect their relationships with their students, which is of paramount importance for teachers' careers and students' lives (Kasoutas & Malamitsa, 2009; Koç, 2014). Metaphors for schools allow us to understand prospective teachers' perceptions of educational institutions and their attitudes towards educational policies (Eren & Tekinarslan, 2013; Nalçacı & Bektaş, 2012; Pinnegar, Mangelson, Reed & Groves, 2011).

Research Objective

This study aimed to determine prospective teachers' metaphorical perceptions of "*students, teachers,* and *schools.*" To this end, the study sought answers to the following questions:

a. What kind of metaphors do prospective teachers' have for *"students, teachers,* and *schools"*?

b. Under what conceptual categories are prospective teachers' metaphors based on their justifications?

METHOD

Research Model

The aim of this qualitative study was to determine prospective teachers' metaphorical images of "*students, teachers,* and *schools*" qualitative research involves many conceptual designs. Data were collected using a qualitative data collection design based on metaphors (Yıldırım & Şimşek, 2016). The methods of metaphor analysis are rhetorical criticism, elicitation, ideography, and drawing. In this study, we employed the elicitation method in which participants are asked to assign metaphors to their experiences. Later, the types of these metaphors are compared to understand how participants make sense of similar experiences (Redden, 2017).

Participants

The study sample consisted of 101 pedagogical formation students of Bolu Abant İzzet Baysal University in the 2019-2020 academic year. Participants were recruited using convenience sampling.

Table 1 shows the participants' demographic characteristics.

Table 1. Demographics of participants

Variables		*f*	%
University	Public University	98	97.03
	Private University	3	02.97
Faculty	Distance Education	49	48.51
	Sciences/Arts/Arts and Sciences	42	41.59
	Economics and Administrative Sciences	1	00.99
	Theology	9	08.91
Age (years)	21-30	88	87.13
	31-40	12	11.88
	≥ 41	1	00.99
Type of Education	Formal	51	50.50
	Distance	50	49.50
	Total	101	100

Of participants, 97.03% had a bachelor's degree from a public university while 2.97% a had bachelor's degree from a private university; 48.51% graduated from the faculty of distance education, 41.59% from the faculty of sciences/arts/arts and sciences, 0.99% from the faculty of economics and administrative sciences, and 8.91% from the faculty of theology; 87.13% were 21-30 years of age, 11.88% 31-40 years of age, and 0.99% 41 years of age or older; 50.50% received formal education and 49.50% received distance education (Table 1).

Data Collection

Data were collected using a semi-structured metaphor form developed by the researchers (Patton, 2018). The form had two parts. The first part consisted of items on participants' demographic characteristics while the second part consisted of three semi-structured statements in the form of "*A student/teacher/school is like ..... because.....*" used to determine participants' perceptions of *"students, teachers,* and *schools."* Participants themselves wrote down the metaphors, which were used as the main data (Yıldırım & Şimşek, 2016).

Data Analysis

The data were analyzed in several stages (Saban, 2008);

i. Coding and extracting: First, the metaphors were arranged in alphabetical order, and a draft was drawn up to check to see whether participants expressed the metaphors clearly. Some of their statements were not metaphors, while some were not consistent with their justifications. Eighteen participants' statements regarding "*students*" were not metaphors while three participants did not express any opinion. Therefore, 21 participants' statements regarding "*students*" were excluded from the analysis. Thirteen participants' statements regarding "*teachers*" were not metaphors, while two participants did not express any opinion. Therefore, 15 participants' statements regarding "*teachers*" were excluded from the analysis. Fifteen participants'

statements regarding "schools" were not metaphors, while four participants did not express any opinion. Therefore, 19 participants' statements regarding "schools" were excluded from the analysis.

ii. Compiling a sample list of metaphors: The metaphors were arranged in alphabetical order again, and the data were revised for the second time. Then a sample list of metaphors was compiled to categorize the metaphors and to validate the data analysis process and participants' comments (Saban, 2009).

iii. Developing categories: Categories were developed for students, teachers, and schools based on participants' justifications. Studies in the literature can be used to develop categories (Merriam, 2013). Therefore, the literature was reviewed to find similar studies for category development.

iv. Validity and reliability: The two most commonly used criteria for credibility are validity and reliability (Saban, 2009). Participants' metaphors were thoroughly evaluated and categorized according to their common qualities. Afterward, experts were consulted to check to see whether the metaphors fully represented the categories and whether the themes accurately represented the metaphors. The metaphors and categories were revised based on expert feedback (n=2). Afterward, interrater reliability was calculated using the equation [Reliability=(number of agreements) / (number of agreements + number of disagreements) *100] suggested by Miles and Huberman (1994). The interrater reliability was 90%, 90.70%, and 81.70% for the concepts of "*student*" "*teacher*" and "*school*" respectively, indicating acceptable reliability. The experts analyzed the metaphors and categories together for the remaining sections and reached a consensus.

FINDINGS

This section addressed the participants' metaphorical perceptions of "*students, teachers,* and *schools*" and conceptual categories based on those metaphorical perceptions.

Table 2 shows the participants' metaphors for "*students.*"

Table 2. Participants' metaphors for "*students*"

Metaphor	*f*	Metaphor	*f*
1. Tabula rasa	5	26. A child who never grows up	1
2. Sapling	5	27. Flower	1
3. Child	4	28. Diamond	1
4. Tree	3	29. Flash memory	1
5. Soldier	3	30. Yield	1
6. Baby	3	31. Ant	1
7. Worker	3	32. Watermelon	1
8. Sheep	3	33. Recorder	1
9. Bee	2	34. Boat oar	1
10. Mirror	2	35. Book	1
11. Notebook	2	36. Slave	1
12. Dough	2	37. Minefield	1
13. Raw material	2	38. Log	1
14. Bucket	2	39. Honeycomb	1
15. Prison	2	40. Picture	1
16. Playdough	2	41. Leaf before the wind	1
17. Land	2	42. Politician	1
18. Soil	2	43. Sponge	1
19. Passenger	2	44. Nature	1
20. Clean slate	1	45. Seed	1
21. Empty bucket	1	46. Ball	1
22. Empty box	1	47. Tourist	1
23. Blank slate	1	48. Greenwood	1
24. Blank tape	1		
25. Empty jug	1	Total	80

Participants generated 48 different (80 in total) metaphors for "*students*" eighteen participants' statements regarding "*students*" were not metaphors while three participants did not express an opinion. Therefore, 21 participants' statements regarding "*students*" were not included in Table 2. The most common metaphors were *tabula rasa (f=5), sapling (f=5), child (f=4), tree (f=3), soldier (f=3), baby (f=3), worker (f=3),* and *sheep (f=3)* (Table 2).

Table 3 shows the conceptual categories for the participants' metaphors concerning "*students*" depending on their justifications, and literature review.

Table 3. Conceptual categories for participants' metaphors concerning "*students*"

Conceptual Categories	Metaphors	*f*	*%*
1. Students as individuals who are molded	*Tree, Mirror(2), A Tabula Rasa(2), Child, Diamond, Sapling(2), Dough, Yield, Raw Material(2), Boat Oar, Log, Playdough(2), Honeycomb, Picture, Land(2), Soil, Greenwood*	23	28.75
2. Students as information providers/receivers	*Bee, Baby, Clean Slate, A Tabula Rasa(2), Blank Slate, Blank Tape, Flower, Notebook(2), Flash Memory, Bucket(2), Sponge, Soil, Tourist*	16	20.00
3. Students as developing individuals	*Tree(2), Baby, Empty Box, A Tabula Rasa(2), Child, Sapling(3), Dough, Nature, Seed*	13	16.25
4. Students as obedient individuals	*Soldier(3), Worker(3), Sheep(3), Slave, Ball*	11	13.75
5. Students as unique individuals	*Empty Jug, Child Who Never Grows Up, Child(2), Watermelon, Recorder, Book, Minefield, Politician*	9	11.25
6. Students as inhibited individuals	*Baby, Imprisoned(2)*	3	3.75
7. Students as individuals who are on their way/looking for a way	*Leaf Before the Wind, Passenger(2)*	3	3.75
8. Students as selfless individuals	*Bee, Ant*	2	2.50
	Total	80	100

Participants' metaphors for "*students*" were grouped under eight conceptual categories; "*Students as individuals who are molded, Students as information providers/receivers, Students as developing individuals, Students as obedient individuals, Students as unique individuals, Students as inhibited individuals, Students as individuals who are on their way/looking for a way,* and *Students as selfless individuals*" (Table 3).

The conceptual category of *Students as individuals who are molded* consisted of 17 different metaphors (23 in total; 28.75%). The conceptual category of *Students as information providers/receivers* consisted of 13 different metaphors (16 in total; 20.00%). The conceptual category of *Students as developing individuals* consisted of nine different metaphors (13 in total; 16.25%). The conceptual category of *Students as obedient individuals* consisted of five different metaphors (11 in total; 13.75%). The conceptual category of *Students as unique individuals* consisted of eight different metaphors (9 in total; 11.25%). The conceptual category of *Students as inhibited individuals* consisted of two different metaphors (3 in total; 3.75%). The conceptual category of *Students as individuals who are on their way/looking for a way* consisted of two different metaphors (3 in total; 3.75%). The conceptual category of *Students as selfless individuals* consisted of two different metaphors (2.50%).

The following are some quotations from participants concerning the conceptual categories of "*Students as individuals who are molded, Students as information providers/receivers, Students as developing individuals, Students as obedient individuals, Students as unique individuals, Students as inhibited individuals, Students as individuals who are on their way/looking for a way,* and *Students as selfless individuals.*"

Conceptual category of students as individuals who are molded

S_{47} "*A student is like a piece of land because we can turn her either into a monster or an angel of goodness. Whether the outcome is good or bad depends on the environment*."

S_{82} "*A student is like a mirror because she is a reflection of her teacher's behaviors and attitudes.*"

Conceptual category of students as information providers/receivers

S_{21} "*A student is like a flash memory because everyone tries to upload and teach something to her. Her family and school constantly try to teach her something, without asking whether she wants it or not.*"

S_{100} "*A student is like a sponge because she interprets and records according to her own strategy all the information provided by her teacher.*"

Conceptual category of students as developing individuals

S_{28} "*A student is like a sapling because she grows and bears fruit.*"

S_{96} "*A student is like a seed because she grows and either becomes fruit or a huge plane tree, under the shade of which people can rest.*"

Conceptual category of students as obedient individuals

S_{11} "*A student is like a worker because she has to do whatever she is told to do.*"

S_{74} "*A student is like a ball because she goes wherever you push her*."

Conceptual category of students as unique individuals

S_{24} "*A student is like a child who never grows up because you never know when she is bored with the lesson or when she enjoys it.*"

S_{79} "*A student is like a minefield because you never know what she might say and when she will say it. It can be a behavior or a question.*"

Conceptual category of students as inhibited individuals

S_7 "*A student is like a prisoner because everyone but her has a say about what she is supposed to learn and when she is supposed to learn it.*"

S_{45} "*A student is like a baby because she is always under control.*"

Conceptual category of students as individuals who are on their way/looking for a way

S_2 "*A student is like a passenger because she goes through different ways of knowledge during this process.*"

S_{17} "*A student is like a leaf before the wind because she does not know where to go.*"

Conceptual category of Students as selfless individuals

S_{49} "*A student is like an ant because she always works and produces.*"

S_{59} "*A student is like an ant because she studies, sometimes have to make her living and then gets a job.*"

Table 4 shows the participants' metaphors for "*teachers.*"

Table 4. Participants' metaphors for "*teachers*"

Metaphor	*f*	Metaphor	*f*
1. Guide	10	26. Pal	1
2. Mother-father	8	27. Parent	1
3. Mother	5	28. A color of the rainbow	1
4. Light	5	29. Pioneer	1
5. Book	4	30. Talking book	1
6. Family	3	31. King/queen	1
7. Warden	3	32. Library	1
8. Sun	3	33. Labyrinth	1
9. Mirror	2	34. Carpenter	1
10. Shepherd	2	35. Model	1
11. Candle	2	36. Mentor	1
12. Boss	2	37. Painter	1
13. Artist	2	38. Foundation of the school	1
14. Water	2	39. Exemplary person	1
15. Master	2	40. Robot	1
16. Guide	2	41. Fighter	1
17. Family elder	1	42. Respectable elderly person	1
18. Light bulb	1	43. People you love	1
19. Encyclopedia	1	44. Driver	1
20. Friend	1	45. Life coach	1
21. Lion	1		
22. Cook	1		
23. Father	1		
24. Farmer	1		
25. Sea	1	Total	86

Participants generated 45 (86 in total) metaphors for "*teachers.*" Thirteen participants' statements regarding "*teachers*" were not metaphors, while two participants did not express any opinion. Therefore, 15 participants' statements regarding "*teachers*" were not included in Table 4. The most common metaphors were *guide (f=10), mother-father (f=8), mother (f=5), light (f=5), book (f=4), family (f=3), warden (f=3)*, and *sun (f=3)* (Table 4).

Table 5 shows the conceptual categories for the participants' metaphors concerning "*teachers*" depending on their justifications and literature review.

Table 5. Conceptual categories for participants' metaphors concerning "*teachers*"

Conceptual Categories	Metaphors	*f*	*%*
1. Teachers as guides	*Mother, Mirror, Pal, Sun, Light, Pioneer, Mentor Guide(10), Driver, Life coach, Guide(3)*	21	24.42
2. Teachers as sources and transmitters of knowledge	*Light bulb, Mother-father, Encyclopedia, Mirror, Sea, Sun, Light(2), Book(3), Talking book, Library, Candle, Respectable elderly person, Water(2), Master*	18	20.93
3. Teachers as sources of love and trust	*Family(2), Family elder, Mother, Mother-father(4), Shepherd, Parent, People you love*	11	12.79
4. Teachers as sources of authority	*Lion, Shepherd, Warden(3), King/queen, Boss(2), Robot, Fighter*	10	11.63
5. Teachers as role models	*Mother-father, Friend, Father, A color of the rainbow, Light, Labyrinth, Model, Exemplary person*	8	9.30
6. Teachers as molders	*Cook, Farmer, Carpenter, Painter, Foundation of the school, Artist, Master*	7	8.14

Conceptual Categories	Metaphors	*f*	*%*
7. Teachers as self-sacrificing individuals	*Family, Mother[3], Mother-father, Candle*	6	6.98
8. Teachers as sources of improvement	*Mother-father, Sun, Light, Book, Artist*	5	5.81
	Total	86	100

Participants' metaphors for "*teachers*" were grouped under eight conceptual categories; "*Teachers as guides, Teachers as sources and transmitters of knowledge, Teachers as sources of love and trust, Teachers as sources of authority, Teachers as role models, Teachers as molders, Teachers as self-sacrificing individuals,* and *Teachers as sources of improvement*" (Table 5).

The conceptual category of *Teachers as guides* consisted of 11 different metaphors (21 in total; 24.42%). The conceptual category of *Teachers as sources and transmitters of knowledge* consisted of 14 different metaphors (18 in total; 20.93%). The conceptual category of *Teachers as sources of love and trust* consisted of seven different metaphors (11 in total; 12.79%). The conceptual category of *Teachers as sources of authority* consisted of seven different metaphors (10 in total; 11.63%). The conceptual category of *Teachers as role models* consisted of eight different metaphors (9.30%). The conceptual category of *Teachers as molders* consisted of seven different metaphors (8.14%). The conceptual category of *Teachers as self-sacrificing individuals* consisted of five different metaphors (6 in total; 6.98%). The conceptual category of *Teachers as sources of improvement* consisted of five different metaphors (5.81%).

The following are some quotations from participants concerning the conceptual categories of "*Teachers as guides, Teachers as sources and transmitters of knowledge, Teachers as sources of love and trust, Teachers as sources of authority, Teachers as role models, Teachers as molders, Teachers as self-sacrificing individuals,* and *Teachers as sources of improvement*."

Conceptual category of teachers as guides

S_2 "*A teacher is like a mentor because she guides us to reach our goals.*"

S_{46} "*A teacher is like a guide because she guides students and sheds light on them and is one of the easiest ways to reach the truth.*"

Conceptual category of teachers as sources and transmitters of knowledge

S_{30} "*A teacher is like an encyclopedia because you can look it up and learn things from it, and it is full of information.*"

S_{92} "*A teacher is like a book because she enlightens her students with her experience and knowledge.*"

Conceptual category of teachers as sources of love and trust

S_{40} "*A teacher is like a parent because you love her even when she is mad at you because you know that she is always there for you.*"

S_{91} "*A teacher is like a mother-father because she gives her students all her love and knowledge.*"

Conceptual category of teachers as sources of authority

S_6 "*A teacher is like a warden because she applies the rules and makes sure that students abide by them.*"

S_{16} "*A teacher is like a king/queen because she is always right and always has the last say.*"

Conceptual category of teachers as role models

S_{52} "*A teacher is like an exemplary person because she always improves herself and has an influence on her students.*"

S_{71} "*A teacher is like light because first the mother and then she sheds light on you. Teachers you love become very dear to you. You would never forget them.*"

Conceptual category of teachers as molders

S_{25} "*A teacher is like an artist because she shapes what she has in the way she wants. She sometimes creates works of art and sometimes messes them up.*"

S_{80} "*A teacher is like a farmer because she cares for her students, who are seeds, and gives them medicine. She tries to correct her students' flaws, just like pulling out weeds under a tree.*"

Conceptual category of teachers as self-sacrificing individuals

S_{26} "*A teacher is like a mother because she helps us in any way from childhood to adulthood.*"

S_{93} "*A teacher is like a candle because she keeps enlightening you as she melts.*"

Conceptual category of teachers as sources of improvement

S_{35} "*A teacher is like a book because the more you read it, the more it improves you. If you do not want to improve, then it gets dusty and, you do nothing but check its cover.*"

S_{98} "*A teacher is like light because she prepares her students for life and informs them about everything.*"

Table 6 shows the participants' metaphors for "*schools.*"

Table 6. Participants' metaphors for "*schools*"

Metaphor	*f*	Metaphor	*f*
1. Family/Home	24	23. Healthy food	1
2. Life	7	24. Rainbow	1
3. Factory	3	25. Zoo	1
4. Book	3	26. Light	1
5. Mother	2	27. Bookie	1
6. Garden	2	28. Work	1
7. Prison	2	29. Workplace	1
8. Tea	2	30. Cage	1
9. Library	2	31. Camping site	1
10. Water	2	32. Closed box	1
11. Soil	2	33. Kitchen	1
12. Tree	1	34. Breath	1
13. Barn	1	35. Ocean	1
14. A boat in a stream	1	36. Forest	1
15. Car	1	37. Honeycomb	1
16. Mirror	1	38. Flowerpot	1
17. Hearth of knowledge	1	39. Movie theater	1
18. Computer	1	40. Land	1
19. Steering wheel	1	41. Peacock	1
20. Nature	1	42. Burden	1
21. Literature	1		1
22. Entertainment venue	1		
		Total	82

Participants generated 42 (82 in total) metaphors for "*schools.*" Fifteen participants' statements regarding "*schools*" were not metaphors, while four participants did not express any opinion. Therefore, nineteen participants' statements regarding "*schools*" were not included in Table 6. The most common metaphors were *family/home (f=24), life (f=7), factory (f=3),* and *book (f=3)*. Table 7 shows the conceptual categories for the participants' metaphors concerning "*schools*" based on their justifications, and literature review.

Table 7. Conceptual categories for the participants' metaphors concerning "*school*"

Conceptual Categories	Metaphors	*f*	*%*
1. Schools as sources of information	*Family/Home(3), Hearth of knowledge, Computer, Nature, Light, Book(3), Library(2), Kitchen, Ocean, Movie Theater, Life*	16	19,.1
2. Schools as part of life	*Barn, Family/Home(6), Flowerpot, Life(4)*	12	14.63
3. Schools as places of change, development, and maturation	*Family/Home(4), Mother, Tea(2), Water, Peacock, Soil(2)*	11	13.41
4. Schools as places of trust and happiness	*Family/Home(8), Entertainment Venue*	9	10.98
5. Schools as places of inclusion	*Family/Home, Garden(2), Rainbow, Forest, Honeycomb*	6	7.32
6. Schools as places of inhibition	*Prison (2), Factory, Cage, Camping Site*	5	6.10
7. Schools as places of molding	*Tree, Mother, Mirror, Factory, Land*	5	6.10
8. Schools as places of guiding and leading	*A Boat In A Stream, Car, Steering Wheel, Factory, Life*	5	6.10
9. Schools as indispensable places	*Work, Workplace, Breath, Health Food, Water*	5	6.10
10. Schools as complex places	*Literature, Zoo, Bookie, Life*	4	4.88
11. Schools as places of socialization	*Closed Box, Family/Home(2)*	3	3.66
12. Schools as places that have lost their purpose	*Burden*	1	1.21
	Total	82	100

Participants' metaphors for "*schools*" were grouped under 12 conceptual categories; "*Schools as sources of information, Schools as part of life, Schools as places of change, development, and maturation, Schools as places of trust and happiness, Schools as places of inclusion, Schools as places of inhibition, Schools as places of molding, Schools as places of guiding and leading, Schools as indispensable places, Schools as complex places, Schools as places of socialization,* and *Schools as places that have lost their purpose*" (Table 7).

The conceptual category of *Schools as sources of information* consisted of 11 different metaphors (16 in total; 19.51%). The conceptual category of *Schools as part of life* consisted of four different metaphors (12 in total; 14.63%). The conceptual category of *Schools as places of change, development, and maturation* consisted of five different metaphors (11 in total; 13.41%). The conceptual category of *Schools as places of trust and happiness* consisted of two different metaphors (9 in total; 10.98%). The conceptual category of *Schools as places of inclusion* consisted of four different metaphors (6 in total; 7.32%). The conceptual category of *Schools as places of inhibition* consisted of four different metaphors (5 in total; 6.10%). The conceptual category of *Schools as places of molding* consisted of five different metaphors (6.10%). The conceptual category of *Schools as places of guiding and leading* consisted of five different metaphors (6.10%). The conceptual category of *Schools as indispensable places* consisted

of five different metaphors (6.10%). The conceptual category of *Schools as complex places* consisted of four different metaphors (4.88%). The conceptual category of *Schools as places of socialization* consisted of two different metaphors (3 in total; 3.66%). The conceptual category of *Schools as places that have lost their purpose* consisted of one metaphor (1.21%).

The following are some quotations from participants concerning the conceptual categories of "*Schools as sources of information, Schools as part of life, Schools as places of change, development, and maturation, Schools as places of trust and happiness, Schools as places of inclusion, Schools as places of inhibition, Schools as places of molding, Schools as places of guiding and leading, Schools as indispensable places, Schools as complex places, Schools as places of socialization,* and *Schools as places that have lost their purpose*."

Conceptual category of schools as sources of information

S_8 "*A school is like nature because it gives everything that it has just as nature does.*"

S_{26} "*A school is like a library because it broadens our horizons and teaches us new things.*"

Conceptual category of schools as part of life

S_{60} "*A school is like a family because we spend most of our time at home with our family, and students spend most of their time at school and learn everything there, like in a family environment.*"

S_{68} "*A school is like home because students spend most of their time and learn about brotherhood, love, and many other things there.*"

Conceptual category of schools as places of change, development, and maturation

S_{22} "*A school is like water because it makes students blossom.*"

S_{82} "*A school is a soil because education grows students and makes them useful just like soil.*"

Conceptual category of schools as places of trust and happiness

S_{41} "*A school is like home because we learn everything at school and spend most of our time there. The school feels as warm as home.*"

S_{73} "*A school is like an entertainment venue; I have a lot of fun there because I love entertainment venues.*"

Conceptual category of schools as places of inclusion

S_{29} "*A school is like a rainbow because it is made up of colors from all over Turkey.*"

S_{37} "*A school is like a garden because students have different colors and personalities just like the flowers in a garden.*"

Conceptual category of schools as places of inhibition

S_7 "*A school is like a prison because it is just like prison life. The 10-minute recess is like going out to the prison yard.*"

S_{16} "*A school is like a camping site because we have no freedom at school.*"

Conceptual category of schools as places of molding

S_{31} "*A school is like a piece of land because you reap what you plant."*

S_{76} "*A school is like a mirror because it prepares students for society and helps them fit into society. It reflects society.*"

Conceptual category of schools as places of guiding and leading

S_3 *"A school is like a steering wheel because it gives students a direction.*"

S_{35} *"A school is like a car because you can go anywhere if you know how to drive but you may have an accident if you do not know how to drive.*"

Conceptual category of schools as indispensable places

S_9 "*A school is like water because it is indispensable for life.*"

S_{12} "*A school is like breathing because every moment there keeps you alive.*

Conceptual category of schools as complex places

S_{39} "*A school is like literature because sometimes you run into a favorite poet, and sometimes a boring novel.*"

S_{90} "*A school is like life because you never know what to learn and when to learn it and what to expect.*"

Conceptual category of schools as places of socialization

S_{50} "*A school is like a closed box because when you open it, it spreads you around.*"

S_{81} "*A school is like a family because we spend most of our time at school and build relationships with our friends and teachers and share our troubles and memories with them.*"

Conceptual category of schools as places that have lost their purpose

S_{25} "*A school is like a burden because I believe that it gives us nothing and does nothing but numb our minds.*"

RESULTS, DISCUSSION and SUGGESTIONS

Metaphors can be used both to explain very complex facts and to improve teachers' feelings and thoughts (Ocak & Gündüz, 2006; Cerit, 2006; Rosaen & Florio-Ruane, 2008). Metaphors are a convenient instrument to explore how prospective teachers with different professional knowledge perceive things and to identify their classroom roles and their beliefs and assumptions concerning students and education (Ben-Peretz, Mendelson & Kron, 2003; Hamilton, 2016). This study determined prospective teachers' metaphors for *students*, *teachers*, and *schools*. Their mental images point to a wide spectrum of metaphors with different characteristics.

Students are the *raison d'etre* of education systems, and hence, schools (Can, 2018), and meanings attributed to students determine the future of society and are the guarantee of future generations (Sezgin et al., 2017). Our participants generated 48 different (80 in total) metaphors for "*students*" which were grouped under eight conceptual categories; *"Students as individuals who are molded, Students as information providers/receivers, Students as developing individuals, Students as obedient individuals, Students as unique individuals, Students as inhibited individuals, Students as individuals who are on their way/looking for a way,* and *Students as selfless individuals."* Students are individuals who achieve learning outcomes in educational programs in a certain period (Balcı, 2016). Our participants perceived students as *"information providers/receivers"* and "*individuals who are molded*" which is consistent with the literature (Aydın & Pehlivan, 2010; Çırak, 2014; Çırak Kurt & Yıldırım, 2019; Özdemir & Erol, 2015). A significant feature of education systems is the progress made by students. Contemporary education systems are concentrated on the development of students (Özdemir, 2018a), who are defined as developing individuals (Neyişçi & Özdiyar, 2019; Saban, 2009; Sezgin et al., 2017). Our participants used such metaphors as soldier, worker, sheep, and slave to describe students as *obedient individuals* but also perceived them as *unique individuals*, which has been reported by previous studies as well (Neyişçi & Özdiyar, 2019; Saban, 2009; Sezgin et al., 2017). Teachers who focus on exploring students' potential should possess a special skill to be able to protect their students' originality and personal rights and to make sure that they cooperate with their teachers (TEDMEM, 2014). On the one hand, our participants described students as unique individuals, but, on the other hand, used such metaphors as prisoners and babies to describe them as *inhibited individuals*, which has been reported by previous studies (Aydın & Pehlivan, 2010; Çırak, 2014; Çırak Kurt & Yıldırım, 2019; Neyişçi & Özdiyar, 2019). Aydın (2015) reported that students felt inhibited at school. Under the category of *Students as individuals who are on their way/looking for a way*, participants stated that students needed a guide (Cemaloğlu, Sezgin, Şahin & Sönmez, 2017; Çırak, 2014) and were *selfless individuals* (Aydın & Pehlivan, 2010).

Teachers are the initiators, developers, and practitioners of education (Bursalıoğlu, 2010a; Cüceloğlu & Erdoğan, 2018) who determine the functioning and quality of the education system (TEDMEM, 2014). Our participants generated 45 (86 in total) metaphors for "*teachers*" which were grouped under eight conceptual categories; *"Teachers as guides, Teachers as sources and transmitters of knowledge, Teachers as sources of love and trust, Teachers as sources of authority, Teachers as role models, Teachers as molders, Teachers as self-sacrificing individuals,* and *Teachers as sources of improvement."* Effective teaching requires guidance skills (McBer, 2000), which is emphasized by numerous educational studies (Alım et al., 2018; Aydın & Pehlivan, 2010; Cerit, 2008; Çevik Kılıç, 2016; Egüz & Öntaş, 2018; Ertürk, 2017; Işık, 2014; Kart, 2016; Kıral, 2015; Koç, 2014; Neyişçi & Özdiyar, 2019; Ocak & Gündüz, 2006; Özdemir, 2018b; Saban, 2004; Saban, Koçbeker & Saban, 2006; Sarıkaya, 2018; Tulunay Ateş, 2016; Turan et al., 2016; Turhan & Yaraş, 2013; Yılmaz et al., 2013). Teachers are regarded as experts who are capable of guiding students (Can, 2018). In this context, the teaching profession is at the junction of being a powerful tool for self-discovery and self-realization and being responsible for guiding and determining the future of society (TEDMEM, 2014). Teachers who can guide their students enable them to develop skills, resulting in academic performance (Bursalıoğlu, 2010a). Another category with high level of frequency based on participants' metaphors was "*teachers as sources and transmitters of knowledge*" (Aydın & Pehlivan, 2010; Cemaloğlu et al., 2017; Cerit, 2008; Çevik Kılıç, 2016; De Guerrero & Villamil, 2002; Egüz & Öntaş 2018; Ertürk, 2017; Işık, 2014; Kart, 2016; Kıral, 2015; Koç, 2014; Neyişçi & Özdiyar, 2019; Ocak & Gündüz, 2006; Ogurlu, Öpengin & Hızlı, 2015; Özdemir, 2018b; Özdemir & Erol, 2015; Saban, 2004; Saban et al., 2006; Sarıkaya, 2018; Tulunay Ateş , 2016; Turan et al., 2016; Turhan & Yaraş, 2013; Yılmaz et al., 2013). This perception is of paramount importance for effective education because teachers are responsible for transmitting knowledge (Bursalıoğlu, 2010a), and students' performance depends on teachers' occupational competence. The fact that teachers perceive themselves primarily as educators affects the way they interact with students (Brophy, 1985 cited in Karadağ & Dulay, 2017). Effective teaching also requires teachers to be *sources of love and trust* (McBer, 2000), which has also been reported by studies on teachers' metaphorical perceptions (Egüz & Öntaş, 2018; Ertürk, 2017; Kart, 2016; Kıral, 2015; Kuyumcu & Özsarı, 2016; Ogurlu et al., 2015; Özgenel & Gökçe, 2019; Tulunay Ateş, 2016; Turhan & Yaraş, 2013). Love, which is as a form of human existence that reproduces itself, and trust, which is a natural product of that existence (Aydın, 2017) are two main values (Cüceloğlu & Erdoğan, 2018) and images of teachers in the eyes of society (Can, 2018). Teachers should build positive relationships with students to achieve effective classroom management (Karadağ & Dulay, 2017) because human relationships mean nothing unless there is love and trust (Cüceloğlu & Erdoğan, 2018). Teachers build love and trust, but sometimes experience role conflict, especially when it comes to discipline (Bursalıoğlu, 2010a). Therefore, most teachers build *"distant relationships with their students where the boundaries of the two sides are clear"* (Karadağ & Dulay, 2017), which may be due to the socialization function of the school (Aydın, 2015). Our participants perceived teachers as "*sources of authority*," which has been reported by previous studies (Aydın & Pehlivan, 2010; Işık, 2014; Ogurlu et al., 2015; Saban et al., 2006). However, teachers are also considered by students to be the representatives of the values of the modern and contemporary world (Aydın, 2017). It should be kept in mind that students identify with teachers who care and support them (TEDMEM, 2014). Teachers' values and views of life are

reflected in their behaviors, which affect students because they are role models for them (Cüceloğlu & Erdoğan, 2018). Research also shows that teachers are considered "*role models*" (Aydın & Pehlivan, 2010; Cemaloğlu et al., 2017; Ocak & Gündüz, 2006; Özdemir, 2018b; Yılmaz et al., 2013). According to McBer's model (2000), one of the characteristics of effective teachers is that they can shape their students' learning dispositions and attitudes for certain objectives, which is perceived as positive (Alım et al., 2018; Aydın & Pehlivan, 2010; Cemaloğlu et al., 2017; Çevik Kılıç, 2016; Egüz & Öntaş, 2018; Ertürk, 2017; Işık, 2014; Ocak & Gündüz, 2006; Özdemir, 2018b; Özdemir & Erol, 2015; Saban, 2004; Saban et al., 2006; Tulunay Ateş, 2016; Turan et al., 2016; Yılmaz et al., 2013). Also, teachers make sacrifices beyond all reasonable expectations (Cüceloğlu & Erdoğan, 2018). Research shows that teachers are regarded as *"self-sacrificing individuals"* (Işık, 2014; Kart, 2016; Koç, 2014; Neyişci & Özdiyar, 2019; Ocak & Gündüz, 2006; Özdemir, 2018b; Özdemir & Erol, 2015; Sarıkaya, 2018). Teachers are committed to making sure that their students become the best version of themselves. The only thing they expect in return is that their students become learned and happy people (Cüceloğlu & Erdoğan, 2018). Another category based on our participants' metaphors was *"teachers as sources of improvement,"* which emphasized that teachers are responsible for monitoring their students' development and supporting them throughout that process (Aydın, 2017). Metaphorical studies on students' perceptions of their teachers also confirm this result (Koç, 2014; Neyişci & Özdiyar, 2019; Ocak & Gündüz, 2006; Saban, 2004; Saban et al., 2006; Sarıkaya, 2018).

Institutions have specific goals to meet the needs of society and have organizational structures to achieve those goals. Schools are one of those institutions. School is an integrated model that encodes collective memory, reflects life, and designs the future (TEDMEM, 2014). Our participants generated 42 (82 in total) metaphors for "*schools*" under 12 categories; *"Schools as sources of information, Schools as part of life, Schools as places of change, development, and maturation, Schools as places of trust and happiness, Schools as places of inclusion, Schools as places of inhibition, Schools as places of molding, Schools as places of guiding and leading, Schools as indispensable places, Schools as complex places, Schools as places of socialization,* and *Schools as places that have lost their purpose*." Today, schools are widely regarded as places where learning takes place (Taşgın, 2018) and as "*sources of information*" (Bülbül & Toker Gökçe, 2015; Cemaloğlu et al., 2017; Doğan, 2014; Gök, 2017; Kara & Bozbayındır, 2019; Nalçacı & Bektaş, 2012; Ogurlu et al., 2015; Özdemir & Akkaya, 2013; Özdemir & Erol, 2015; Saban, 2008; Tulunay Ateş, 2016; Yüksel & Hayırsever, 2019). Schools are also seen as "*part of life*" where students' physical, social, and psychological needs are met (Akan & Yarım, 2019; Cemaloğlu et al., 2017; Doğan, 2014; Gök, 2017; Kara & Bozbayındır, 2019; Neyişci & Özdiyar, 2019; Özdemir & Orhan, 2019), which may be mainly because it is believed that schools are the institutions where social norms are passed down to the next generation (Dewey, 2019). The world is changing at a rapid pace, driven by science and technology. Therefore, education systems, and thus, schools, should be reformed to enable students to acquire new knowledge and to help them develop 21st-century skills based on their interests and needs (Bursalıoğlu, 2010a). Today, modern schools focus both on individual and social development (Özdemir, 2018a), and therefore, are defined as "*places of change, development, and maturation"* (Bülbül & Toker Gökçe, 2015; Cemaloğlu et al., 2017; Doğan, 2014; Gök, 2017; Nalçacı & Bektaş, 2012; Neyişci & Özdiyar, 2019; Saban, 2008; Tulunay Ateş, 2016; Yüksel & Hayırsever, 2019) because successful physical development involves both instructional development (*reading and writing skills, etc.*) and maturation (Dewey, 2019). Schools perceived as places of change, development, and maturation promote human interaction, and students who feel safe and happy have better academic performance. Research also shows that schools are regarded as "*places of change, development, and maturation"* (Akan & Yarım, 2019; Demirel, 2016; Gök, 2017; Kara & Bozbayındır, 2019; Nalçacı & Bektaş, 2012; Özdemir & Akkaya, 2013; Özdemir & Erol, 2015; Tulunay Ateş, 2016; Yüksel & Hayırsever, 2019). Students have different characters, lifestyles, behaviors, and backgrounds (Can, 2018), which are incorporated by schools in common cultural life (Sezgin, 2013). This enables students to perceive *"schools as places of inclusion"* (Demirel, 2016; Kara & Bozbayındır, 2019). Education is a multidimensional activity, and therefore, should be modeled in such a way that it meets the needs of students of all backgrounds, abilities, and interests (Bursalıoğlu, 2010b). Some of our participants perceived *"schools as places of inhibition"*. Teachers avoid associating schools with a restrictive metaphor like prison because it would damage their self-esteem and confidence. However, students think of schools as prisons because they often use that metaphor when talking about their schools (Aydın, 2015), which has been reported by other studies as well (Cemaloğlu et al., 2017; Özdemir & Akkaya, 2013; Özdemir & Orhan, 2019; Saban, 2008; Yüksel & Hayırsever, 2019). Our participants also defined *"schools as places of molding"* (Bülbül & Toker Gökçe, 2015; Cemaloğlu et al., 2017; Nalçacı & Bektaş, 2012; Ogurlu et al., 2015; Özdemir & Akkaya, 2013; Saban, 2008). The most important feature of schools is that their raw material is human (Bursalıoğlu, 2010a). Schools work on students as raw materials and provide them with knowledge and help them develop skills and positive attitudes (Çiçek Sağlam, 2019). Our participants also perceived *"schools as places of guiding and leading,"* which is supported by previous studies (Nalçacı & Bektaş, 2012; Özdemir & Erol, 2015; Saban, 2008; Tulunay Ateş, 2016). Schools are primarily responsible for guiding and leading (Çiçek Sağlam, 2019). They are still regarded as the answer to social problems (Aydın, 2015) and as *"indispensable places"* (Nalçacı & Bektaş, 2012; Yüksel & Hayırsever, 2019). Schools, which are perceived as indispensable, are human-oriented, and therefore, very complex (Bursalıoğlu, 2010b). Research also shows that schools are considered to be *"complex places"* (Cemaloğlu et al., 2017; Ogurlu et al., 2015; Özdemir & Akkaya, 2013). Some of our participants also considered schools to be *"complex places"*. Schools are responsible for turning students into individuals not only with academic degrees but also with social and cultural values (Schreglmann, 2019) and for promoting student socialization (Bursalıoğlu, 2010a). Therefore, they are also seen as *"places of socialization"* (Doğan, 2014; Gök, 2017; Nalçacı & Bektaş, 2012; Neyişci & Özdiyar, 2019; Ogurlu et al., 2015; Özdemir & Akkaya, 2013). Although schools are perceived by students as the places of socialization, they lose reputation and credibility when they fail in effective teaching. Such schools are regarded as *"places that have lost their purpose"* (Doğan, 2014; Özdemir & Akkaya, 2013).

This study determined prospective teachers' mental images of *"students, teachers,* and *schools"* through metaphors. Metaphors are very powerful instruments that can be used to determine mental images.

The following are suggestions based on the results:

i. Prospective teachers' metaphoric perceptions of students, teachers, and school should be used to develop better teacher training policies.

ii. Possible causes of negative metaphors should be addressed to reform education policies.

iii. Future studies should use different research methods and recruit larger groups of participants from different cities to analyze the concepts of student, teacher, and school.

iv. Future studies should investigate prospective teachers' metaphorical perceptions of different concepts (school principals, education inspectors, etc.).

Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

Batman University Ethics Committee;

Date of ethics committee decision= 07/05/2020

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| Research Article / Araştırma Makalesi |

History Educators in Two Different Geographies: Lucy Maynard Salmon and Abdurrahman Şeref

İki Ayrı Coğrafyada Tarih Eğitimcileri: Lucy Maynard Salmon ve Abdurrahman Şeref

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Abstract

Purpose: The aim of this research is to provide information about the lives and activities of Lucy Maynard Salmon (1853-1927), the history educator of America and Abdurrahman Şeref Efendi (1853-1925), the history educator and politician of the Ottoman Empire, who lived in the same periods, and to compare the understanding of history education in the light of the American and Turkish social structure of the period.

Methodology: In this study, which used the document review technique from qualitative research methods, books and articles written by scientists, as well as books, articles and dissertations written about them, were interpreted by subjecting them to descriptive analysis.

Findings: It is expected that two scientists who grew up and received education in two different societies will also differ in their understanding of history and education. Although there are differences in the educational understandings of the two intellectuals who are light in the societies in which they live, they have something in common in terms of bringing many innovations to the understanding of history of the society in which they live. Salmon develops students critical thinking and creativity skills through extracurricular practices, exams and assignments, while Şeref improves their professional competence by having graduate students teach courses at school.

Highlights: Although Şeref's understanding of education is more traditional than Salmon's, it can be considered innovative compared to the Ottoman education system of the period. They both tried to break down the taboos in the field of education that society had created over time, brought innovations to history education with their practices and thoughts, and laid the foundation for today's understanding of social studies and history education. The success of both scientists in the field of education led them to serve in different fields. Salmon worked as a manager in non-governmental organizations and associations, while Şeref served as a minister and deputy in the political field.

Öz

Çalışmanın amacı: Aynı dönemde yaşayan Amerika'nın tarih eğitimcisi Lucy Maynard Salmon (1853-1927) ile Osmanlı Devleti'nin tarih eğitimcisi ve siyasetçisi Abdurrahman Şeref'in (1853-1925) hayatları ve faaliyetleri hakkında bilgi vermek ve dönemin Amerikan ve Türk toplum yapısı ışığında bu iki bilim insanının tarih eğitim anlayışlarını karşılaştırmaktır.

Yöntem: Nitel araştırma yöntemlerinden doküman incelemesi tekniği kullanılan bu çalışmada bilim insanlarının yazdığı kitaplar ve makalelerin yanı sıra onlar hakkında yazılan kitaplar, makaleler ve tez çalışmaları betimsel analize tabi tutularak yorumlanmıştır.

Bulgular: Farklı iki toplumda yetişen, eğitim alan iki bilim insanının tarih ve eğitim anlayışları da farklılık göstermesi beklenir bir durumdur. Yaşadığı toplumlara ışık olan iki aydının eğitim anlayışında farklılıklar olsa da içinde bulunduğu toplumun tarih anlayışına birçok yenilik getirmesi bakımından ortak yanları bulunmaktadır. Salmon, ders dışı uygulamalar, sınavlar ve ödevler ile öğrencilerin eleştirel düşünme ve yaratıcılık becerilerini geliştirirken Şeref'in ise mezun öğrencilerine okulda ders anlattırarak mesleki yeterliliklerini geliştirdiğini görüyoruz.

Önemli vurgular: Şeref'in eğitim anlayışı Salmon'a göre daha geleneksel olsa da dönemin Osmanlı eğitim sistemine nazaran yenilikçi sayılabilir. İkisi de toplumun zaman içinde oluşturduğu eğitim alanındaki tabuları yıkmaya çalışmış, uygulamaları ve düşünceleri ile tarih eğitimine yenilikler getirmiş ve bugünün sosyal bilgiler ve tarih eğitim anlayışının temelini atmışlardır. Her iki bilim insanının eğitim alanında gösterdikleri başarı onları farklı alanlarda da hizmet vermeye yöneltmiştir. Salmon sivil toplum örgütlerinde ve derneklerde yöneticilik yaparken Şeref ise siyasi alanda nazırlık ve milletvekilliği görevlerinde bulunmuştur.

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INTRODUCTION

Two intellectuals in two separate geographies in the 19th century, a period in which balances of power changed, imperialism destroying the empires spread to every continent of the world and instead, nation states replaced them. One is Abdurrahman Şeref (1853-1925), both a history academician and a politician of the Ottoman Empire at the very heart of the war and the other is Lucy Maynard Salmon (1853-1927), the history academician of America, a country rising in a geography so far from the war. It is something that is normally expected that two scientific men who grew up and received education in the societies with different political interests, lifestyles, faiths and values assume different concepts of history and education from each other. Even if such two intellectuals raising the awareness of their societies assume different understanding of education, they share a common ground in terms of introducing many novelties to the history concept of the societies they lived in. Both tried to break the taboos in education, which were created by society in the course of time and brought novelty to history education with their practices and thoughts and laid the foundations of today's concept of social sciences and history education.

There are many studies about Lucy Maynard Salmon who led the way for the education and social rights of women in America and evaluated history education with an innovative perspective. All articles of Salmon were compiled in the book of *history and the texture of modern life: Selected essays* under the editorship of Nicholas Adams and Bonnie G. Smith in 2001. Other valuable book is *go to the sources: Lucy Maynard Salmon and the teaching of history* written by Chara Haeussler Bohan in 2004. These books present all unknown sides regarding Salmon's concept of history and education activities. In addition to these two books, Bohan's (1999) study called *Lucy Maynard Salmon: Progressive historian, teacher, and democrat* and Webb and Bohan's (2015) studies under the name of *Beyond Jane Addams: The progressive pedagogies of Ella Flagg Young, Lucy Sprague Mitchell, Lucy Maynard Salmon and Anna Julia Cooper* better clarify Salmon's concept of history and education and also, how the tasks assumed by her as a woman were fulfilled successfully.

There are books, theses and articles written about Abdurrahman Şeref. The books written about Şeref are as follows; Demiryürek (2003) *Tanzimat'tan Cumhuriyet'e bir Osmanlı aydını Abdurrahman Şeref Efendi (1853-1925)* (*Abdurrahman Şeref Efendi (1853-1925), an Ottoman highbrowed from Tanzimat reform era to the Republican period); and Demiryürek (2009) son vakanüvis Abdurrahman Şeref Efendiyle Osmanlı tarih sohbetleri (Ottoman history conversations with the last historiographer Abdurrahman Şeref Efendi)*. The theses written about Şeref are provided below; doctoral thesis called *a devlet adamı ve tarihçi Abdurrahman Şeref Efendi (1853-1925) (statesman and a historian Abdurrahman Şeref Efendi (1853-1925))* by Demiryürek (1999), Taştan (2004) *Abdurrahman Şeref, yaşadığı dönem ve eserleri* (*Abdurrahman Şeref, his period and works)*, Kozan (2011) *Abdurrahman Şeref Bey'in eğitim din ve ahlak eğitimiyle ilgili görüşleri* (*Abdurrahman Şeref Bey's views on education, religion and ethics education)*, and Çetin (2019) *Abdurrahman Şeref Efendi tarihinde Osmanlı Devletinin ilk yüzyılı (1300-1400): Osmanlı hanedanının kökeni, fetret devri ve siyasetten katl meselelerinin değerlendirilmesi* (*the first century of the Ottoman Empire in the history of Abdurrahman Şeref Efendi (1300-1400):* postgraduate theses are; *roots of the Ottoman dynasty, interregnum and evaluation of fratricide from a political perspective).* The articles; Binark (1980) *arşivlerimizin değeri ve son vakanüvis Abdurrahman Şeref Beyin 'evrak-ı atika ve vesaik-i tarihiyemiz'* (*value of our archives and the last historiographer Abdurrahman Şeref Bey's 'our old papers and history documents),* Tekiner (2009) *Abdurrahman Şeref Efendi (biyografisi, resmi ve özel hayatı)* (*Abdurrahman Şeref Efendi (his biography, picture and private life))* prepared by Vehbi Günay for publication, Demiryürek (2003) *biyografi yazarı olarak Abdurrahman Şeref Efendi* (*Abdurrahman Şeref Efendi as a biography writer)* and Demiryürek (2003) *ölümünün 78 yılında son vakanüvis Abdurrahman Şeref Efendi ve Cumhuriyet* (*the last historiographer Abdurrahman Şeref Efendi in the 78th year of his death and the Republic).*

Purpose and Importance of the Research

The aim of this research is to provide information about the lives and activities of Lucy Maynard Salmon and Abdurrahman Şeref Efendi who lived in the same periods, and to compare their understanding of history education in the light of the American and Turkish social structure of the period. Lack of any study about both scholars and comparing the history education of both societies in the 19th century makes this study important.

Problem Statement of the Sub-study

Problem statement of this study has been described as "What can be said about the lives and activities of Lucy Maynard Salmon and Abdurrahman Şeref, their understandings of history education and similarities and differences between such understanding of theirs. "Sub-problems in this context are summarized as follows: a) What can be told about Lucy Maynard Salmon's life, activities and understanding of history education, b) What can be told about Abdurrahman Şeref's life, activities and understanding of history education, c) What are the similarities and differences between both scholars' understandings of history education."

METHOD

Design of the Research

In this study, document review technique, one of the qualitative research methods, was used. According to Yıldırım and Şimşek (2008), document review covers analysis of the written materials containing information about facts and cases intended to be studied. Data collected from the academic studies regarding the works of both scholars and themselves have been analyzed and interpreted.

Data Acquisition and Analysis

The documents that make up the data set of the study consist of the articles of Lucy Maynard Salmon obtained from the library of Vassar College and the book of Abdurrahman Şeref Efendi translated into modern Turkish and 4 books, 6 articles and 4 dissertations on the lives and activities of these scientists. These works were interpreted within the framework of these scientists' lives, activities, and perspectives of history by subjecting them to descriptive analysis and their understandings of history education were compared by considering the social characteristics of the period.

FINDINGS

Lucy Maynard Salmon's Life and Activities (1853-1927)

Lucy Maynard Salmon was born in 1853 in Fulton, NY as the daughter of an English and French-origin family. Her mother Maria Clara Maynard, manageress of Fulton Female Seminary, supported her education in a period in which few women were educated in America and most of whom were deprived of their rights. Salmon completed her undergraduate study in history department in Michigan University in 1876. Then, she worked as the assistant principal and the principal of McGregor High School. Salmon completed her graduate study in Political Science department of Michigan University in 1883 and focused on European history, English and American constitutional history (Webb & Bohan, 2015). Her postgraduate thesis named as "A History of the Appointing Power of the President" was published in the first issue of American Historical Associations' Papers in 1886. Next year, she established the history department of Vassar University and retained her position as the head of this department until the end of her life. At first, Salmon was the only academician of the department but she expanded it soon and received a full professorship in 1889. Salmon, who participated in American Historical Association (AHA) in 1885, was elected to be a member in Executive Council of the Association in 1915 became the first woman to take office in the council. She established Association of History Teachers of the Middle States and Maryland, which was the oldest association in history education (Bohan, 2004).

Salmon's ideas were extremely innovative and democratic for the society which was unable to form participatory democracy completely. She was the one who held an innovative, progressive and pluralistic vision in history education and pioneer and supporter of women's rights as well as being an academician. Her studies were particularly on women's possession of rights in education and politics. The American society and government during that period did not support equal education and voting right for all citizens and particularly for women. Therefore, Salmon's ideas and studies were criticized by most of her colleagues and politicians (Bohan, 1999).

In 1870, 60% of all universities in the USA were dedicated to men and 12% to women. Even though the rest of the schools provided coeducation, proportion of men was extremely predominant. Social structure, perspective on women and the role played by women in the society in Victorian age had not only affected the English society but also America was affected by this viewpoint. Woman's role in the society was to get married and bring up a child. This understanding made women emotionally closer to each other. Few women could study in university and those graduated from university had to make a choice between marriage and career due to the perception that married women would not be able to dedicate themselves to their professions. Business life for the women particularly in the top-class in America meant social recognition. However, higher education provided many women with the feeling of freedom and educational institutions became the most widespread employment area for women. Just like the other women in that period, Salmon also chose to teach as her profession and never got married. She shared the same house with her female friend Adelaide Underhill for 30 years (Bohan, 2004).

Lucy Maynard Salmon's Understanding of History Education

Salmon's education vision was affected by the gender issues of Victorian age, lives of ignored people and reflected on historiography and history teaching. As a student, Salmon wrote on political history and as a lecturer, on social history. Salmon and the prominent historians of the period, James Harvey Robinson, Frederick Jackson Turner, Charles Beard and Woodrow Wilson supported social history as a new field. Instead of confining history to military and political figures and events, these historians tried to expand the ground of historiography. They believed that all people made a contribution to history and their stories had to be told. Salmon also and primarily wrote about immigrants and minorities with low socio-economic status and women issues and made a contribution to this trend. However, she supported equality of all people and made efforts in order to contribute development of democratic feelings. At the beginning of her career, she made researches into domestic economic activities and household services particularly in the United States of America and at the end of her career, newspaper issues. Salmon conducted studies on the history of workers, employers and ordinary people and wrote articles about domestic economic activities too besides that she created a new working field named as home economics, domestic science and crafts. Salmon used innovative methods such as questionnaire and statistics in order to collect data for domestic service researches. Since these methods were considered to be rare historical research forms in the earlier periods of the twentieth century, they were criticized as well. Having conducted studies on newspaper towards the end of her career, Salmon stated that newspaper could be used as a tool to understand political and social events. According to Salmon, newspaper was an important source of information for historians in reconstructing the past allowing society to be examined as a whole. Newspapers were the leading means of mass communication prior to radio, television and film. Newspapers made a contribution to acquire information regarding the course of the war during the American Civil War and the World War 1 in the political field, and social life thanks to the pictures and advertisements.

Salmon's books published in this respect are as follows; *Domestic Service* (1897), *Progress in the Household* (1906), *The Newspaper and the Historian* (1923) and *The Newspaper and Authority* (1923) (Bohan, 1999).

In her article "*What is Modern History?*", Salmon clarifies the issues we are still arguing on. Modern historians describe the history after 15th century as modern history and the historians of the classical periods as reactionist (anti-modern, traditionalist). Salmon criticizes this approach. According to her, chronology is not as fixed and direct as it is put forward. Time has been defined by people as a result of political and religious events. For her, "Time called Greenwich time is untrue. The only real time is solar time" and in this way, Salmon put forwards that times of the ancient age and the modern age cannot be determined. Additionally, since development of every society is different, their modernization process occurs in different periods too. Salmon puts forward that formation of chronology is not necessary so as to determine the modern history. However, Salmon states in this article of hers that literature, art and science are universal. Even though they are the products of individual effort, such elements become part of a whole as they are continuation of former efforts occurred with the incremental growth of previous conditions even if they are completed (Salmon, 1917).

Salmon's views about historiography can be summarized as follows; historiography is the job of historians. Historians should write about the period they live in regardless of whether what happened is important or not. An event considered to be unimportant today may be the cause of different events over the next periods and gain value. If any trivial information at present is associated with the past, it is valuable. The scholar John Bright says, "We stand thanks to our ancestors and are able to perceive more." The smallest piece of information incrementally increases like a snowball. "The darkest age is the one we live in" said Salmon. She notes that an extensive examination of an event over the example of the First World War has been censored in terms of political, military, economic and social aspects and prevented from being disclosed. Historians should continue writing about what they have observed without fear since we tend to believe in what we see rather than what we hear. Salmon says, "trendy things are temporary, but seed grows well and becomes permanent in the soil with a solid ground." Therefore, she expressed her views in this respect stating, "historians should not write about every subject, but they should be specialist in a specific subject and conduct deep studies on that topic" (Salmon, 1917).

Salmon, who always considers history from a different perspective, indicates in her article called *History Museum* that museums are great antiques which cannot be restricted into geographical boundaries and thus, she makes museums universal. She describes museums as not only teaching areas but also sophisticated places where people become socialized and share information in the cafes and rest areas located in museums. In this article, Salmon gives information about the museums she visited during her trip to Europe and as for the American history museums; she states that ethnical elements making up today's America are kept in history museums. Salmon puts forward that we can examine the English furniture, Dutch household goods, French tiles, German toys, Swiss embroidery, Italian laces, Swedish textiles and all other solid remains being part of American life today in history museums. Salmon emphasizes that just as we follow chronology in historiography, chronology should also be taken into account when placing the objects in museums. In the same article, Salmon states that the point is not to bring the objects in different parts of the world together but the objects should be left as they are in their original locations and for example, Egyptian Obelisk in Central Park and Bunker Hill Monument in Boston are not significant by themselves but these works will gain meaning when they are examined together with the other objects in Egypt and the Sahara Dessert (Salmon,2019; Trans., Bahri Ata).

History teaching methods developed by Salmon were innovative and advanced compared to the period she lived in. For her, goal of the history lesson is, on the one hand, to give information and on the other hand, develop students' skills of reasoning. When selecting materials for their lessons, teachers should consider the appropriateness of such materials to their students' mental development as well as appropriateness to their subjects. Many times, before Jean Piaget wrote about cognitive development stages in 1960s, Salmon indicated that textbooks and history lessons had to be prepared according to the mental development of child. Salmon put emphasis on five mental development characteristics which she found pedagogically useful in history teaching. These are given below; 1. Imagination, 2. Learning Enthusiasm, 3. Unity/Integration, 4. Judgment, 5. Creativity. Salmon explained these stages as follows; the first and the second stages of development correspond to primary and secondary school terms and during this period, imagination, reasoning skill, learning enthusiasm and desire of a child should be increased benefiting mythology and biology. Third stage of development corresponds to high school period and students should learn the national history during this period. The fact that students learn about the development and growth of their nations increase their feelings of national unity and solidarity and they learn integration of facts and ideas. Fourth stage corresponds to university period and in this process, more limited periods in which students can make comparisons should be examined and they should develop their judgment skills by focusing on the cause and effect among the cases. Fifth stage is graduate period and at this stage, students should be encouraged to focus on original historical resources and independents studies and their creative skills should be developed by creating new works (Bohan, 2004).

According to Salmon, using textbooks by teachers only for memorizing and supporting verbal memory was wrong. On the other hand, she also disapproved of the source method in which textbooks were totally excluded and history was reconstructed with original and multi-part documents. The most suitable method was to prepare textbooks covering both methods according to the age characteristics of students by supporting such textbooks with descriptive texts and original sources. She believed that reading textbooks instead of memorizing them, listening to the lesson and examining sources were inseparable components of history learning process. Ultimate goal of history teaching at the university level was to encourage students to conduct independent study

with original sources and materials. For other levels, when using original sources, their suitability for student level had to be taken into consideration. With these views, Salmon influenced American Historical Association (AHA). The committee decided to teach students how to read history books instead of memorizing as a teaching method, how to develop a thinking process about historical facts and how to analyze the relationships between a proof and a historical sentence. However, the committee also decided to support development of skills of historical thinking, critical thinking, preparing written study, presenting verbal reports, making and reading map, preparing notebook and proper use of original source materials (Bohan, 2004). Today, signs of these recommendations are observed in the social sciences and history teaching programs. Salmon's support regarding use of primary historical sources by students became the key point of her life. This was her "magnum opus" (masterpiece) and was planning to prepare a book about historical materials. Nevertheless, she did not live long enough to achieve this and in 1933 her colleagues in Vassar published her incomplete article under the name of *Historical Material* (Bohan, 1999).

Salmon's classes, events and methods were always subject of debate and drew criticism a lot. Salmon changed the understanding of traditional method in which teacher transferred knowledge and students learnt it by memorizing in the classroom environment. She used to take the students to the library and gathered them around a long table so that discussions could be made freely and in a comfortable atmosphere. "Long table" became Salmon's brand (Webb & Bohan, 2015). As one of Salmon's important events, she brought her students to the kitchen of the house in Poughkeepsie in order to discover history. For her, native works were part of history and wanted the students to determine which history emerged by examining kitchen utensils, kitchenware and machines. For comparison, she put up the photo of a kitchen from the colonial period in Victorian age. While Salmon's pedagogical approach showed for students that history was observable in the ordinary sides of life, this approach increased the students' interest in cultural and social history.

Salmon's another interesting event was to take her students to the main street in Poughkeepsie for examination. Her student GL Chase (Fletcher) stated that the signs and symbols on the architecture of the buildings were the traditions from the periods when people were illiterate and the immigrants from different countries had an effect on the names of the stores. While the factories surrounding the street and the trucks on the street were the proof and reflection of modern industry, the columns and the arches on the street bore the traces of Roman and Greek history (Bohan, 1999). It was likely that these site visits made a deeper impression on the students than merely reading a book on the history of kitchen and city. With such out-of-school events, Salmon proved that historical materials were accessible everywhere and in fact, our living spaces were historical documents. In her article called *History in a Backyard*, she resembled the hedge in the backyard of her house to the boundaries of a country and stated that the flowers in the backyard belonging to different nations were living peacefully. "Can the nations of the world live peacefully like their representatives in our backyard" was the question asked by her and with this analogy, she argued that whether all nations could live in a peaceful environment without countries and without boundaries (Salmon, 1913). Salmon evaluated history from a different perspective and stated that individuals could conduct historical studies related to different subjects and history could address a larger group of people than a certain group of academicians. She believed that literary history was more interesting than traditional or academic history and would address a wider group of people. So, she tried to receive a support for a new AHA magazine dedicated to the literature history and address general readers, but her efforts were fruitless (Bohan, 1999). In fact, this thesis of Salmon accounts for why historical novels are among best-sellers, historical series and films are blockbusters today.

Salmon's exams, homework and teaching methods were advanced compared to the methods we still make discussions on today. She used to require her students to define or explain a certain historical fact by using their creative skills. Salmon encouraged her students to collect lake photographs, postcards as a source, examine the buildings and monuments, read original documents on the newspapers in order to discover history in homework and exams during the year and in this way, she made them write history by having her students analyze the knowledge and use their imaginative power. She tested her students for historical material at the end of the year and evaluated their skills of analysis, judgment, finding the sources of historical knowledge and identifying the relationships in this respect and encouraged them to be interested in history (Bohan, 2004). In American history lesson and in the lesson called ethnical elements, Salmon used to direct her students to examine the contributions of the immigrants to the American music, political, social, literary and industrial development (Bohan, 1999). As it is seen in these examples, Salmon encouraged her students, on the one hand, to examine and study the traditional and extraordinary subjects and on the other hand, to use the methods of collecting innovative historical knowledge.

Abdurrahman Şeref's Life and Activities (1853-1925)

Abdurrahman Şeref, whose grandfather, father and brother were military men, was born in 1853 in Istanbul as the son of Hasan Efendi being one of the accounting secretaries of Tophane-i Amire and Şevket Feza Hanım. After he completed his first education in Sıbyan Mektebi (Ottoman Primary School) in his neighborhood, he went to Eyüp Rüştiye (Ottoman Middle School) and then, attended to Mahrec-i Aklam and Mekteb-i Sultanî (Galatasaray High School) and graduated from this school in 1873 (Demiryürek, 2017).

Abdurrahman Şeref's successful activities as the principal of Mekteb-i Mülkiye (School of Political Sciences) drew attention and he was rewarded by Sultan Abdülhamid II with continuous rise in rank. Despite all these positive processes, some events in the school disturbed the ruling regime. Murat Bey, teacher of Tarih-i Umumi (General History) at school published a newspaper called *Mizan* and it raised the topics of freedom, equality, justice and constitutionalism and etc. These ideas met with approval by the

students and reached through graduated students other places than school. Discontentment with the regime of the Sultan Abdülhamid II were begun to be expressed verbally and in written. Abdurrahman Şeref was dismissed from his position in Mekteb-i Mülkiye (School of Political Sciences) due to various intrigues and the reports of informers and appointed as the principal of Mekteb-i Sultanî (Galatasaray High School). He tried to protect the students against the reports of informers in order not to experience the same problems. He was rewarded with various medals by the Ottoman Empire owing to his successful and devoted activities during his management at this school and by some European states since he revitalized the spirit of Tanzimat (Reforms). After Abdurrahman Şeref left his position in Mekteb-i Sultanî in 1908, he continued teaching general history and the Ottoman history in Darülfünun (Istanbul University). Following announcement of the Second Constitution, he started political life as Defter-i Hakanı Nazırı (General Director of Land Registry and Cadastre). He was appointed as the member of Ayan Meclisi (The Senate) by the Sultan Abdülhamid II in 1908 (Demiryürek, 2003). In 1909, the Tarih-i Osmani Encümeni (Ottoman History Association) was established under the presidency of Abdurrahman Şeref upon the request of the Sultan Mehmet Reşat V with the purpose of searching and writing the Ottoman history. The counsel continued its activities under the name of Türk Tarih Encümeni (Turkish History Association) until 1931 and published a magazine at regular intervals for 11 years and released the *1st volume of the Ottoman History* in 191 (Yazgan, 2003).

Appointment of Abdurrahman Şeref to the Ministry of Education occurred actually in 1909 during the government of Hüseyin Hilmi Paşa and he was assigned to Şûrâ-yı Devlet Reisliği (The Council of State), Ministry of Trade and Agriculture until the last Ottoman Parliament (Osmanlı Mebusan Meclisi) was dissolved and to the Ministry of Education and the Council of State by proxy in the last government. This was the last Ottoman government in which Abdurrahman Şeref took office (Türkgeldi, 1987). When the Turkish War of Independence resulted in success, Abdurrahman Şeref was the first member of the assembly of notables to visit and support Ankara. Abdurrahman Şeref, who was recognized with his patriotism, was nominated as a candidate from Istanbul. Following elections, he got into TBMM (Turkish Grand National Assembly) as the Member of Parliament of Istanbul. He made the opening speech of TBMM as the oldest member of the assembly. As being one of the two people who became the Republican deputy from the Constitutional assembly of notables, Abdurrahman Şeref continued this duty until the end of his life (Demiryürek, 2003).

Abdurrahman Şeref's Understanding of History Education

Abdurrahman Şeref fulfilled his duties of administration and teaching in Mekteb-i Mülkiye (School of Political Sciences). He gave lectures such as Moral Philosophy, the Ottoman History, General Geography, Statistics and method of Translation. Abdurrahman Şeref was loved and respected very much as both an administrator and a teacher and influential on the students in this school in terms of holding modern ideas considering the relevant period and made every effort to ensure that the students completed their education. Abdurrahman Şeref made some changes in this school. One of these changes was to convert the school building into a boarding school. He aimed at strengthening the moral bond among the students and with this change, students would have the feeling of the privilege of being the member to Mülkiye (Political Science Graduate) (Taştan, 2004).

Abdurrahman Şeref defined discipline in his book called *İlm-i Ahlâk* (Moral Philosophy) and drew the attention to the fact that it was used by the public in order to explain polite behaviors and kind attitudes and the reason why those acting in line with the general acceptance of the society were described as well-behaved children resulted from this acceptance. He argued that only education could allow man to reveal their inherent qualities, use such qualities and make themselves and others different from other living creatures through such qualities developed (Kozan, 2011). In this book, Şeref says: "disciplining ideas may denote education and learning knowledge. Education does not only consist of knowledge and sciences we learn in schools. Lessons in schools are the key to the mine of knowledge. We should be enthusiastic to continue our education and learn knowledge not only in schools but also during our lifetime." He states that education starts in family and is shaped in the society in which we live. In the same book, Şeref divided sciences into parts and stated that each type of science developed another aspect of mind and helped men to understand and know themselves and made a contribution to the moral development. He mentions about natural sciences such as religion, mathematics, philosophy, chemistry, history, poetry and literature (Şeref,2019).

Abdurrahman Şeref made recommendations to the teachers and academicians in the same book. These recommendations may include treating students with affection and politely, forgiving their mistakes. According to him, following order must be observed in order to discipline a child with affection; "1. First what is good and bad should be taught to the child. 2. When children do good things, they should not be appreciated to their faces. 3. Children should not be compared with their peers for their good or bad behaviors. 4. Children's mistakes should sometimes be ignored, and children should not be embarrassed. 5. Children should not be allowed to do some things secretly. 6. Children's stubbornness for their bad attitudes should be overcome." It can be said that these views reflecting authoritarian education understanding are still used today in order to maintain discipline in education. Abdurrahman Şeref did not make recommendations only to the teachers but also all people in the society and indicated the responsibilities of individuals to themselves, each other and the state. He mentioned about the responsibilities of spouses to each other, children's responsibilities to their parents and parents' responsibilities to their children as well (Şeref, 2019).

Abdurrahman Şeref educated students who were likely to affect and dominate the mindset of a period. These included Efdaleddin Tekiner, Hamdullah Suphi, Tevfik Fikret, Ahmet Haşim, Ahmet Bedii, İbrahim Hakkı Paşa, Kazım Bey (Demiryürek,2003). Efdaleddin Tekiner, one of Şeref's students and his assistant speaks about his teacher as follows; "Abdurrahman Şeref used to call his students "molla (scholar)", "flowers of my garden", "şakirdan efendiler (my dear pupils)" and similar soft expressions and he

was not too familiar with his officials but treated them sympathetically and pleasantly. He treated each of them according to their positions and did not hurt them. He never used vulgar language in his relationship with his students during the lessons and when he found it necessary to warn and advise them for any problem. On the contrary, students were very enthusiastic to attend to his lessons. Morals, advice, proverbs, warnings, encouragement, and all other essential elements were included in his curriculum during his lessons with the purpose of educating the students completely. Şeref defended and supported the rights of his students and in case of any event in which his students were involved, he used to take the side which was in favor of his students. Abdurrahman Şeref definitely succeeded in drawing the attention of the student to the lesson and found the ways of not reflecting the faults of the students to them. Therefore, his students always showed respect and love to him" (Kozan, 2011).

When we look into the memories of Abdurrahman Şeref, we observe that he is a kind-hearted, helpful and traditional teacher. Hamdullah Suphi Tanrıöver, one of his students, speaks about him as follows: "Our master used to close his eyes while he was speaking. Our teacher, being adhered to the previous discipline methods, created a certain degree of formality between himself and us. He knew that when we caught each other's eyes, we broke the ice, and this was contrary to the dignity of teaching profession." We observe that this attitude reflects authoritarian teacher profile of the period. Today, the discipline in which eye contact with students during the lesson makes teaching more permanent prevails unlike what we have observed in the method utilized by Abdurahman Şeref. In his memories, Ahmet İhsan Tokgöz says; "Abdurrahman Şeref was extraordinarily conversationalist. You could never find anybody who did not enjoy spending time with him when they listened to his anecdotes and tales. He used to tell jokes when teaching the lesson and we admired the way he told the lesson." Refet Avni Aras adds the following: "we not only learned about history in his lessons against irreplaceable authority in his branch but also we learned many things about our moral improvement, requirements of humanity, Turks' heroic deeds beyond what was given in the history books, vivid examples of lofty excellence." (Demiryürek,2009). As it is understood from the memories of the students; when teaching the lesson, Abdurrahman Şeref used to tell the events as if he had experienced them, revitalized the events with stories and made teaching permanent. He talked about the developments related to freedom and innovations with extremely happy and content spirit and imbued his students with these ideas. His way speaking and telling was different from the way he wrote. He preferred to use a language which was difficult to understand in his writing but used a simple and pleasant language during the lesson.

Abdurrahman Şeref tried to protect both his students and Mekteb-i Mülkiye-i Şahane (School of Political Sciences) and Galatasaray Mekteb-i Sultanî (Galatasaray High School) as the manager of these institutions against the oppressions of the period of the Sultan Abdülhamid II and widespread spying activities during that period. During his administrative positions in these schools, he tried to educate his students in western mentality and as the supporters of freedom and democracy and succeeded in his efforts too. For instance, he did not avoid from telling his students about French revolution despite the oppressions of the Sultan Abdülhamid II. He told the students proudly; "freedom is not given but acquired" even if the first Ottoman Constitution of 1876 and freedom were not present in the country. He also tried to develop the education during his position as the Ministry of General Education, made efforts to find funds with the purpose of opening new schools and attached importance to train new teachers with modern ideas. Şeref believed that plan and programs in education would increase continuous success and indicated during his ministry of education that changes as it is on a scratch pad could not be made in education and raised an objection to the changes of lesson and curriculum in the middle of an academic year (Demiryürek, 2003).

As a history teacher, Abdurrahman Şeref prepared many textbooks. These textbooks consisted of compilation of the lesson notes and did not include only history but also geography and morality. The first book written by Şeref was *Fezleke-i Tarih-i Düvel-i İslamiyye* (A Short History of Islamic States). His first work related to the Ottoman history was *Tarih-i Osmani* (The Ottoman History). Other history books of his were as follows: *Tarih-i Devlet-i Osmaniye (*History of the Ottoman Empire), *Fezleke-i Tarih-i Devlet-i Osmaniye* (A Short History of the Ottoman Empire), *Fezleke-i Tarih-i Düvel-i İslamiyye* (A Short History of Islamic States)*, Zubdet-ül Kısas* (General History) and *Tarih-i Asr-ı Hazır* (Contemporary History). His other book named as *Tarih Musahabeleri* (History Conversations) was published by the Ministry of National Education and created by the compilation of some articles written by Abdurrahman Şeref in *Sabah* newspaper between the years of 1917-1918 and in *Vakit* newspaper between the years of 1921-1922. This book was simplified by Enver Koray and reprinted with the new alphabet in 1985 (Tan, 2014).

DISCUSSION

Comparison within the Framework of Historical Context

We observe that both scholars gave history lessons in the secondary education at the beginning of their professions and then, at university. We know that one of Salmon's lessons in Vassar College was ethnical elements in American history while Abdurrahman Şeref gave lectures under the name of general history and the Ottoman history in Darülfünun (Istanbul University). When we consider the views of the scholars about history education, we observe that they tried to destroy the stereotyped thinking of their societies about history education. It should not be difficult to guess that verbal lessons particularly such as history were taught by teacher's transfer of information to student in the classroom in the education system of the 19th century. Bohan (2004) reports that Salmon was criticized by her colleagues since she taught the lessons unlike the established methods of her age and she was a successful woman. Salmon encouraged her students to think, discuss and analyze with the practices in her lessons, out-of-school activities, homework and exams rather than memorizing the historical facts. She took the lesson away from classroom environment and proved that history could meet them everywhere by taking her students to the library, kitchen of her house and to the main streets of the city. It can be put forward that Şeref's understanding education is more modern than the

society he lived in but more traditional than Salmon's understanding. As far as the memories of his students, Abdurrahman Şeref taught his lessons with direct instruction method in the classroom and used simple and understandable language, strengthened the subject with different stories and succeeded in drawing the attention of the students with his tone of voice. Reflecting an authoritarian teacher model, Abdurrahman Şeref tried to protect his students against spying activities while he made efforts to support development of the ideas such as equality, freedom and justice on the part of his students.

According to Salmon, goal of the history education should emphasize the difference between reading and analyzing history and develop students' skills of thinking, interpreting and analyzing, give information to every student about the best independent studying methods and encourage them to study individually. Present developments of different nations should be correlated with their past and multi-disciplinary comparison skills of students should be developed by identifying the relationships of history with other disciplines (Bohan, 2004). The goal expected from Abdurrahman Şeref's history education has been summarized by Demiryürek (2017) as follows; only occurrence of historical facts should not be told but causes and effects should be analyzed and the essential points should be taught and students should be encouraged to understand and guess the future events through the past events. Thus, history served a bridge and past events should be taken as an example in constructing the future. It can be said that Şeref's understanding of history is between traditional and modern but closer to the modernization.

We can say that Salmon behaved as an older sister toward the female students and Şeref behaved as an older brother toward male students and both acted as a mentor for development and education of their students. Salmon acted as a mentor for her students not only during the school time but also after school. She gave academic support to postgraduate students, provided letter of recommendation, books and sources. She helped those who wanted to continue their profession as teachers and gave letter of recommendation at the request of the relevant students (Bohan, 2004). Şeref provided the graduate students, the students attending to school in the evenings with the opportunity of giving lessons and developed their professional skills by allowing them to undergo a kind of training with the purpose of increasing their success. Additionally, he led the way to make Galatasaray Football Team so as to contribute physical development of the students. Abdurrahman Şeref voluntarily participated in every activity which might be useful for the students in the schools where he worked as a manager and did his best so that his students could complete their education. He tried to keep his schools and students away from spying activities. He adopted providing his students with modern sciences and imbuing them with freedom and equality ideas commonly supported in the west as a principle when educating them. Additionally, Şeref aimed at combining these ideas with the religious principles and wanted his students to achieve the goals of the modern world and on the other hand, to be individuals living in line with the rules of the religion and aiming at acquiring after-life happiness too (Kozan,2011).

Salmon did not find use of the textbooks by teachers only for the purpose of memorizing and supporting verbal memory right. History textbooks should be prepared by supporting them with explanatory texts and original sources depending on the age characteristics of students (Bohan, 2004). Şeref's views about history textbooks are similar to Salmon's. He attached importance to use of source in his books, compared the sources while examining them and tried to give complementary knowledge with the footnotes. According to him, among the fields, writing history textbooks was the most difficult one. From his point of view, telling the historical facts chronologically was not the point but telling them in line with the cognitive development of students was important. History textbooks should not only transfer occurrence process of historical facts, but they should state the reasons and results of such facts and provide insight into the future through the facts of the past. Şeref puts forward that the textbooks of his period are suitable for the primary and secondary school level but not suitable for the age levels of higher education students. He designed his book called *"Tarih-i Devlet-i Osmaniye* (The Ottoman Empire History)*"* in order that it would address higher education level and in consideration of the skills and knowledge of Mekteb-i Mülkiye-i Şahane (School of Political Sciences) students. The book does not include only the facts but information about important persons and politicians, former ruling order and organization structure of the Ottoman Empire as well. He suggested that not only students, but also civil servants would benefit this book owing to said characteristics (Demiryürek, 2009). As it is seen, both scholars insistently emphasized that history textbooks should be suitable for the age and development levels of students and make a contribution to the mental development of students in addition to giving information.

Museum was very important for both scholars. Salmon, in her article called *history museum*, diversified the museums as art, handicrafts, industry, mineralogy, nature history, ethnology, biographic, archeology and history museums and talked about the objectives of these museums, and how the objects in museums should be placed and kept. In the same article and in his trip to Europe, she gave information about the museums she examined. In Şeref's articles called *Topkapı Saray-ı Hümayun* ve *Topkapı Saray-ı Hümayun harem dairesi* (Topkapı Palace Imperial and Topkapı Palace Imperial women quarters) published in *Tarih-i Osmani Encümeni Mecmuası (*Magazine of Ottoman History Associaton), Abdurrahman Şeref revealed unknown sides of Topkapı Palace which is presently used as a museum. Another service of Şeref about museums was that he submitted a report to the Sublime Porte about the library and museum of Yıldız Palace, which was saved from a potential looting due to 31 March Incident and presented his observations and solutions regarding emptying it. With this report, in 1910, Library of Yıldız Palace was transferred to the Ministry of Education and the Museum of Yıldız Palace to Hazine-i Hassa (The Sultan's privy purse). The Library was transferred to Darülfünun (Istanbul University) in 1925 with the order of Mustafa Kemal. After Darülfünun was transformed to Istanbul University, these works are still kept in rare works library of the university (Candemir, 2008).

Since newspapers and magazines were the most important mass media of the period, both scholars used them so as to communicate their ideas to the public. Salmon wrote articles about the historical subjects of the newspaper and suggested that

historians could use the newspaper in order to do researches about both political and social issues. For Şeref too, newspaper was a tool in order to publish newspaper articles. Additionally, Salmon's articles were published in the Papers of American History Association and Şeref's articles were published in Tarih-i Osmani Encümeni Mecmuası (Magazine of Ottoman History Associaton). When we evaluate the subjects of the articles in general, we observe that Salmon wrote about the social historical subjects such as household services, newspaper, democracy, social rights of the people and women with low social-economic level. In Şeref's articles, we observe that he wrote about biographies of the statesmen political events of the period, government budget, affairs with other states, political historical subjects such as the duties of the statesmen and their effects on the political events.

CONCLUSION

It is observed that social, political and economic characteristics of the American and Turkish society of the period affected Salmon and Şeref's mindsets and despite their common points, differences between them were more than the similarities. There are similarities in terms of woman's place in both societies in the social structure of the period and women are expected to do housework and bring up children. In America having its share of oppressive attitude of the Victorian age, it is observed that they acted together in favor of freedom and equality when the education levels of women rose. Salmon was also affected by this movement and made efforts for positive discrimination for women and led the way for women through civil society organizations. When we examine Şeref's views on this issue, we observe that he attached importance to the education of girls. In his book called *İlm-i Ahlâk* (Moral Philosophy), Şeref clearly puts emphasis on the duties of individuals, spouses, children and parents in the society to each other. As far as it is understood from this book, his ideas specifying that woman should bring up children beneficial to the society, do housework and respect her husband coincide with the social and political structure in the last period of the Ottoman Empire.

Success of both scholars regarding history teaching led them to provide service in more different fields. Salmon took office in the board of directors of American Historical Association (AHA) and establishment and function of certain non-governmental organizations in addition to her administrative position in Vassar College. Şeref established Tarih-i Osmani Encümeni (the Ottoman History Association), worked as a manager in Mekteb-i Mülkiye-i Şahane (School of Political Sciences) and Galatasaray Mekteb-i Sultanî (Galatasaray High School) and acted as Istanbul deputy in the 2nd Term assembly of TBMM (Turkish Grand National Assembly) in addition to his positions as the Minister of Education for twice, the Minister of Foundations for once and historiographer, official historiography of the Ottoman Empire.

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Statements of Publication Ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' Contribution Rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

In this study, document review technique, one of the qualitative research methods, was used. Ethics committee approval is not required for document review research.

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| Research Article / Araştırma Makalesi |

Professional Development Needs Analysis of School Administrators and Teachers in Turkey

Türkiye'deki Okul Yönetici ve Öğretmenlerinin Mesleki Gelişim İhtiyaçlarının Analizi

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Keywords

1. educational administration and planning
2. in-service education
3. training needs assessment
4. professional development needs
5. teacher development

Anahtar Kelimeler

1. eğitim yönetimi ve planlaması
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3. yetiştirme ihtiyacı analizi
4. mesleki gelişim ihtiyacı
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Abstract

Purpose: This study aimed at determining the professional development needs of school administrators and teachers working in Mamak, Ankara and to what extent they needed these trainings were reported in this study.

Design/Methodology/Approach: A two-stage path needs analysis model used for the study. First, the nominal group technique was implemented. Second, according to the results, the professional development training needs were turned into targeted surveys for each participant group. The data collected from school administrations and teachers working in Mamak.

Findings: The school administrators need leadership; pre-school teachers need picture analysis; primary school teachers need creative drama; middle-school teachers need integration with the digital world; high-school teachers need first-aid; special education teachers need techniques for changing problematic behaviors, and guidance and psychological counseling teachers need solution-oriented therapy training.

Highlights: The findings have revealed that while school administrators and teachers need core skills related to their fields. They mostly need contemporary training subjects so they can keep up with the times. The training which is commonly needed by the school administrators, pre-school, primary, middle, and high school teachers is first-aid training and the main reasons of this need can be examined in depth through further studies. It was shown in the results that the nominal group results and the surveys differed for all groups. In conclusion, a single needs analysis approach was insufficient for identifying professional development needs, and it is necessary to utilize one or more techniques together. Policymakers and/or practitioners may develop projects and activities, related to the priority subject areas of this study, aimed at improving schools.

Öz

Çalışmanın amacı: Bu araştırmanın amacı Ankara'nın Mamak ilçesinde görev yapan okul yöneticileri ile öğretmenlerin mesleki gelişim ihtiyaçlarının belirlenmesi ve bu eğitimlere ne düzeyde ihtiyaç duyduklarının tespit edilmesidir.

Materyal ve Yöntem: İki aşamalı ihtiyaç belirleme tekniğinden yararlanılmıştır. Öncelikle, nominal grup tekniği uygulanmıştır. Sonrasında, elde edilen sonuçlara uygun şekilde her bir katılımcı grubu için ayrı ayrı anketler hazırlanmıştır.

Bulgular: Okul yöneticileri en fazla liderlik; okul öncesi öğretmenleri resim analizi; ilkokul öğretmenleri yaratıcı drama; ortaokul öğretmenleri dijital dünyayla entegrasyon; lise öğretmenleri ilkyardım; özel eğitim öğretmenleri problem davranış değiştirme teknikleri; rehberlik ve psikolojik danışma öğretmenleri çözüm odaklı terapi eğitimlerine ihtiyaç duymaktalardır.

Önemli Vurgular: Araştırma bulgularına göre okul yönetici ve öğretmenlerinin, alanlarının gerektirdiği temel becerilere ihtiyaç duydukları görülmüştür. Buna karşın çağa ayak uydurabilmek adına, en fazla çağdaş yaklaşımlar konusunda kendilerini geliştirmeyi istemektelerdir. Okul yöneticileri, okul öncesi, ortaokul ve lise öğretmenlerinin ortak olarak ihtiyaç duydukları konu ilkyardımdır. Bu durumun temel nedenleri, ileriki araştırmalarla derinlemesine incelenebilir. Bulgular, tüm gruplar açısından anket ve nominal grup çalışmalarından farklı sonuçlar elde edildiğini göstermiştir. Buna göre mesleki gelişim ihtiyaçlarının belirlenmesinde yalnızca bir yaklaşımın yeterli olmadığı anlaşılmaktadır. Bu doğrultuda bir ya da birkaç tekniğin birlikte kullanılması gerekmektedir. Araştırma sonuçlarına uygun şekilde, politika yapıcılar ve/veya uygulayıcılar okulları geliştirmek amacıyla, öncelikli alanlara yönelik projeler ve yetiştirme etkinlikleri geliştirebilirler.

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INTRODUCTION

Teachers are the working input of the school system. They are of vital importance when it comes to improving the quality of education both in terms of individual representation as well as the representation of their occupation (Durkheim, 2016). Since teachers are the implementers of numerous actions within the framework of the macro-policy of the educational system, it can be stated that teachers in a sense constitute the load-bearing columns that support the system itself. On the other hand, school administrators are also an important facet of the educational system and as individuals make decisions required for education institutions to reach specific goals; implement planning processes, organization, and coordination; oversee the division of labor, make cooperation and motivation possible by establishing efficient communication with the educational staff as well as are the people who carry out the performance management of school staff. Therefore, continuous professional development of school administrators who lead teachers is extremely important in terms of both establishing organizational efficiency and making it possible for teachers to work effectively and satisfactorily. Considering this, identification of the professional development needs of school administrators and teachers within the educational system and the planning of trainings which embody the current approaches of education are important. As a result, in this study, two approaches were used to identify the professional development needs of educators, and the results from these findings were presented comparatively.

The Concept of Professional Development

Each educational system that claims to be successful needs to embody continuous change and transformation to live up to these claims truly. Thus, there is a greater need to rapidly transform teachers' professional efficiency and professional development demands to continue with their occupational practices as well as to adapt to them new conditions. For example, teachers are expected to develop both individually and professionally to meet the requirements of the current age as well as to increase the performance of their institutions (Aydın, 2011a; Omar, 2014). Over time, the professional development process can lead to the transformation of teachers' beliefs and teaching practices, which allows them to focus on changes that will ultimately increase the success of their students' (Martin et al., 2019). From this point of view, professional development can be defined in the most general terms as the development of teacher skills and efficiencies which produce important educational results for students (Hassel, 1999; as cited in Pharis et al., 2019).

Making professional development possible in line with its objectives is possible through a systematic process in which teachers participate and are contemplative. As Aydın (2016) states, the concepts of education and development are the results of a positive approach. Identification of the gaps between existing and required performance with the participation of teachers, and in the process removing these gaps through functional educational programs, is among the most important aspects of professional development. In this respect, the individual first needs to do his/her job well, then a needs analysis should be carried out with a proactive understanding as a way of identifying their future skills and efficiencies. In fact, it would be incorrect to leave teacher development only to teachers. It is both a right of the teachers to receive professional development training to improve themselves and their careers as well as their duty to participate in such training to increase both individual and institutional performance.

Professional development has two main foundations in terms of teachers. These are pre-service training which involves undergraduate study prior to beginning their professional life and in-service training or professional development activities which should continue throughout teachers' careers (Işık, Çiltaş, & Baş, 2010). While the paradigm regarding pre-service training is "giving training in case it is required", the paradigm reflected by in-service training is "giving training when it is required". It should be pointed out that in-service training is of vital importance in terms of institutional and individual development, regardless of the overall quality of the pre-service training (Aydın, 2011b), because even average in-service training programs can increase the self-efficacy of teachers (Tzivinikou, 2015). In-service training is a process which continues throughout life and should be the cultivation and education of a teacher from the first day of their career until their final day of teaching (Başaran, 1969). According to Aydın (2014), one of the aims of in-service training is to create a learning culture within the school. Importantly, the creation of a learning culture requires the school to be a learning organization. At this point, individuals who are willing to learn, will without a doubt, play an important and helpful role in the creation of this culture.

The idea of neoteric professional development requires teachers to make continuous efforts to participate in, learn from, and institute the skills and efficiencies they acquire. For example, one-off and/or short-term professional development processes are far less effective (Pharis et al., 2019). Instead, teachers' professional development "should be regarded as a continuous, a limitless process which is open to change and development and it should be made possible for teachers to perceive this process as a life-style" (Tutkun & Aksoyalp, 2010, 369). Expecting teachers to continue their professional lives only with their previous knowledge and skills causes the teaching profession to fall behind as a specialty and to decrease the quality of the education system (Kaçan, 2004). Preventing stagnation and decline in educational systems is possible when teachers continuously renew and develop themselves through in-service training and/or professional development activities they attend throughout their careers.

Professional Development Needs Analysis Techniques

Professional development needs are the gaps that exist between the competencies employees already have and those competencies they need to gain to work effectively and satisfactorily in both the present and future. Needs analysis is a process

that can be utilized to identify the differences between employees' current and expected competencies (Omar, 2014). In this respect, doing needs analysis makes it possible for teachers to receive training that is more suitable and applicable for the structure of their classes (Bayrakçı, 2009). Needs analysis techniques consist of surveys, interviews, focus groups, nominal groups, work analysis as well as performance form observation and documentation (Aydın, 2011a). Each technique has both advantages and disadvantages; therefore, a variety of techniques should be utilized together to identify the appropriate professional development needs of teachers.

The assumption that teachers need training due to specific insufficiencies that they may have led to "centralized, top-down training policies" within professional development programs (Yaylacı, 2013). So, in-service training is generally determined by top-level administrators who do not consider the individual needs of teachers and instead focus on items that fit their own agenda (National Board Resource Center, 2010; Summey, 2013; as cited in Crompton, Olszewski & Bielefeldt, 2016). Whereas in the process of doing these analyses, it should be made clear that these trainings are not a wish list, instead they depend on reality rather than assumptions and should not solely reflect the views of administrators (Aydın, 2011a). In fact, teachers can contribute a great deal to the development of trainings as a part of the identification and planning process of in-service training (Campbell & Kane, 2000; John & Gravani, 2005). For example, preparing training content without consulting teachers or identifying their needs can result in a program carried out "in an imposed manner, without asking for the demands and views of the teachers" and this situation disenables the activities during the seminar period (Genç & Aydın, 2015). The teachers who criticize the professional development process express themselves by saying, "It is like we are all being given the same medication regardless of what kind of illness we have!" (National Board Resource Center, 2010, 26). Teachers' negative views regarding seminar period activities are based on their view that they are receiving training that they do not need (İlğan, 2013). However, for an effective professional development to occur, teachers need to "identify targets for themselves, select activities, and participate in the process actively" (Horsley, 2007; as cited in Bümen et al., 2012, 37). In this regard, doing needs analysis for professional development activities that meet the needs of teachers is extremely important in terms of both their willingness to participate in the program as well as making sure these activities reach the targeted level of success and do so in a productive manner.

The In-Service Trainings in Turkey

The in-service teacher trainings in Turkey is planned both at the school and the ministerial level. Within the body of the Ministry of Education (MoNE) in Turkey, in-service teacher trainings are organized for teachers by the General Directorate of Teacher Training and Development (GDTTD). Since 2001, the GDTTD has regularly published in-service training plans. In the 2019 in-service training plan, it is stated that the GDTTD has organized a total of 344 trainings for educators, of which 35 of these trainings were provided as distance education. When a detailed analysis of the plan was made, there is a wide variety of training intended such as foreign language, project preparation, technological developments (e.g., STEM), and drama education. However, when the number of teachers in Turkey is considered, it can be stated that these trainings are relatively insufficient and that there needs to be an increase in their frequency. For instance, 13 trainings were planned for special education teachers who were actively employed, and 1184 teachers participated in these trainings. When it is considered that 14,043 special education teachers are actively employed throughout Turkey according to the 2018-19 MoNE statistics, only 1% of the special education teachers were able to participate in the provided trainings. However, this number could increase because during 2020 and the global pandemic (COVID-19) crisis there has been an increase in online teacher training offered by MoNE. Although it is difficult for MoNE to reach all of the teachers throughout Turkey under normal circumstances and during regular school operations, it should be stated that teacher training needs are increased, and in particular, it is increased at the school level to meet the needs of school administrators and teachers from all grade levels.

The period of seminar trainings is the most common practice in teachers' professional development activities in Turkey. These trainings had been conducted twice – at the beginnings and at the ends of each academic year – until the MoNE decided to increase the periods. These seminar trainings for teachers normally take place once at the beginning of the school year and at the end of the academic year. This system of seminar-based teacher training has taken place each year up until the 2019-20 academic year. To carry out these trainings the MoNE has typically given mid-term breaks to students in the months of November and April for five days each time. During this period while students are on break, the school administrators and teachers have to attend the scheduled training seminars. Though this process was interrupted due to the closure of schools during the COVID-19 pandemic, MoNE continues to provide teachers to diversify and develop their professional development activities, and to implement the innovations they gain as well. However, according to İlğan (2013), even in the past decade, seminar period activities which constitute the greatest content of teachers' professional development in Turkey, are quite controversial in terms of their quality. Additionally, teachers define these semester break periods as a "seminar holiday", and as a result, often regard the process merely as a formality (Genç & Aydın, 2015). In addition, the seminar trainings are often discounted due to the activity reports being disregarded (Tonbul, 2006) as well as the attendees do not always have the freedom to choose which activities are presented during seminar trainings (Bümen et al., 2012). This can be seen as a proof that determining the training needs is not sufficient alone, and that training subjects should be prepared and presented with utmost care is also an important requirement.

Considering these views, the aim of this study is to determine the professional development training needs of school administrators and teachers working in the Mamak district of Ankara in Turkey. It can be seen in the literature that (Ergin, Akseki,

& Deniz, 2012; Özdemir, 2010; Şirin & Coşkun, 2015) the professional development needs of teachers are generally determined through the survey method. In addition, most studies (Akar, 2010; Demirel & Budak, 2003; Şen, 2011) are only used to evaluate the needs of specific teacher groups. As a result, in this study, two needs analysis techniques were utilized together, which were the nominal group technique and the survey technique. While the nominal group technique allows group members to voluntarily participate by actively stating their views within a democratic environment, the survey technique makes it possible to determine the general tendencies of the larger participant group (Aydın, 2011a). Therefore, this study can contribute to the literature by using two different techniques in combination, thus simultaneously presenting the views of school administrators as well as those of the teacher groups, thus allowing for a comparison of views. In this respect, the aim of this study was to identify the training needs of school administrators and teachers and to what extent these groups needed the identified trainings. Thus, answers to the following research questions were sought:

1. What kind of training do school administrators, pre-school, primary school, middle school, high school, special education, and guidance and psychological counseling teachers need?
2. To what extent do school administrators, pre-school, primary school, middle school, high school, special education, and guidance and psychological counseling teachers need the identified training?

METHOD/MATERIALS

Research Design

The study is a descriptive study designed in the survey design. The aim of the survey model is to describe specific dimensions and/or characteristic traits of an analyzed group (Fraenkel, Wallen, & Hyun, 2012).

The Study Group

According to the determination of participation regarding needs analysis studies, it was attached importance to achieve maximum variety in terms of gender, school level, seniority and region. The distribution of the participants in the nominal group study is provided in Table 1.

Table 1. Distribution and percentages of school administrators and teachers in the nominal group in line with different variables

	Variable	Group	*N*	%
School Administrators	Gender	Female	9	28.1
		Male	23	71.9
		Total	32	100
	Seniority	1-5	8	25.0
		6-10	8	25.0
		11-15	8	25.0
		16-20	3	9.4
		21-25	4	12.5
		26-30	0	0
		31 and over	1	3.1
		Total	32	100
	Variable	Group	*N*	%
Teachers	Gender	Female	118	64.5
		Male	65	35.5
		Total	183	100
	Seniority	1-5	11	6.0
		6-10	50	27.3
		11-15	36	19.7
		16-20	34	18.6
		21-25	38	20.7
		26-30	10	5.5
		31 and over	4	2.2
		Total	183	100

As it can be seen in Table 1, a total of 32 school administrators and 183 teachers participated in the nominal group of this study. Nine of the school administrators were female and 23 were male, while 118 of the teachers were female and 65 were male.

In the second stage of the study, the target population was the school administrators and teachers working in Mamak. The distribution of participants in the second study group in line with different variables is provided in Table 2.

As it can be seen in Table 2, a total of 183 school administrators and 1239 teachers made up the second study group in this study. Overall a total of 6183 teachers and 398 school administrators were employed in Mamak during the period in which this study took place. In the study group, there were 1239 (20%) teachers and 183 (45.9%) school administrators. Therefore, it can be stated that there was a good level of participation in the professional development needs analysis.

Table 2. Distribution and percentages of school administrators and teachers in the second study group in line with different variables

	Variable	Group	*N*	%
School Administrators	Gender	Female	45	24.6
		Male	138	75.4
		Total	183	100
	Seniority	1-5	8	4.4
		6-10	30	16.4
		11-15	39	21.3
		16-20	36	19.7
		21-25	32	17.5
		26-30	20	10.9
		31 and over	18	9.8
		Total	183	100
	Administrative Seniority	1-5	104	56.8
		6-10	32	17.5
		11-15	19	10.4
		16-20	11	6
		21 and over	17	9.3
		Total	183	100
	School level	Pre-school	8	4.4
		Primary school	50	27.3
		Middle school	60	32.8
		High school	65	35.5
		Total	183	100
Teachers	Gender	Female	969	78.2
		Male	270	21.8
		Total	1239	100
	Seniority	1-5	235	18.9
		6-10	348	28.1
		11-15	202	16.3
		16-20	215	17.4
		21-25	150	12.1
		26-30	59	4.8
		31 and over	30	2.4
		Total	1239	100

The Data Collection Tools and the Collection of Data

In the first stage of this study, the nominal group technique was applied. Although there are different views regarding the steps of the nominal group technique (Balcı, 2014; Claxton, Ritchie & Zaichkowsky, 1980), the most acknowledged understanding, which is a technique that consists of four steps that were implemented in this study, is presented by Gepson Martinko, Belina (1981). In this respect in the first step, the participants were asked to successively write down five training subjects that they believed were necessary for their personal and professional development as well as that of their colleagues. In the second step, they were asked to share the identified training subjects with the entire participant group. The participants were expected to share another training subject if their subjects had already been listed. Also, the training subjects shared by participants were numbered according to the order in which they were stated, and these were projected onto a screen. In the third step, the participants were given some time and were asked to choose five of the training subjects they saw listed on the screen and score the subjects from five to one in order of importance for them. In the fourth step, the scores provided by the participants were entered into a spreadsheet software program (e.g., Microsoft Excel) prepared beforehand, and after all the views were stated, the training subjects were ordered according to their degree of importance.

Following the nominal group studies, the school administrators and teachers were sent a survey form which included the training subjects listed within the first stage of the study. This was done to identify the level of need for trainings that had been highlighted by the groups for the larger groups. For example, the participants were expected to score the trainings listed in the survey form according to their personal needs. The survey answer choices consisted of the following: 1. There is no need at all, 2. There is a need at a low level, 3. There is a need at a medium level, and 4. There is a need at a high level. Importantly, the surveys were sent online to each group separately and the data were obtained in this manner. In addition, for this study, ethical committee approval and application permission from the Ankara Provincial Directorate for National Education were received prior to conducting the study. The professional development needs analysis process is provided in Figure 1.

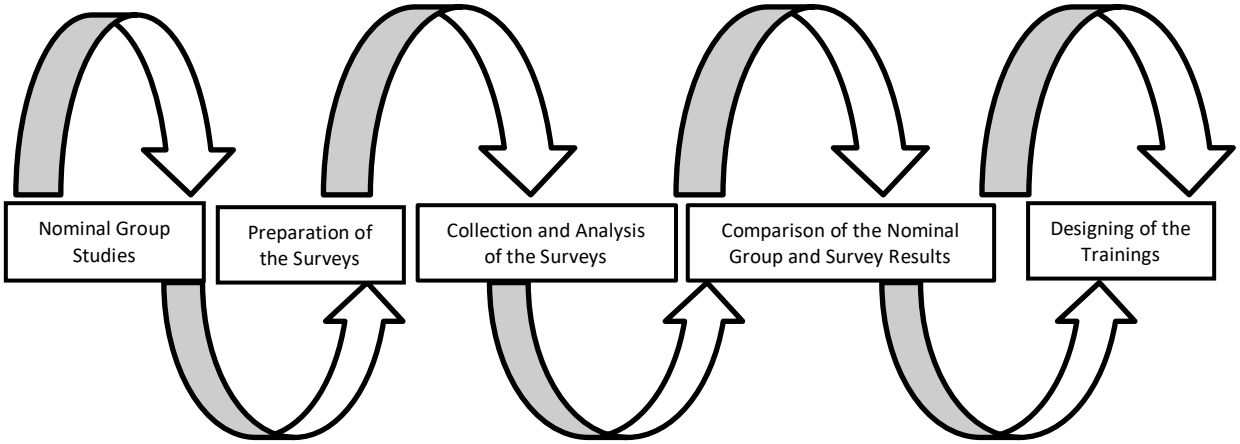

Figure 1. The professional development needs analysis process

The Analysis of the Data

The data were analyzed under sub-headings for each participant group. In the analysis of the findings, a dual approach was used, and the survey data obtained were evaluated by the comparison of these data with the data obtained through the nominal group technique within the first stage of the study. While the total scores obtained from the participants were calculated in the analysis of the nominal group studies, the arithmetic mean and standard deviation values were calculated in the survey data analysis, and the training subjects that were determined were ordered accordingly.

As mentioned earlier, the nominal group technique was used as a pilot application, in order to ensure that the survey is evaluated both for its suitability for determining the professional development needs of educators, and for its scope. The reason is that the nominal group technique eliminates the possibility of researcher bias in the data analysis (Varga-Atkins, Mclsaac & Willis, 2017). The ways presented by MacPhail (2001) were followed to assure the internal and external validity of the nominal group technique. Accordingly, the researchers ensured that a) they were present throughout the nominal group process, and b) participants were included in each step. In terms of ensuring the external validity of the study, the surveys were created to determine the generalizability of the study. The opinions of practitioners and field experts were gained at every stage of the study. The views of field experts, related to the professional development needs obtained by school leaders and teachers, were consulted to test the validity of the study (Taherdoost, 2016). Experts compared and contrasted the training subjects in order to define their similarities and differences, and also for purposes of conformity with the literature. In addition, the surveys were sent to each participant group who was not part of the nominal group, in order to determine the comprehensibility of the surveys. Necessary changes were made according to their views. Since surveys do not measure a structure, Erkuş (2019) states that technical explanations such as the "validity and reliability" of surveys are inaccurate. As a result, the validity and reliability of the surveys in this study have not been assessed.

FINDINGS

Since it was not practical to present all the training subjects identified through the needs analysis survey, the top 10 most needed training subjects identified according to the survey results were provided. Through the presentation of these findings, the data obtained from the survey and nominal group study were compared. Furthermore, if there is no sequence number for the education title in the nominal group study, it means that the teachers did not give any points for that title.

The Professional Development Needs of School Administrators

In the nominal group study, the school administrators identified 61 training subjects. For the placement of training subjects in the survey developed based on the nominal group study, the arithmetic mean and standard deviation values for the first 10 training subjects with the highest averages were calculated, and the analysis results are provided in Table 3.

As can be seen in Table 3, the mean of the school administrators' views ranged between M = 2.91 and M = 3.08. According to the school administrators' responses regarding their professional development needs; leadership, foreign language, project management, crisis management, first-aid and problem-solving techniques were the trainings stated as being needed at a high level. In the nominal group study, the school administrators stated that they respectively need trainings for crisis management, communication, leadership, conflict management, and protocol and etiquette trainings. Among these trainings though, communication, conflict management, and protocol and etiquette were not listed in the top 10 needed trainings according to the survey results. In addition, the school administrators identified foreign language as a topic of need, which was not scored by school administrators who had participated in the nominal group.

Table 3. Arithmetic mean and standard deviation values related to the professional development needs of school administrators

Trainings	M	SD	Order of Importance	Nominal
1. Leadership	3.08	1.01	1	3
2. Foreign Language	3.07	0.98	2	-
3. Project Management	3.03	0.90	3	19
4. Crisis Management	3.03	0.99	4	1
5. First-aid Training	3.01	0.96	5	13
6. Problem Solving Techniques	3.01	1.01	6	8
7. Special Education Applications	2.98	0.90	7	7
8. Decision Making Processes	2.98	1.01	8	19
9. School Safety	2.95	0.91	9	15
10. Basic Law and Administrative Law	2.95	0.91	9	19
11. Empathic Communication	2.91	1.02	10	12

The Professional Development Needs of Pre-School Teachers

In the nominal group study, 36 training subjects were identified by pre-school teachers. For the placement of training subjects in the survey developed based on the nominal group study, the arithmetic mean and standard deviation values of the first 10 training subjects with the highest averages were calculated, and the analysis results are provided in Table 4.

Table 4. Arithmetic mean and standard deviation values related to the professional development needs of pre-school teachers

Trainings	M	SD	Order of importance	Nominal
1. Picture Analysis	3.53	0.74	1	6
2. Mind and Intelligence Games	3.52	0.74	2	7
3. Creative Drama	3.49	0.74	3	5
4. Rhythm Training	3.44	0.77	4	11
5. Game Therapy	3.44	0.79	5	3
6. First-Aid Training	3.44	0.81	6	1
7. Special Education	3.42	0.88	7	9
8. Playing a Musical Instrument	3.37	0.83	8	-
9. Robotic Coding	3.35	0.81	9	8
10. STEM	3.35	0.83	10	14

As is seen in Table 4, the mean of the pre-school teachers' views ranged between *M* = 3.35 and *M* = 3.53. According to the pre-school teachers' responses; their needs were greatest in picture analysis, mind and intelligence games, and creative drama trainings. In the nominal group study, pre-school teachers stated that they needed trainings in first-aid, alternative teaching methods, game therapy, developmental tests, and creative drama trainings. Also, it was recognized that alternative teaching methods and developmental tests were not among the top 10 training needs stated by pre-school teachers in the survey results.

The Professional Development Needs of Primary School Teachers

In the nominal group study, the primary school teachers identified 38 training subjects. For the placement of training subjects in the survey based on the nominal group study, the arithmetic mean and standard deviation values of the top 10 training subjects with the highest averages were calculated, and the analysis results are provided in Table 5.

Table 5. Arithmetic mean and standard deviation values related to the professional development needs of primary school teachers

Trainings	M	SD	Order of importance	Nominal
1. Creative Drama	3.56	0.68	1	4
2. Robotic Coding	3.56	0.70	2	14
3. Teaching Through Games	3.53	0.69	3	1
4. Fun Science Activities	3.52	0.66	4	11
5. Mind and Intelligence Games	3.52	0.74	5	10
6. Use of Musical Instruments	3.51	0.71	6	5
7. Picture Analysis	3.50	0.72	7	13
8. Sportive Competence	3.50	0.73	8	12
9. First-aid Training	3.47	0.74	9	7
10. Use of Technology	3.47	0.81	10	8

As is seen in Table 5, the mean of the primary school teachers' views ranged between *M* = 3.47 and *M* = 3.56. According to the primary school teachers' responses, they mostly needed trainings in creative drama, robotic coding, and teaching through games. In the nominal group study, primary school teachers stated that they respectively needed trainings in teaching through games, human relationships and communication in school, child psychology, effective classroom management, and use of musical

instruments. Also, it was recognized that human relationships and communication in school, child psychology, and effective classroom management were not among the top 10 training needs stated by primary teachers in the survey results.

The Professional Development Needs of Middle School Teachers

In the nominal group study, the middle school teachers identified 41 training subjects. For the placement of training subjects in the survey developed based on the nominal group study, the arithmetic mean and standard deviation values for the first 10 training subjects with the highest averages were calculated, and the analysis results are provided in Table 6.

Table 6. Arithmetic mean and standard deviation values related to the professional development needs of middle school teachers

Trainings	M	SD	Order of importance	Nominal
1. Integration with the Digital World	3.18	0.91	1	7
2. Approaches Towards Gifted Children	3.15	0.89	2	19
3. Identification of Students with Special Needs and Communication with Them	3.07	0.90	3	17
4. Coping with Peer Bullying	3.07	0.98	4	3
5. First-Aid Training	3.06	0.98	5	8
6. Training to Help Students Acquire Top Level Cognitive Skills	3.05	0.90	6	18
7. Foreign Language	3.03	0.96	7	13
8. Contemporary Teaching Approaches	3.02	0.92	8	6
9. Practices and Approaches Related to Inclusive Students	3.02	0.92	8	17
10. Child Psychology	3.02	0.97	9	4
11. Stress and Anger Management	2.98	0.98	10	2

As is seen in Table 6, the mean of the middle school teachers' views ranged between *M* = 2.98 and *M* = 3.18. According to the middle school teachers' responses, they mostly needed trainings in integration with the digital world, approaches towards gifted children, and identification of students with special needs and communication with them. In the nominal group study, middle-school teachers stated that they respectively need trainings in classroom management, stress and anger management, coping with peer bullying, effective communication with students, and guidance skills. It was recognized that classroom management, effective communication with students, and guidance skills were not among the top 10 training needs stated by middle school teachers in the survey results.

The Professional Development Needs of High School Teachers

In the nominal group study, high school teachers identified 43 training subjects. For the placement of training subjects in the survey developed based on the nominal group study, the arithmetic mean and standard deviation values of the top 10 training subjects with the highest averages were calculated, and the analysis results are provided in Table 7.

Table 7. Arithmetic mean and standard deviation values related to the professional development needs of high school teachers

Trainings	M	SD	Order of importance	Nominal
1. First-aid Training	3.34	0.75	1	13
2. Special Education Methods	3.30	0.82	2	6
3. Stress and Conflict Management	3.24	0.75	3	9
4. Understanding Generation Z	3.24	0.88	4	16
5. Motivation Training	3.20	0.82	5	5
6. Information on the New Exam System (12th grade)	3.20	0.85	6	7
7. Coping with Conflicts between Students (Managing Anger and Mediation)	3.18	0.79	7	2
8. New Teaching Methods and Techniques	3.17	0.77	8	4
9. Vocational Guidance related to the University Entrance Exam	3.16	0.81	9	9
10. Coping with Addictions	3.11	0.79	10	16

As is seen in Table 7, the mean of the high school teachers' views ranged between *M* = 3.11 and *M* = 3.34. According to the high school teachers' responses, the trainings that they need most are first-aid, special education methods, stress and conflict management and understanding Generation Z. In the nominal group study, high school teachers stated that they respectively need trainings in values training, coping with conflicts between students, assessment and evaluation, new teaching methods and techniques, and motivation. Also, it was seen that values training, assessment and evaluation, and new teaching methods and techniques were not included within the high school teachers' top 10 training subjects.

The Professional Development Needs of Special Education Teachers

In the nominal group study, the special education teachers identified 35 training subjects. For the placement of training subjects within the survey based on the nominal group study, the arithmetic mean and standard deviation values of the top 10 training subjects with the highest averages were calculated, and the analysis results are provided in Table 8.

As seen in Table 8, the mean of the special education teachers' views ranged between *M* = 3.17 and *M* = 3.42. The special education teachers mostly needed trainings in changing problem behaviors, acquisition of language and speech skills for students,

and behavioral education for students with autism. In the nominal group study with special education teachers, to a certain extent, a variety of different findings were obtained in comparison to other findings within this study. For example, special education teachers stated that they respectively needed trainings in changing problem behaviors, daily life skills, sex education, preparation of individual education programs, and communication skills.

Table 8. Arithmetic mean and standard deviation values related to the professional development needs of special education teachers

Trainings	M	SD	Order of importance	Nominal
1. Changing Problem Behaviors	3.42	0.84	1	1
2. Acquisition of Language and Speech Skills for Students	3.30	1.03	2	6
3. Behavioral Education for Students with Autism	3.29	0.97	3	7
4. Awareness on Special Education Needs of Students	3.25	1.03	4	13
5. Family Education	3.24	0.98	5	10
6. Social Learning Method	3.23	1.03	6	9
7. Puberty Characteristics of Handicapped Individuals	3.20	1.01	7	11
8. Sex Education	3.19	1.06	8	3
9. Joint Education for Different Handicap Types	3.17	1.00	9	9
10. Education for Individuals with Multiple Handicaps	3.17	1.05	10	14

The Professional Development Needs of Guidance and Psychological Counseling Teachers

In the nominal group study, the guidance and psychological counseling teachers identified 60 training subjects. For the placement of training subjects based on the nominal group study, the arithmetic mean and standard deviation values of the top 10 training subjects with the highest averages were calculated, and the analysis results are provided in Table 9.

Table 9. Arithmetic mean and standard deviation values related to the professional development needs of guidance and psychological counseling teachers

Trainings	M	SD	Order of importance	Nominal
1. Solution Oriented Therapy	3.27	0.95	1	4
2. Attention Tests	3.21	0.96	2	17
3. Objective Tests Training	3.17	0.98	3	7
4. Approaches Related to Raising Psychological Endurance in Students	3.13	0.81	4	15
5. Implementation of Positive Psychology in Schools	3.13	0.92	5	8
6. Intervention in Cases of Crisis such as Suicide, Death, and Grief	3.11	0.95	6	10
7. Game Therapy	3.11	0.99	7	4
8. Sex Education for Students Who Need Special Education	3.10	0.96	8	10
9. Counseling Skills and Techniques	3.10	1.02	9	1
10. Creative Drama	3.08	1.04	10	12

As is seen in Table 9, the mean of the guidance and psychological counseling teachers' views ranged between *M* = 3.08 and *M* = 3.27. They stated that the trainings they needed most were solution-oriented therapy, attention tests, and objective tests. In addition, approaches related to raising psychological endurance in students and implementation of positive psychology in schools were other training subjects stated as being needed at a high level. In the nominal group study, teachers stated that they respectively needed trainings in counseling skills and techniques, diagnosis and support of mental, psychological, and behavioral problems, peer-bullying, solution-oriented therapy, and communication skills.

DISCUSSION AND CONCLUSION

In this study a two-stage path needs analysis model was used to determine the professional development needs of school administrators and teachers working in Mamak as well as to what extent these groups needed the specific types of training they reported through this study. As a result of the data analysis, it was determined that the school administrators stated that they need "crisis management" training the most common within the nominal group study. Ng and Szeto's study (2016) carried out with 32 newly appointed school administrators in which they found similar results to this study findings, that school administrators do not have the competency skills and knowledge for managing crises. The school administrators needed to develop themselves regarding the law, and in this respect, they stated that they need training in the matters of law to be provided by lawyers. In fact, the same was found in this study that the school administrators also stated that they needed training in basic law and administrative law. In addition, Bravender and Staub (2018) state that school administrators new in their careers should be provided crisis management training through simulations to help them make more effective decisions in future crisis situations. Also, the results of Karakuş and İnandı's study (2018) show that school administrators who receive in-service training on crisis management view themselves as more competent in managing crises. This type of training may be more important than ever due to the COVID-19 crisis and the sudden changes experienced by schools during the global pandemic. It should be clear how critical it is for school administrators to receive adequate and effective training in crisis management.

Another remarkable finding was related to foreign language training which was not scored in the nominal group studies but did rank as the second most important need for school administrators as a part of the survey results. Similarly, this might be related to the project management process which was also highly demanded by school administrators. In fact, it is known that there is an increasing demand for international projects in schools such as European Union funded projects (Kesik & Balcı, 2016), which could explain for the high demand of foreign language training among school administrators. Therefore, providing foreign language training in line with the preparation, acquisition, and fulfillment of such projects might ultimately satisfy the needs stated by school administrators.

In this study, it was seen that picture analysis and rhythm training which represent new tendencies in pre-school training; mind and intelligence games which aim at developing certain tangible skills of students through games; creative drama; rhythm and game therapy training, were all stated as being the most needed trainings by pre-school teachers. Likely, this reflects the teachers' need for educating their students in line with contemporary tendencies. For example, the most frequently mentioned training needed by pre-school teachers was picture analysis which demonstrated the importance of presenting children with opportunities for expressing things not easily expressed verbally. In addition, Yüksel et al. (2015) state that the use of picture analysis can be beneficial for the learning and development of children. According to Toran and Yağan Güder (2020), pre-school teachers state that they more often participate in training related to their needs; therefore, it can be suggested here that top-level school administrators give priority to the training subjects most desired by teachers. Furthermore, this is important because it appeared from the responses by teachers in this study that they strive to develop their students in a multifaceted manner.

Next, in the dimension of the study related to primary school teachers, it was seen that creative drama and robotic coding were considered as their important needs for teacher training. In addition, primary school teachers stated that teaching through games was also an important professional development need. As shown in the present study findings, contemporary teaching approaches regarding skills such as critical thinking, cooperative learning, efficient use of information and communication technologies, creativity and communication, which are defined as 21st century education skills (Partnership for 21st Century Learning, 2019), were given importance by pre-school and primary school teachers. In terms of primary school teachers, it can be stated that these teachers were up to date in identifying their training needs as well as were aware of the needs for educating students through contemporary means. For example, in a study carried out by the MoNE, Department of Research and Development of Education (2008), it was determined that classroom teachers successively need trainings in areas such as new pedagogic approaches, coping with stress, developing assessment and evaluation tools, education for special education students, teaching through games according to individual student differences, and use of new education technologies. In the time since that study took place, the needs of teachers' have transformed into the use of top-level technological skills such as robotic coding. This is of course related to the expectations of each generation of students that teachers provide education regarding the latest technologies. Therefore, it can be stated that changes which take place over the years need to be matched by the training that teachers currently receive. In this respect, the teachers wish to have training regarding the use of technology in line with the requirements of the current technological needs showed similarities to other studies in the literature (e.g. Ergin, Akseki, & Deniz, 2012; Fok et al., 2005; Gokmenoglu, Clark, & Kiraz, 2016).

Furthermore, similarly to the training needs of pre-school and primary school teachers, it was understood that the need of 21st century skills was also a priority of middle-school teachers as well. Clearly, digital competencies have an important place in the interest areas of middle school teachers regarding teaching processes (Aksoy & Taşkın, 2019). As a result of this study, it was found that integration with the digital world as the highest rated training need according to middle school teachers' responses. Following this, middle school teachers stated that they need trainings for providing a more effective teaching process for the students with special needs. Gokmenoglu, Clark, and Kiraz (2016) also found that teachers need trainings in numerous subjects of teaching students who need special education.

It was a crucial finding of this study that high school teachers stated they mostly need for first-aid training. In addition, first-aid training was listed as the top 10 training subjects needed by school administrators as well as considered important among pre-school, primary, and middle school teachers. Importantly, the reason for the greater need by high-school teachers of first-aid training in comparison to other grade levels should be analyzed. In Alikasifoglu et al. (2004), 42% of the students state that they get into physical fights and some students expressed that these fights end in injuries. Therefore, this professional development need for teachers should be evaluated and more importance be given to violence management within schools. Another important training need for high school teachers is related to preparing students for university placement exam. In Turkey, this exam is an important threshold for individuals to realize vertical mobility within the society. As a result, teachers strive to prepare students to score as possible on the university placement exam so that the students can earn a spot into the best higher-education institutions. Thus, this can be stated as the basis for high school teachers' need of training in motivation, new teaching methods, and techniques as well as arguing for a new and improved university exam system.

Among special education teachers it was recognized from their statements that besides a need for training in behavior management, they also needed training in family education. In Karasu, Aykut, and Yılmaz's study (2014), teachers who are working with mentally handicapped students expressed that they successively need training in teaching methods and approaches, behavior and classroom management, sex education, and family education. According to Konuk Er, Girgin Büyükbayraktar, and Kesici (2016), special education teachers need training about sexuality education for students and handling such issues when they face them. The researchers state that students and graduates of mentally handicapped education express that sex education is an

extremely important issue in their field (Dedeoğlu, Durali & Tanrıverdi Kış, 2004). Despite this, it was recognized that sex education is provided within the scope of "Puberty and Sex Education" lessons as an elective course within the special education undergraduate teaching program published by the Higher Education Council (2020). However, due to sex education training being listed among the top 10 training subjects needed by special education teachers, and similar emphasis being made by guidance and psychological counseling teachers the sex education lesson should be a mandatory part of teacher education instead of being an elective course.

The guidance and psychological counseling teachers stated that they mostly needed training in solution-oriented therapy. In fact, it is concluded in studies within the literature (Arslan & Akın, 2016; Nedim Bal & Kaya, 2017) that the therapy method is effective in terms of reducing many of the problems that students experience. The guidance and psychological counseling teachers expressed that any application to be made in order to understand the value of their field better is important. In addition, the importance of teachers in-service training is underlined in the literature dealing with the professional development of guidance and psychological counseling teachers (Bengisoy & Özdemir, 2019). As a result, the training needs of guidance and psychological counseling teachers should be taken into consideration as a guide in terms of the implementation of specific training needs.

Similar to the criticisms directed at professional development studies in different countries, teachers in the seminar period define themselves not as a carrier of knowledge, skills, and experiences, but as passive recipients of the trainings (Quiroz & Secada 2003; as cited in Passmore & Hart, 2019). In addition, a professional development program which is provided in a rapid-fire and intense manner because the aim is to present as many subjects as possible within a limited amount of time can cause disappointment and frustration among teachers, which is similar to the feelings administrators and teachers have regarding their professional development expectations (Pharis et al., 2019). However, in an age in which change and transformation take place in such a speedy manner, professional development should become a part of educators' daily activities and should be an inseparable part of school culture (Bubb & Earley, 2007; as cited in Tuli, 2017). Therefore, as Aydın (2011b) states, a system which handles teachers' in-service training at the central, local, and school levels as well as universities should contribute to this process for all the needs of educational institutions, school administrators, teachers, and students and their families.

In this study, an approach which deals with how and through which processes the needs of school administrators and teachers at the district level can be identified as presented. In this respect, it will be possible to identify the needs of these two important stakeholders within the educational system depending on their personal participation and views as well as the ongoing development of in-service training programs. As these participatory processes are followed, it should allow school administrators and teachers to attend these training activities more often as well as implement what they have learned. Finally, in the findings of this study it was shown that the results of the nominal group study and the surveys differed for all groups who had participated. Therefore, this proves that a single technique is insufficient for professional development needs analysis and that many differing techniques should be utilized in combination to understand better and address this important issue. In future studies, an analysis can be carried out regarding to what extent school administrators and teachers see themselves as adequately trained and qualified in the identified training subjects as well as what level of need exists for these types of training to occur. In addition, it may be possible to conduct in-depth research on the most needed topics in each participant group. For example; it is seen that school administrators need leadership the most. Points, such as what deficiencies they see in themselves regarding leadership, can be determined with surveys/questionnaires to be developed. This study may use a starting point for policymakers to plan trainings based on the need of school leaders and teachers. In accordance with these results, policymakers and/or practitioners may develop projects and activities, related to the priority subject areas of this study, aimed at improving schools. However, this research is limited to the views of school administrators and teachers working in one district of Ankara. Therefore, it includes the views of people working in schools with a similar socio-economic status. For this reason, it may be suggested to apply the surveys more widely.

In conclusion, the aim of this study was to identify the training needs of school administrators and teachers and to what extent these groups needed the identified trainings. The results of the study have enabled a comparison between the educational needs of school leaders and teachers at all levels. The findings have revealed that while school administrators and teachers need core skills (e.g. leadership) related to their fields. They mostly need contemporary training subjects (e.g. foreign language education, communication with the digital world, and robotic coding) to keep up with the times, but most importantly, the school administrators, pre-school, primary, middle and high school teachers all need first-aid trainings. This may explain the current situation of the schools and indicate the necessities of educators in terms of changing behaviors of students. In addition, pre-school, primary and the guidance and psychological counseling teachers all need creative drama, which can be used to respond to students' needs in a more engaging manner. Furthermore, it is discovered that the nominal groups and the group to which the survey was applied have different priorities when it comes to professional development needs. This may indicate that the methods by which the majority's views will be obtained need to be followed in order for the trainings need to be planned to be widely accepted.

Declaration of Conflicting Interests

The authors declare no potential conflicts of interest associated with this research, authorship, and/or publication of this article.

Statements of Publication Ethics

The authors hereby declare that the study does not have unethical issues and that the research and publication ethics have been observed carefully.

Author Contribution Statement

İ. A. developed the conception of the study. She was involved in planning and supervising the work. İ. A., B. T., and A. K. designed the method of the study as a two-stage path needs analysis. İ. A. led the nominal groups. B. T. and A. K. analyzed the nominal group data. G. T., N. G., and Ş. T. collected the survey data and B. T. contributed to the analysis of the survey data. B. T. and A. K. aided in interpreting the data and in drafting the manuscript. All authors discussed the results, commented on the manuscript and approved the final version.

Researchers' Contribution Rate Statement

The study was conducted and reported with the equal collaboration of the researchers.

Ethics Committee Approval Information

Ethical committee approval (85434274-050.04.04/40476, no. 5/93) was obtained from Ankara University Research Ethics Committee, Turkey.

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| Review / Derleme |

The Turkish National Remedial Program (TNRP) to Combat the Negative Effects of the Covid-19 Pandemic

Covid-19 Salgınının Olumsuz Etkileriyle Mücadelede Türkiye Ulusal Destekleme Programı (TUDEP)

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Abstract

The Covid-19 pandemic has led unique negative consequences in education. Due to the closure of schools, educational services have been carried out through distance education in many countries. Physical restrictions and staying away from the schools have negative consequences both on the physiological and psychological attributes of the students. Therefore, international institutions such as United Nations Educational, Scientific and Cultural Organization (UNESCO) and Organisation for Economic Co-operation and Development (OECD) advise countries to reopen schools as soon as possible and implement remedial programs. Due to the school closures, all educational services have been provided by distance education for nearly a year in Turkey. After the reopening of schools as of March 2021, Ministry of National Education (MoNE) has initiated Turkish National Remedial Program (TNRP) to support the students' academic skills as a two-stage program. The first phase of the project is designed as an emergency action plan, and the students in regions with the lowest participation in distance education were prioritized. The second phase of the project is designed as a large-scale support program that will cover all students and will be implemented during the summer months. The purpose of this study is to evaluate the second stage of TNRP by taking into consideration the international criteria for remedial programs and best practices around the world. The document analysis method is used to evaluate the second stage of TNRP. It is concluded that the second phase of TNRP is in coherence with international standards in terms of targeting all students from primary school to the end of secondary education, providing academic support with compressed content with critical outcomes, assessing the level of student achievement, prioritizing students who need special education, and making flexible programming to maximize participation.

Öz

Covid-19 salgını, eğitim alanında büyük olumsuzluklara yol açmıştır. Salgına bağlı olarak okulların kapanması nedeniyle birçok ülkede eğitim faaliyetleri uzaktan eğitimle gerçekleştirilmiştir. Uzun süre evde kalmak ve okulun sunduğu imkânlardan yararlanamamak öğrencilerin fizyolojik ve psikolojik özellikleri üzerinde çeşitli olumsuzluklar doğurmaktadır. Bu nedenle Birleşmiş Milletler Eğitim, Bilim ve Kültür Örgütü,(UNESCO) ve Ekonomik Kalkınma ve İşbirliği Örgütü (OECD) gibi uluslararası kurumlar, okulların en kısa sürede tekrar açılması ve akademik destek programlarının uygulanması konusunda ülkelere çağrıda bulunmaktadır. Türkiye'de de salgına bağlı olarak okullar yaklaşık bir yıl kapalı kalmış, bu dönemde tüm eğitim faaliyetleri uzaktan eğitim ile sağlanmıştır. 2021 yılının mart ayı itibarıyla okulların tekrar açılması ile Milli Eğitim Bakanlığı (MEB), öğrencilerin akademik becerilerini desteklemek için Türkiye Ulusal Destekleme Programını (TUDEP) başlatmıştır. İki aşamalı olan bu projenin ilk aşaması bir acil müdahale programı olarak planlanmış, uzaktan eğitime katılımın en düşük olduğu ilçelerdeki öğrenciler önceliklendirilmiştir. Projenin ikinci aşaması ise tüm öğrencileri kapsayacak ve yaz aylarında uygulanacak geniş ölçekli bir destek programı olarak tasarlanmıştır. Bu çalışmanın amacı, TUDEP'in ikinci aşamasını destek programlarının oluşturulmasında önerilen uluslararası ölçütler ve iyi uygulama örneklerini dikkate alarak değerlendirmektir. Çalışmada, TUDEP'in ikinci aşamasının değerlendirilmesi için doküman analizi yöntemi kullanılmıştır. TUDEP'in ikinci aşamasında ilkokuldan ortaöğretimin sonuna kadar tüm öğrencilerin hedeflenmesi, akademik desteğin önceliklendirilen alanlarda ve kritik kazanımlarla verilmesi, program hedeflerine ulaşma düzeyinin değerlendirilmesi, özel eğitime ihtiyaç duyan öğrencileri önceliklendirmesi ve katılımı en yüksek düzeye taşıyacak şekilde esnek bir programlama yapılması yönleriyle uluslararası standartlarla uyumlu olduğu sonucuna varılmıştır.

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INTRODUCTION

The Covid-19 pandemic has precipitated unique and negative effects in global education (OECD, 2020a, 2020b). More than 1.6 billion students across the world were removed from school at some point during the pandemic period (Brossard et al., 2020; UNICEF, 2020a). In other words, Covid-19 and its attendant social distancing measures have pushed more than 90% of the world's student population out of educational institutions (Micks & Mcllwaine, 2020). Countries have gone to great lengths to create alternative methods of maintaining student learning outside of school and designed these interventions relatively quickly due to the speed of the pandemic's spread (Gouedard et al., 2020; Özer et al., 2020).

Educational delivery methods vary greatly between countries (Carvalho & Hares, 2020). In countries that were already well-prepared for distance education, the transition to virtual learning was quicker and lower-effort. Countries such as America and Canada, which have long histories of distance education and robust infrastructures for such methods, made preparations to maintain students' learning at the primary and secondary levels through remote instruction and e-learning (Carvalho & Hares, 2020; Özer & Suna, 2020). On the other hand, the pandemic precipitated educational problems in many African countries, which had already faced significant educational access issues for many years (Carvalho & Hares, 2020). In these countries, lessons are typically provided through printed books, as well as through limited radio and television programming, since only a certain part of the population has access to such devices (UN Education Agency, 2020). Therefore, national infrastructure and socioeconomic status has dictated the country's preparedness for remote instruction over the course of the pandemic.

Although educational processes vary from region to region, it was inevitable that the distance education provided during Covid-19 would differ greatly from the face-to-face education typically offered in schools (UNESCO et al., 2020; UNESCO, 2020b). Schools are environments where students interact with their peers and teachers; they are designed to ensure students' multidimensional development, beyond solely academic growth. Therefore, school closures curtail the benefits of many other opportunities offered by the school environment aside from teaching and learning (Özer et al., 2020). Since homes became students' main educational environment during the pandemic period, the impact of home resources on student learning became more pronounced (Brossard et al., 2020; Maldonado & De Witte, 2020; Özer et al., 2020; Pershad et al., 2020). For this reason, researchers have considered the effects of the pandemic on students from a broad perspective (UNESCO et al., 2020, 2021). Consequently, numerous studies have focused on the economic and social consequences of learning losses during this time (Dorn et al., 2020; Maldonado & De Witte, 2020; Psacharapoulos, 2020; World Bank, 2020b).

Students' learning processes have experienced visible impacts due to the pandemic. The pause in conventional classroom-based education due to the pandemic has led to deficiencies in students' academic skills (Daniel, 2020; Kaffenberger, 2020; Kuhfeld & Tarasawa, 2020; Maldonado & De Witte, 2020; Özer & Suna, 2020; UNICEF, 2020a). Studies show that *learning losses,* resulting from deficits in these skills, have a significant impact on student development (OECD, 2020a, 2020b; Suna & Özer, 2020). Because education is a cumulative process, such learning losses can also hinder students' future learning (Kaffenberger, 2020). Based on this fact, UNICEF and UNESCO have called the countries to take all actions possible to make classrooms as safe as possible and reopen the schools (UNESCO, 2020c; UNICEF, 2020c). Learning losses influence educational investments, too. Studies have indicated that five months of school closure can cause countries can lose up to 16% of their education investments (UNESCO, 2020a). Therefore, as countries currently prepare to reopen schools, they are also establishing remedial programs to alleviate these learning losses.

With the Covid-19 pandemic under at least partial control in most of the world, many countries have begun reopening schools and resuming conventional classroom-based education (Gouedard et al., 2020; The World Bank, 2020; UNICEF, 2020a). However, students' learning losses can pose critical obstacles during this transition (UNICEF, 2020a; United Nations, 2020). Thus, many countries have initiated various remedial programs to compensate for these learning losses (UNESCO, 2020a). The structure of these programs varies between countries, depending on the length of school closure, the educational delivery mode(s) utilized during the pandemic period, and the structure and elements of the educational system.

International organizations focusing on education and its strong links with economic development have strongly emphasized the need to support students due to the disproportionate impact they faced as a result of the pandemic (UNICEF, 2020a; UNESCO, 2020; United Nations, 2020; World Bank, 2020). Such organizations consider remedial programs an urgent need, due to the psychological and physiological repercussions of the pandemic on students (Gouedard et al., 2020; Kaffenberger, 2020; United Nations, 2020; UNESCO, 2020a). Researchers have emphasized the importance of support programs at this critical moment, explaining that "if in normal times, a lack of focus on implementation may result in no change, in times of Covid-19, the lack of a coherent education response strategy by a country can result in failure to continue student learning." (Gouedard et al., 2020, p.7).

Modeling studies, which take into account the experiences of previous school closures, show that support programs are the most important measure for reducing the negative effects of the pandemic (Das et al., 2020). In addition, the fact that the impact of the pandemic has lasted longer than many previous disasters necessitates changes in the structure of academic support programs. Modeling studies show that if an intensive remedial program is implemented and its curricula are reorganized according to the specific deficiencies the program seeks to address, learning losses will decrease significantly in the long term (Kaffenberger, 2020).Additionally, remedial programs are effective interventions for narrowing the achievement gaps between student groups (Chen & Yu, 2016; Guitterez & Rodrigo, 2014). In this manner, these programs are also important for coping with the achievement gap between students in Covid-19 pandemic.

The educational services at all levels in Turkey have been maintained through distance education (mainly on the Education and Information Network [EBA]) for nearly a full year (Özer, 2020a, 2020b; 2020c). Material support for students, including the necessary equipment for remote instruction, continued throughout the year to increase access to distance education. However, academic support is also necessary to compensate for the year of school interaction that students have missed out on due to social distancing. The importance of program is also critical for narrowing the achievement gap between schools in Turkey (Bölükbaş ve Gür, 2020; Karaağaç Cingöz ve Gür, 2020; Suna, Tanberkan & Özer, 2020; Suna et al., 2020a; 2020b; Suna ve Özer, 2021a; 2021b). To meet this need, the Turkish Ministry of National Education (MoNE) initiated the Turkish National Remedial Program (TNRP) with the reopening of schools in March 2021. Structured as a two-phase project, the TNRP prioritizes students in the regions with the lowest access to distance education in its first phase. Thus, this first stage is designed to focus on the most disadvantaged student groups as an emergency remedial program. In the second phase, beginning in the summer months, the scope of academic support will be expanded for all students in a large-scale remedial program covering all levels of schooling, from the beginning of primary education to the end of secondary education. This program has been designed as an overarching umbrella that includes the other support programs implemented before the pandemic. The aim of this study is to evaluate the structure of the second stage of the TNRP program comparatively with international criteria and examples. The study provides the detailed planning of TNRP for the first time and it focuses the coherence between the global best practices and planning of MoNE. Within this scope, the present study is important for evaluating the approach of MoNE in designing the remedial program based on the global criteria.

Method

The document analysis method is used to evaluate the second stage of TNRP based on the international criteria and best practices. The document analysis is a qualitative method which includes depth review of related documents including the papers, books, and reports (Bowen, 2009; Creswell, 2014). In this manner, the literature about the remedial programs is reviewed and reports of international institutions on education and economy are emphasized. Additionally, the best practices and models from diverse countries to cope with negative effects of Covid-19 pandemic are considered. The best practices around the world and suggestions of international organizations are discussed in related titles.

Principles of Remedial Programs and Best Practices around the World

In every education system, there are always students who have difficulty achieving educational outcomes for various reasons. Lack of support may lead these students to be unsuccessful in the long term and to withdraw from their educational goals (Johnston, 2010; Wilson et al., 2011). Therefore, remedial programs make an important contribution to closing these inequalities in education, as they prioritize supporting students who cannot meet the required benchmarks due to various disadvantages.

Remedial programs are designed around a common purpose, but their structure and schedule differ from one country to another (Abraham, 2019; UNESCO, 2020a). Countries can create specific support programs by grouping students according to their competencies, providing one-to-one education by increasing the number of teachers, or maintain a common remedial education without grouping, facilitating collaborative and group-based activities to mitigate differences between students (Abraham, 2019; Schwartz, 2012). The main reason for these differences is that each education system has unique characteristics and elements.

While remedial programs have become a priority in the Covid-19 pandemic period, many questions have arisen about how to realize this priority. The multidimensional and unique nature of the impact of the pandemic in each country necessitates different national solutions (Gouedard et al., 2020; UNESCO, 2020a). International organizations such as the World Bank, OECD, and UNESCO have stated that the best solution will be country-specific, just like the problem itself (UNESCO, 2020a). However, various international criteria should also be considered to increase the quality of the remedial programs offered.

Based on the multidimensional impact of the pandemic on students, UNESCO has proposed a four-stage approach for the development of a qualified remedial program (UNESCO, 2020a). The first stage (*envisioning and understanding)* involves understanding the current situation and problem areas. At this stage, educators should determine the distribution of learning losses and establish a clear academic plan. In the second stage *(decide and design),* the timeframe and format of the support program is designed. During this stage, educators answer questions such as how, with which tools, and for what amount of time academic support will be offered to students, based on the structure of the education system. The third stage *(enable and execute)* considers allocating the necessary budget to implement the program, as well as organizational planning. This stage also includes the coordination of human resources and the preparation of the targeted curriculum. In the last stage *(monitor and adjust)*, the effectiveness of the support program is determined through measurement and evaluation methods. This final stage involves various methods for evaluating the extent to which the program compensates for learning losses. Designing the support program in a way that considers these four stages is essential for the creation of an inclusive and highly accountable remedial program.

To minimize the negative impact of the pandemic, many countries are implementing remedial programs following the four-stage approach recommended by UNESCO (UNESCO, 2020a). In the United States, the state of Maryland increased school hours to minimize learning losses, added weekend and night classes, and reinforced support through summer school programming. The state of New York also implemented summer school to compensate for students' learning losses due to the pandemic. Italy has decided to hire more than 24,000 new teachers to implement a remedial program before starting the new academic semester. A volunteer teaching program was initiated to compensate for students' learning losses in England by calling on retired teachers to volunteer. Belgium has announced a free summer camp for all students; schools there can elect to open for summer camps, and

have additional budget allocated for this programming. France and Ontario (Canada) have narrowed their curriculum for use in their remedial programs. After the beginning of the semester in France, Saturday classes were organized until the summer months, and summer schools and summer camps were announced, where all students can participate. In addition, the French government has proposed to extend the official academic calendar to cover the summer months.

The Turkish National Remedial Program (TNRP): The Second Stage

Target Group

The pandemic has kept students home from school for quite a while, causing disruption to students' daily routines that negatively affects their lives (UNESCO, 2020a; 2020b). Although research had indicated that some disadvantaged student groups have suffered greater losses due to these changes, the duration of the pandemic and its restrictions have affected all student populations. For this reason, it is important to provide support to all students regardless of their competencies and socioeconomic status. As emphasized by Kaffenberg (2020) and the World Bank (2020c), the second stage of the TNRP has been designed as a large-scale remedial program that will include all students. The goal of reaching all students is also an important step in the context of equality in education. This objective is associated with many current support programs carried out for disadvantaged students in Turkey, such as IYEP, DYK, and the 1000 Schools in Vocational Education Project (Gençoğlu, 2019; Özer, 2021; Özer et al., 2020).

Time of Implementation

Depending on the reopening date of schools in wake of the Covid-19 pandemic, remedial programs may extend over a long period of time. Many countries established additional teaching hours to support students after schools reopened. In addition, some countries have structured remedial programs in the summer period to increase and permanently establish this level of support. Studies have also shown that the implementation of such summer programs positively contributes to academic and social skills (McCombs et al., 2011; Potter, 2020).

TNRP is designed as a two-stage program, to match this approach. The first stage of TNRP, conceived as an emergency response plan, begins in March; while the second stage, which is completely focused on academic support, is scheduled to commence in July and August. In addition, the 1000 Schools in Vocational Education Project, IYEP, and DYK have been added within the scope of TNRP.

The second TNRP stage planned for July and August aims to realize a remedial project focused entirely on learning losses after the school year, which is currently in its second term. The scheduling of the TNRP for the summer months allows the processes planned for the academic year to be completed without any delay, to produce more support materials, and to plan for the realization of this large-scale project simultaneously.

Disciplines Covered in the Remedial Program

Remedial programs generally prioritize main disciplines such as mathematics, reading, and science (Simonez, 2016). These programs aim to upskill students in the disciplines prioritized by the educational system, rather than offering a basic repetition of the training provided during the semester. It is easier for students who gain these skills to acquire other skills in diverse disciplines within the scope of the course (Schwartz, 2012).

The TNRP aims to support and develop students' skills in three main disciplines: Turkish language, mathematics, and science. Thus, the project includes, Turkish language, mathematics, and science courses in primary education; and Turkish Language and Literature, mathematics, physics, chemistry, and biology courses in secondary education.

Students' mathematics, science, and Turkish language skills are considered as their main resources for solving problems encountered in daily life, as well as the foundation of knowledge to support the development of skills in other areas. For this reason, the TNRP prioritized supporting students' skills in these disciplines. Although the remedial program is structured around these three disciplines, many support materials and activities have been developed for other subject areas as well.

This project will determine critical outcomes in mathematics, Turkish language, and science at both the primary and secondary education level. These critical outcomes that facilitate access to other educational objectives will be decided for each grade level. After the determination of these outcomes, the education process for the project, which will last approximately two months, will be structured in order to reach them. The identified outcomes will also determine which training materials will be used and which tools will be developed to assess student learning.

Assessment of Support for Students

Measurement and evaluation methods have been used for different purposes in remedial programs during the pandemic period, including determining the status of students' learning and how compatible the support education is with student needs (UNESCO, 2020a). The types of measurement and evaluation methods implemented within the scope of these programs also differ between countries. In countries such as France, the remedial program begins with *direct assessment*, while some other countries use *indirect assessments* such as teacher feedback and previous student data (UNESCO, 2020a).

While direct assessment provides more information about students' learning, it can also lead to test-taking anxiety for students. While such anxiety is mitigated through using indirect assessment in lieu of direct examinations, the information

obtained is more limited. In the beginning of the second stage of the TNRP, indirect assessment is preferred to minimize the test-taking anxiety for students, who have been out of school for nearly a year. For this purpose, the remedial program will be planned around data from national monitoring studies, scores from central examinations, and teacher feedback.

During the TNRP's second stage, two large-scale assessments will be conducted to assess students' Turkish language, mathematics, and science skills. The first of these evaluations will be performed at the end of July, one month after the start of the program, while the other will occur at the end of August, immediately following the program's completion. The results of both assessments will provide important feedback on the program and students' performance of critical outcomes. The assessments will be developed and implemented by the General Directorate of Measurement, Assessment, and Examination Services (ÖDSHGM).

Flexibility in Program Participation

The benefits of remedial programs are maximized when as many students participate in them as possible (Kaffenberger, 2020; World Bank, 2020c). As previously stated, the second stage of the TNRP is designed for all students from the beginning of primary education to the end of secondary education. Therefore, a flexible plan has been built to encourage students from all grade levels to attend the program. In addition to the advantages of the implementation in the summer months, the increase in the mobility of students, parents, and teachers during these months is also a factor to be taken into account.

In order to maximize the participation of students in the second step of the TNRP program, administrators will ensure that students can participate in any province. Since the program will be conducted in July and August, students who will be in different provinces for various reasons (parents' jobs, vacation travel, etc.) will be able to participate in the program no matter their location. Similarly, teachers participating in the program will also have the chance to work in whichever province they are located. Thus, this plan aims to increase participation in the program and maximize the program's contribution, while taking into account the personal preferences of students, parents, and teachers.

Academic Supports for Diverse Education Levels

The TNRP has been designed as an overarching umbrella that will include the support programs currently implemented by the MoNE. Therefore, the support and training courses (DYK) implemented since the 2014–2015 academic year, the Remedial Education & Support Programme in Primary Education (IYEP) implemented since the 2018–2019 academic year, the 1,000 Schools in Vocational Education Project launched in the 2020–2021 academic year are also included in the TNRP.

a. Supports at the Basic Education Level

In order to support students at the basic education level, the critical outcomes in Turkish language, mathematics, and science will be determined from 1st through 4th grade at the primary school level, and classroom teachers will provide education on these outcomes for two months. Due to the structure of the Turkish national curricula, the focus will be on students' Turkish language and mathematics skills in 1st–4th grade, and science skills in 3rd and 4th grade.

Before the TNRP begins in the summer months, the IYEP program, which was implemented in the 2018–2019 academic year, will assess the needs of primary school students and begin addressing those needs. Within the scope of the IYEP, educators will determine whether the students at the 3rd grade level have reached the expected outcomes; the students who are not at a sufficient level will participate in IYEP. The MoNE is currently seeking to increase the number of participants in IYEP, which reached more than 300,000 students during the 2018–2019 academic year. This program will focus on students' mathematics and Turkish skills, while science skills will be improved with additional resources in the summer.

The General Directorate of Primary Education (TEGM) has carried out many studies during the pandemic to support the academic skills that the remedial program will focus on. This office has developed set of 17 workbooks on Turkish language, mathematics, science, and life sciences for students studying in unified classrooms in rural areas. Worksheets named "Tohum" ("Seed") have been developed for 1st grade students who learning to read. For 3rd and 4th grade students, activities supporting Turkish language development named "Topaç" ("Top") were developed. For the social, emotional, and language development of primary school students, the "Reading Fish Audio Electronic Library" has been established. "I am Ready to Learn" workbooks have been prepared for Turkish language and mathematics at all grade levels in primary school. The ÖDSHGM also developed pamphlets for 4th grade students in Turkish language, mathematics, science, English, social studies, religion, and ethics. Lastly, the ÖDSHGM completed a new project designed to evaluate the reading skills of 4th grade students and provide them with appropriate support materials.

At the secondary school level, critical outcomes in Turkish language, mathematics, physics, chemistry, and biology will be determined at all levels between the 5th–8th grade. Teachers will provide educational support in July and August for students to reach the outcomes in these disciplines. The DYK program, which has been implemented at the secondary school level since the 2014–2015 academic year, has been restructured within the scope of the TNRP.

The TEGM has developed many additional resources to be used in the remedial program and continues to work on this issue. This division developed 16 books on Turkish language, mathematics, science, social studies, and the Turkish Republic Revolution History and Kemalism for students in secondary schools. In addition, the TEGM employs 1,000 teachers in 50 provinces to develop

workbooks in 118 fields and digital content in 58 fields. A total of seven books and audio files have been developed to improve students' foreign language skills from 2nd–8th grade. The ÖDSHGM conducted an e-monitoring study to assess and improve 8th grade students' science and mathematics literacy and reading skills. An extension of this study including students in 5th–7th grade is also ongoing.

b. Supports at the Secondary Education Level

The DYK constitutes the main source of academic support for students at the secondary level. By making the necessary arrangements in the regulation of the DYK, the MoNE has opened remedial programs at different class levels in extraordinary situations such as a pandemic. The TNRP will also provide academic support in Turkish language and literature, mathematics, physics, chemistry, and biology at this level.

Another program included in the scope of the TNRP that provides academic support at the secondary education level is the 1,000 Schools in Vocational Education Project (Özer, 2021). This project administers multidimensional support to approximately 600,000 students in the 1,000 most disadvantaged vocational high schools, determined by criteria such as absenteeism rates, low school achievement, and disciplinary problems. This support covers the fundamental academic skills and social skills of students, training for teachers and parents, and school infrastructure. Using the resources allocated for this large-scale project within the scope of the TNRP will prioritize disadvantaged students who are more likely to be impacted by the negative effects of the pandemic. This project will provide support to all grade levels in vocational high schools, as all students in the selected schools are included.

The General Directorate of Secondary Education (OGM) has also developed diverse resources to support students during the pandemic. This office developed skill-based activities for various disciplines, including Turkish language and literature, mathematics, and science. During the pandemic, the OGM designed 2,247 skill-based activities at the 9th grade level and 980 activities at the 10th grade level. Similarly, skill-based activity development continues for the students in 11th and 12th grades. Moreover, 350 educational activities were developed in nine disciplines to support the students' learning after they resumed face-to-face education.

The OGM is still working on printing and distributing all the resources developed for EBA TV during the epidemic. Approximately 25,000 questions presented to students at the secondary education level were collected in a mobile question bank and provided to students to access offline from their mobile devices. The OGM also will extend the support offered to students in the 9th –11th grades who will take the University Examination (YKS).

The ÖDSHGM completed an e-monitoring study to assess 9th and 10th grade students' ability to apply their knowledge and skills in daily life. In this context, the assessment tool used to evaluate the students' high-level cognitive skills was also included in the remedial program.

c. Supports for Students Who Need Special Education

Disadvantaged student groups may be more affected by the negativities caused by extraordinary circumstances, like pandemics, natural disasters, and political unrest (Özer & Suna, 2020; UNICEF, 2020b). Students who need special education may not benefit to the same extent from the opportunities designed for other students, as they have specific academic needs. As a result, these students may become more vulnerable in times of crisis and may be more affected by learning losses. Therefore, it is important to encourage and prioritize the participation of these students in remedial education programs.

The MoNE also included students who need special education within the scope of the project and prioritized the participation of these students to support their academic skills. It is predicted that 7,086 students from the special-education schools with general education programs will attend the program. The activities will be held by opening non-formal education courses through public education centers and providing support to the students in institutions with a special education curriculum. It is predicted that 33,548 students can benefit from the programs designed in this way.

Additionally, the TNRP will provide psychosocial support by considering the psychological negativities caused by students' lack of interaction with teachers and peers during quarantine and social distancing. School counselors in the program will develop programs to provide psychological support to students. Psychosocial helpline services established during the Covid-19 pandemic will continue within the scope of the TNRP as well. Thus, students, teachers, and families will be able to contact experts over the phone for psychosocial support.

The steps and schedule for the implementation of the second phase of the TNRP are given in Table 1.

Table 1. Estimated Schedule: Second Phase of TNRP

Step	Date
Determining of critical outcomes in Turkish language, mathematics and science	1st March-15th March 2021
Receiving feedback to critical outcomes in Turkish language, mathematics and science	16th March-31st March 2021
Structuring the education programs	1st April-31st April 2021
Receiving feedback to education programs	1st May-15th May 2021
Developing/adapting the assessment tools for education programs	15th May-31st May 2021

Step	Date
Applications for students who enroll the program	1st June-18th June 2021
Course Period	1st July-31st August 2021
First large-scale assessment	25th July-3rd August 2021
Second large-scale assessment	1st Sptember-8th August 2021

As seen in Table 1, the steps for implementing the TNRP were initiated following the reopening of schools in March. The training programs and materials will be completed by July, when the implementation of the second phase of TNRP will start. The support program will be completed in the first week of September, when the second assessment will take place.

DISCUSSION AND CONCLUSION

The negative consequences of the Covid-19 pandemic have become more visible with the reopening of schools. Since the second half of 2020, countries begun reopening schools and the number of students receiving face-to-face education has increased. Early studies empirically illustrate the negative toll that time away from school has had on students' physical and psychological skills (Karasawa, 2020; Kuhfeld & Tarasawa, 2020; Kuhfeld et al., 2020).

The most effective tools to compensate for the negative effects of the pandemic are remedial education programs. For this reason, international organizations such as the OECD, World Bank, and UNESCO advise all countries to implement remedial programs against learning losses (Gouedard et al., 2020; UNESCO, 2020a). Modeling studies show that learning losses from the pandemic can correspond to an education period of half a year to over a full year (Azevedo et al., 2020; Dorn et al., 2020; Kuhfeld & Tarasawa, 2020; Kuhfeld et al., 2020). Moreover, the rates of learning loss for disadvantaged students, especially those from low socioeconomic backgrounds, may be even higher (Dorn et al., 2020). These findings clearly show the urgency and importance of remedial programs.

In Turkey, schools remained closed for almost a year; thus, the MoNE has planned a two-phase remedial program to compensate for students' learning losses. As of March 2021, when schools reopened nationally, the first phase of TNRP was initiated for the students in the regions with the lowest participation in distance education. Therefore, the first phase of the TNRP constitutes an emergency intervention during the semester for the most disadvantaged students. The second phase will reach all students from basic education to the end of secondary education levels during the summer months. This second phase aims to expand the scope of academic support to all students, in order to alleviate the effects of the pandemic before the 2021–2022 academic year. The present study reviewed the second phase of the TNRP based on the international criteria for remedial programs.

The differences in the impact of the pandemic from one country to another, as well as the distinct features in national education structures push countries to find their own solutions to this pressing issue of learning loss. However, there is a consensus on the steps to be taken to structure an effective academic support program (UNESCO, 2020a). The first of these steps is defined as *envisioning and understanding* the current situation and problem areas. In order to better discern students' learning losses in the second phase of TNRP, the outputs of the first phase and the results of the central examinations will be used together with teacher feedback. Thus, the data collected throughout the educational process will play a role in structuring the program, without creating additional test-taking anxiety for the students.

The second stage involves *deciding and designing*, and emphasizes three elements: increasing the time allocated to education, giving special importance to the program, and presenting the program with targeted content. These elements are reflected in the TNRP through implementation of the second phase in the summer months and the inclusion of previous support projects from before the pandemic within the scope of the TNRP. In addition, the critical outcomes in Turkish language, mathematics, and science are prioritized in this second phase.

The third stage (*enable and execute)* includes the allocation of financial and human resources for the support program, alongside the preparation of curriculum and education materials. The budget and human resources required for the TNRP have been arranged within the scope of previous support projects, especially the DYK. The process of creating a targeted curriculum and developing the educational materials is ongoing. Providing the opportunity for students and teachers to participate in the project from different provinces is important for maximizing access to the educational programming.

The last step of the process *(monitor and adjust)*, includes the continuous assessment of the program and the evaluation of the implementation according to the monitoring results. Large-scale assessment will be performed in the first month and at the end of the program in order to determine the impact of the second phase of the TNRP and to assess the students' progress. During this process, feedback will be solicited from teachers and monitoring results will be shared with the public through reports published by the MoNE.

As a result, the second stage of TNRP has been established as an inclusive, flexible, and dynamic remedial program. The program structure and approach matches the UNESCO (2020a) recommendations which are covered in envisioning and understanding, deciding and designing, enable and execute, and monitor and adjust.

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| Research Article / Araştırma Makalesi |

Investigation of Pre-Service Teachers' Opinions About Using Non-Linear Digital Storytelling Method

Doğrusal Olmayan Dijital Öyküleme Yöntemine Yönelik Öğretmen Adaylarının Görüşlerinin İncelenmesi[1]

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Keywords

1. Non-linear digital storytelling
2. Pre-service teacher
3. Teacher Training

Anahtar Kelimeler

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Abstract

Purpose: The aim of this research is to reveal the experiences of pre-service teachers about the use of non-linear digital storytelling as a teaching method.

Design/Methodology/Approach: Case study, one of the qualitative research methods, was used in this research. 11 pre-service teachers from the Department of Computer Education and Instructional Technology of a state university in the fall semester of the 2018-2019 academic year constitute the working group of the research. Pre-service teachers created non-linear digital stories in Designing and Using Material in Education Course for the seven weeks. Data collection tools are semi-structured interview forms developed by researchers and student reflections. The data were analyzed by content analysis method. Consensus among coders was calculated.

Findings: When the research data were analyzed, two themes, four categories and twenty-five codes emerged. In addition, frequencies expressing the number of students containing each code were determined. There are two categories in positive sides theme: Contributions and purposes. Under negative sides theme, there are also two categories as challenging steps and problems.

Highlights: The results of the research include the results of the pre-service teachers who stated that they learned new programs with this application, had difficulty in making videos, experienced technical problems but wanted to use in their professional life. Based on the results of the research, suggestions were made to practitioners and researchers.

Öz

Çalışmanın amacı: Bu araştırmanın amacı öğretmen adaylarının doğrusal olmayan dijital öykülemenin öğretim yöntemi olarak kullanılması hakkındaki deneyimlerinin ortaya çıkarılmasıdır.

Materyal ve Yöntem: Araştırmada nitel araştırma yöntemlerinden durum çalışması kullanılmıştır. 2018-2019 eğitim öğretim yılı güz döneminde bir devlet üniversitesinin Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümünden 11 öğretmen adayı araştırmanın çalışma grubunu oluşturmaktadır. Öğretmen adayları Eğitimde Materyal Tasarımı ve Kullanımı dersinde yedi hafta boyunca doğrusal olmayan dijital öyküler oluşturmuşlardır. Veri toplama araçları araştırmacılar tarafından geliştirilen yarı yapılandırılmış görüşme formu ve öğrencilerden toplanan yansılardır. Veriler içerik analizi yöntemi ile analiz edilmiştir. Kodlayıcılar arası görüş birliği hesaplanmıştır.

Bulgular: Araştırma verileri incelendiğinde iki tema, dört kategori ve yirmi beş kod ortaya çıkmıştır. Ayrıca her bir kodu içeren öğrenci sayısını ifade eden frekanslar belirlenmiştir. Olumlu yönler temasında iki kategori bulunmaktadır: Katkılar ve amaçlar. Olumsuz yönler teması altında ise zorlu adımlar ve problemler olmak üzere iki kategori bulunmaktadır.

Önemli Vurgular: Araştırmanın sonuçları arasında öğretmen adaylarının bu uygulama ile yeni programlar öğrendiklerini, öyküleri video haline getirirken zorlandıklarını, teknik sorunlar yaşadıklarını ancak meslek hayatlarında kullanmak istediklerini ifade ettikleri sonuçları yer almaktadır. Araştırma sonuçlardan yola çıkarak uygulayıcılara ve araştırmacılara önerilerde bulunulmuştur.

[1] This research was presented as an oral presentation at the 13th International Computer & Instructional Technologies Symposium.

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INTRODUCTION

Technological advances have been affecting and innovating many areas, including education. To offer a well-qualified education, trainers and researchers follow these advances and use them in educational environments. One of these innovations is digital storytelling. Digital storytelling is the presentation of a story written on a specific subject by enriching it electronically (Kobayashi, 2012). It is an educational method based on constructivism which develops content for clarifying a particular subject and increases learning motivation and participation (Letonsaari and Selin, 2018).

Digital storytelling is divided into three groups as informative/instructive, personal and historical (Robin, 2006). In educational environments, instructive stories are mostly used. For using digital stories more efficiently in these environments, it is necessary to plan digital story creation process (Uslupehlivan et al., 2017). There are some studies on digital storytelling process within the literature (France and Wakefield, 2011; Kajder et al., 2005; Cennamo et al., 2010). Cennamo et al. (2010) define these processes as follows: writing script, developing story board, placing images, creating a digital story and sharing it with others.

Storytelling has various kinds, depending on the script. Many stories used for educational purposes are linear, telling one subject and readers can not affect the end of these stories (Letonsaari and Selin, 2018). Called as linear storytelling, this kind has one pathway. The story has a beginning, development and an end (Cao et al., 2008; Liu et al., 2010). As well as linear scripts, there are some non-linear digital stories (branching) that lead readers to alternative paths. To have an interaction, stories can be enriched with videos, animations, and audio, along with non-linear scripts (Prosser, 2014). Personal digital stories are mostly linear whereas instructive stories can be non-linear (Lange et al., 2019).

Non-linear stories have different pathways (Cao et al., 2008). These stories enable users to regulate and connect various ideas (Liu et al., 2010). To combine parts of the story and establish bridges and links, special software is used (Letonsaari and Selin, 2018). Stories can be created as videos or slides (Cao et al., 2008). Göbel et al. (2008) argue that some software is limited to linear stories and that more software, which will simplify creating non-linear story and can be used by even beginners, is needed. Thus, they have developed a new software. Likewise, Spaniol et al. (2006) suggest that technological equipment and software are needed for creating non-linear digital stories.

Associating non-linear digital storytelling with digital games, Letonsaari and Selin (2018) claim that non-linear structure entails examining the subject in more detail and considering different points of view in a careful manner. Similarly, Rasmusson and Bourne (2017) liken selection paradigm in non-linear digital storytelling to games. Prosser (2014) suggests that non-linear structures are effective in creating personalized learning environments. In addition, there are some researchers who argue that non-linear digital storytelling might create collaborative learning environments (Cao et al., 2008; Liu et al., 2010). For, according to them, connecting different ideas successfully requires teamwork. Spaniol et al. (2006) define linear and non-linear digital stories as follows:

a) **Linear stories:** There is one way for creating stories. Storyteller sets a linear pathway for users to follow. Each part of the content is seen or heard in the same order. Users do not interfere with the order of plots. They can only stop, forward or rewind stories, without changing the end.

b) **Non-linear stories:** The story might have a different ending, depending on user interaction. Thus, rather than one pathway, there are many alternatives. The storyteller combines elements of the story and establishes a connection among many serialized elements. In the end, he/she can lead to various stories, depending on the selection of users at interaction points (Spaniol et al., 2006).

To illustrate these two kinds, Figure 1 presents an example of linear digital story while Figure 2 is for non-linear digital story example:

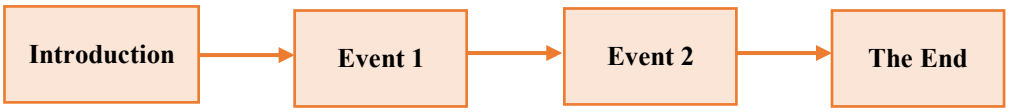

Figure 1. ***Linear story order***

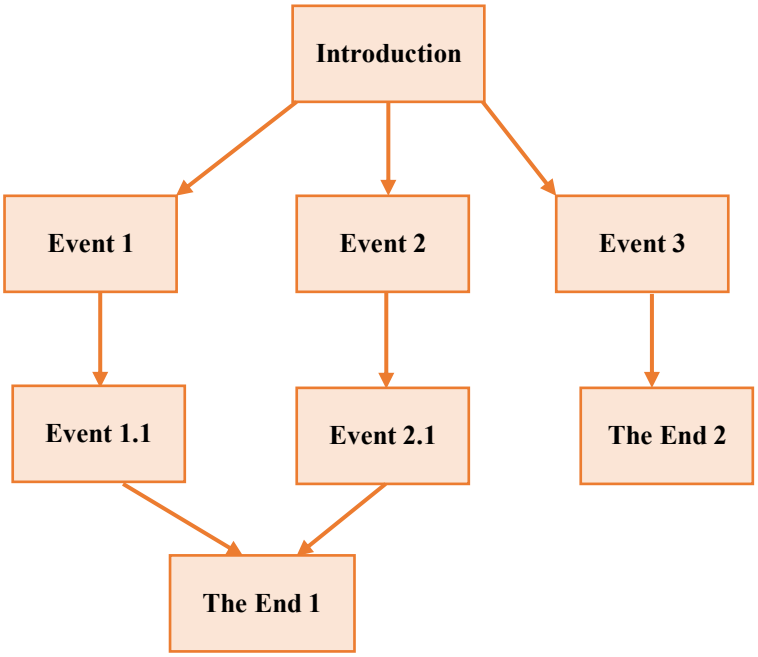

Figure 2. ***Non-linear story order***

There are a limited number of studies on non-linear digital storytelling within literature. In a study that compares linear and non-linear digital storytelling methods in a collaborative learning environment for primary school students, Liu et al. (2010) concludes that those in non-linear group shows better performance regarding reproduction, remix, possession, and positive connection. In their research, Maleki and Sajjadi (2012) also suggest that non-liner storytelling have a positive impact on student participation and motivation. In his study on language learning, Prosser (2014) uses non-linear digital stories with interactive narration structures. In his/her study on non-linear structures' effect on cognitive load, he/she concludes that they do not lead to excessive cognitive load. Letonsaari and Selin (2018) examine how non-linear script writing process is implemented in collaborative learning environments.

With the advent of technological advances, students' expectations have dramatically changed, and they now ask for various methods and materials being implemented in learning-teaching environments (Uslupehlivan et al., 2017). Similarly, emphasizing the need for new approaches in education, Anılan et al. (2018) claim that digital storytelling has the quality to stand out among new approaches and methods that address new educational needs. Rasmusson and Bourne (2017) argue that non-linear digital storytelling might help gain some learning outcomes in various disciplines. For example, it can be used as a non-linear course book or course material according to them. Although these interactive learning environments provide student-centred and constructivist environments, more studies are needed to measure to what extent these environments are created (Prosser, 2014).

In this study, pre-service teachers, who take Designing and Using Material in Education course, are asked to create non-linear digital stories as course materials. Then, their opinions on their experiences in using the method are recorded. By doing so, this study aims to reveal experiences and opinions of pre-service teachers at the department of Computer Education and Instructional Technologies (CEIT) on using non-linear digital stories as teaching method. In this respect, the research problem of the study can be defined as follows:

- What are the opinions of pre-service teachers at the department of CEIT on using non-linear digital stories as teaching materials?

Findings of the study will first contribute to understanding pre-service teachers' attitudes towards technology, who are regarded to be a significant component of technology integration at schools. Secondly, it will give some idea on how to implement digital stories as teaching materials as it illustrates experiences of pre-service teachers in using non-linear digital storytelling as a tool for developing material. Finally, the study will help enhance non-linear digital storytelling processes and demonstrate new research areas on the subject.

METHOD/MATERIALS

Research Model

As this study is on pre-service teachers' experiences in creating non-linear digital stories as teaching material, case study model is used for qualitative research. Case study is a qualitative research method that profoundly examines a case in real life, current

system or particular time; describes it by collecting detailed information from multiple sources and reveals its themes and concepts (Creswell, 2013).

Study Group

The study group of the research includes 11 pre-service teachers who studied in the 2nd grade of the department of CEIT in the Faculty of Education of a state university in Central Anatolian region in the fall semester of the 2018-2019 academic year. There were 7 males and 4 females in the group. Convenience sampling method was used to select members of the research group. As the study was on non-linear digital storytelling, which required technical know-how on using software, pre-service teachers at the department of CEIT were determined as research group thanks to their technology readiness.

Data Collection

To collect data, semi-structured interview form developed by the researchers and students' reflections were used. In their reflections, students write how this implementation contributes to them, the hardships they encounter and things they dislike as well as general opinions on the implementation. While developing interview forms, studies were reviewed in literature. Then, three experts in the field of CEIT were consulted on the form. According to the opinions, a question was changed, and a new question was added in the form. In the end, an interview form consisting of 7 items is constructed. Before it was filled by the study group, the form was tested with another student who had similar traits to the research group to check whether there was a point difficult to comprehend. The semi-structured interview form consisted of questions about in what way non-linear digital storytelling attracted students' attention, the phases they found difficult, and how it might affect teachers and students. The questions in the form included: "Did you have any difficulty using the software? If yes, in which parts?", "Which step of non-linear digital storytelling (script writing, storyboard creating, making video) attracted your attention more? Why?" The interview was carried out face-to-face and on individual basis. It was also recorded. Each interview lasted approximately 10 minutes. Reflections were collected in written form. These papers were obtained from students after the implementation.

Implementation Process

The research was implemented in a computer laboratory with internet connection. As a part of Designing and Using Material in Education course, it lasted for 7 weeks, 4 hours a week. During the implementation, Cennamo at al. (2010)'s five step digital storytelling model was adopted. These steps are script writing, designing storyboard, placing images, creating a digital story and sharing it with others. In accordance with these steps, weekly activities were designed as flows:

- **Week 1:** Non-linear digital storytelling was introduced to pre-service teachers. Sample scripts and videos were presented.
- **Week 2:** The software that can implement the application has been introduced. Students were let free to choose digital story creation program. Most students know programs such as Movie Maker, Adobe Captivate, Adobe After Effects, Adobe Flash. They were also introduced to some web 2.0 tools of digital story creation such as Vyond, Storyboard That etc. Students were asked to write a non-linear script for the next week.
- **Week 3:** The instructor provided feedback for students' scripts. Then, they updated their scripts.
- **Week 4:** Storyboards of the scripts were manually created on papers by some students. However, others used computer programs. Most used paper drawings.
- **Week 5:** By using software, students chose some visuals such as scene, characters, objects etc. and created their digital stories into digital platforms.
- **Week 6:** They completed creating non-linear stories in digital platforms. The instructor provided feedback for them. Those having some missing parts were asked to complete them for the next week.
- **Week 7:** Students shared their digital stories with their friends and instructor in the computer laboratory.

While creating non-linear digital stories, students were let free to choose a topic, basing on their field of study. It was observed that themes mostly involved secure internet use and computer use ethics. They created stories on these subjects due the problems they hear or encounter in daily life. Students were also free to choose software programs. They mostly designed plain story scenes with trial versions of web 2.0 tools such as Vyond, Storyboard That. For branching structures, they used Adobe Captivate and Adobe Flash etc. software.

Data Analysis

Content analysis method was used for analysing data. Themes, categories, codes and frequencies were determined. Reflection papers of the students and their interview forms were transcribed. Then, these transcripts were coded by two researchers. Reliability co-efficient was calculated by using Miles and Huberman (1994) formula [Reliability = The number of agreed codes / Total number of codes (agreed + disagreed)]. Inter-rater reliability (IRR) was calculated to be 87%. If the IRR is 80% or over, it is considered to be adequate (Miles and Huberman, 1994). In qualitative researches, whereas using tape recorders while recording data and having inter-rater reliability ensure reliability, rich description (describing environment, participants, themes in detail),

long-term participation into the field, and using different and various data sources contribute to validity (Creswell, 2013; Creswell and Miller, 2000; Fraenkel and Wallen, 2008).

FINDINGS

In this study, it is aimed to analyse pre-service teachers' opinions on non-linear digital storytelling. In Table 1, it is seen that semi-structured interview forms and reflections reveal two themes, four categories and twenty-five codes. The Frequency means the number of students for each code.

Table 1. **Opinions of pre-service teachers on the use of non-linear digital storytelling as a teaching method**

Theme	Category	Code	Frequency
Positive Sides	Contribution	Learning new software	10
		Providing different viewpoints	10
		Developing decision making skill	7
		Ensuring edutainment	5
		Learning a new method	5
		Studying skill	5
		Creative thinking skill	5
		Establishing connection skill	3
		Planning skill	2
		Providing various materials	2
	Purposes	Using it in professional life	10
		Ensuring permanent learning	6
		Using it in daily life	5
		Lecturing	4
		Attracting attention	4
		Reinforcement	3
		Arousing curiosity	2
Negative Sides	Challenging Steps	Creating a video	5
		Non-linear script writing	5
	Problems	Technical problems	2
		Being time consuming	2
		Lack of multilanguage support in software	2

When we look at Table 1, it is seen that two categories, "Contributions" and "Purposes", are listed among positive sides of non-linear digital storytelling whereas "Challenging Steps" and "Problems" are presented as two different categories of negative sides.

Contributions Category

This category includes individual benefits of the implementation for pre-service teachers. They stated that it mostly contributed them to learn new software (10), provide different viewpoints (10), and develop decision making skill (7). The pre-service teachers are coded as P1, P2 etc. Some ideas of pre-service teachers on Contributions Category are given below:

P3:…I have learnt the some details in Adobe Captivate such as preparing a slideshow, creating new slides, adding background music or audio records to each slide, and particularly setting a timer for all the records and pictures.

P4: ….It develops the student's decision making skill. The teachers can easily draw their attention to the topics.

P5:… I have learnt how to add new buttons, and learning new features of the program Adobe Captivate has made me happy.

I can use it in different areas. For instance, I could create my own character via free-hand drawing or preparing it in the program Storyboard That. I could add it to Adobe Captivate as a slide and speech balloon, too. Hence, the implementation has contributed me a lot, and I will absolutely be able to practice what I have learned in my future professional life.

Purposes Category

This category includes pre-service teachers' opinions on for what purposes they will be able to use the implementation. It is seen that purposes for use are mostly coded as using it in professional life (10) and daily life (5), and ensuring permanent learning (6). Some of pre-service teachers' opinions on this category are given below:

P3: …. It helps the students learn effectively as it draws their attention to the topic. Teaching with digital storytelling is definitely more memorable. It provides funnier moments for both teachers and students, and also helps teachers teach new things to their students without boring them.

P5:….It was a remarkable experience for me. Movie Maker was also great. We could add the pictures into it. For instance, we could create a video show for one's birthday by adding his/her photos and own audio records. They are all very useful programs. One can easily use them in not only classrooms but everywhere.

P9:…. Preparing a non-linear digital story in Adobe Captivate has provided a remarkable experience for my future career.

Challenging Steps Category

This category includes the steps in which pre-service teachers have faced some difficulties. They stated that creating video (5) and writing non-linear script (5) are challenging steps, having same frequency. Here are some sample opinions of pre-service teachers on this category.

P6: … I had difficulty in using Adobe Captivate since I have never used it before. However, I completed it with a little thought and support with videos from the internet.

P7: … Fictionalization is sometimes a bit hard. I mean connection. Story board is not difficult as you have some ideas about the script.

Problems Category

This category is about the problems that pre-service teachers have during the implementation. In this category, some problems are coded as technical problems (2), lack of multilanguage support for software (2) and being time consuming (2).

P7: …After sign up and account settings, I completed scene and then character selection. Then, I changed the postures, clothes, and colours of the characters clothes' each day. Creating hand and face mimics depending on the scenario is really time consuming for students.

P1: … In addition, I had to look for the meanings of some English words since the software language was English.

P2: …Another problematic situation for me was that I downloaded some sort of background music and tried to add it to the slides. However, it played just in the first slide but not others initially. Then I had to get a hand from my friend and managed to complete my project.

DISCUSSION

In the present study, it is concluded that pre-service teachers have both positive and negative opinions about non-linear digital storytelling. When positive opinions are considered, two categories are foregrounded as personal contributions and purposes of use. Learning new software and providing different viewpoints are listed as the most outstanding contributions. Moreover, they suggested other contributions such as decision making, permanent learning, edutainment, learning new methods, skill development (creative thinking, establishing connection and planning) on study, and providing various materials in teaching. The pre-service teachers have mostly intended to use non-linear digital storytelling both in their professional and daily life. In a similar study, Demirer and Baki (2018) argue that pre-service teachers consider that digital storytelling is entertaining, attractive, provides permanent learning and develops skills, and thus they regard these features as contributions. In their study, Özüdoğru and Çakır (2020) suggest that pre-service teachers state that digital storytelling teaches new methods and provides permanent learning and entertaining. According to findings of Kabaran et al. (2019), pre-service teachers emphasize that digital storytelling affects planning and research skills. In another study by Anilan et al. (2018) conducted with pre-service teachers on digital storytelling, it is emphasized that digital storytelling is entertaining, draws attention, provides permanent learning and can be used in professional life.

It can also be inferred that providing different viewpoints and developing decision making, establishing connection and creative thinking skills are different advantages of non-linear digital storytelling method. Having different points of view is one of the most important skills in non-linear digital storytelling method, particularly in scriptwriting. In non-linear digital storytelling, the scriptwriter needs to use decision making, creative thinking and establishing connection skills effectively while branching the story. There are similar studies in literature which illustrate that non-linear digital storytelling have a positive impact on combining and organising various ideas (Liu et al, 2010), establishing connections and considering different viewpoints (Letonsaari and Selin, 2018), and selecting and making decision (Rasmusson and Bourne, 2017). Maleki and Sajjadi (2012) also conclude that non-linear digital storytelling increases the motivation and participation of students in learning environment. Lange et al. (2019) emphasize that attention, establishing connection and participation are three most important factors for a successful non-linear digital storytelling in education.

When negative opinions of pre-service teachers are examined, two categories are coded as "Challenging Steps" and "Problems". While the former one includes problems regarding creating video and non-linear script writing, the latter includes technical problems, the lack of multilanguage support for the software, and time consuming. There are some studies in literature demonstrating that pre-service teachers have some technical and time aspect difficulties in digital storytelling method (Kabaran

et al., 2019; Özüdoğru and Çakır, 2020; Uslupehlivan et al., 2017). These technical problems might stem from weak infrastructures of computer laboratory. It is also thought that the method is regarded to be time consuming as some of the pre-service teachers do not have much experience, technical problems generally need much time to be solved, learning the software for the first time, the software has no multilanguage support. In addition, creating non-linear scenarios might be a reason for being considered time consuming in this research. Because non-linear storytelling takes more time than linear digital storytelling in both scenario creation and digitization. Creating non-linear stories is pretty complicated and time consuming, but it provides more freedom for both users and creators (Lange et al, 2019).

Being in accordance with constructivism, non-linear digital storytelling has a remarkable importance for professional life development of pre-service teachers. They will be able to practice what they have acquired during their in-service training. Thus, it can be argued that the more effective experiences they get in pre-service, the more successful implementations they have in their professional life. In this study, pre-service teachers produced an interactive educational material via using the technology. In order to use digital storytelling effectively in every phase of education, it is essential for pre-service teachers to be trained on tools and software used in digital storytelling and how to use it in education environments (Uslupehlivan et al., 2017). Thus, it will contribute to training qualified teachers in accordance with the needs of the age.

CONCLUSION AND RECOMMENDATIONS

When findings of the study are analysed, it is concluded that pre-service teachers have both positive and negative opinions on the use of non-linear digital storytelling as educational method. There are two categories in positive opinions: Contributions category and purposes category. While the former has 10 codes, the latter has 7 codes. Under negative opinions, there are also two categories as challenging steps category and problems category. There are two codes in challenging steps category whereas three codes are listed under problems category.

Based on this study, some recommendations can be given to implementers. In this study, some technical and time aspect problems were observed even though it was conducted with 11 pre-service teachers studying at the department CEIT. Thus, it can be argued that there will likely to be many more technical and time aspect problems in more crowded groups or the groups with lesser technological readiness. An adequate infrastructure for computer laboratory and effective technical support will be beneficial for solving these problems. Moreover, more time should be allocated for implementation process. For instance, out of class activities could be added. Pre-service teachers should have training on using software. While implementing non-linear digital storytelling process, restricting the number of branching is also thought to be useful to solve time aspect problems.

Based on this research, some recommendations can be given to the researchers. Different from this research, which was designed as a case study, experimental techniques could be designed and implemented to test impacts of the implementation on educational outputs. Moreover, its practicality could also be tested with pre-service teachers having less technological prior knowledge. As a part of career training, pre-service teachers in other fields could also be trained on non-linear storytelling approach and on software used for this approach. The number of software to be used for creating non-linear digital stories is limited, and many of them have no multilanguage support. Thus, new software with multilanguage support could also be developed.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with 60% contribution of the first author and 40% contribution of the second author.

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| Research Article / Araştırma Makalesi |

Competencies for a Classroom Teacher to Support Gifted Students in the Regular Classroom: A Qualitative Research[1]

Özel Yetenekli Öğrencileri Genel Eğitim Sınıflarında Destekleyecek Sınıf Öğretmeninin Sahip Olması Gereken Yeterlikler: Nitel Bir Araştırma

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Keywords
gifted student
regular classroom
inclusion
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classroom teacher

Anahtar Kelimeler
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genel eğitim sınıfı
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Abstract

Purpose: The purpose of this research was to research and reveal the competencies for classroom teachers to support gifted students in the regular classrooms.

Design/Methodology/Approach: In order to achieve this purpose, researcher conducted a case study and an action research of the qualitative research design, respectively. Participants of the study were five classroom teachers, their gifted students, parents of the gifted students, other classroom teachers, elementary school teachers and school administrators. Data were collected through unstructured interviews, observations, focus group interviews, documents and products during both the case study and action research. Roughly, 44 hours of interviews and 70 course hours of observations were carried out; and 311 documents and/or products obtained. Content and descriptive analysis were run to analyze the data. Inter-coder reliability coefficient was found to be .78.

Findings: Overall analysis revealed thirty-four competencies under eight different competency areas on four different stages. The first stage, "Introduction to Inclusion of the Gifted", comprised of "Basics of the Domain" and "Vocational Principles" competency areas including five and four competencies, respectively. The second stage, "Before the Inclusion of the Gifted", comprised of "Cooperation and Support", "Precautions and Arrangements" and "Planning and Programming" competency areas including five, three and four competencies, respectively. The third stage, "During the Inclusion of the Gifted", comprised of "Management and Climate of Inclusion Classroom" and "Implementation and Evaluation of Inclusion Program" competency areas including three and seven competencies, respectively. The fourth stage, "After the Inclusion of the Gifted", comprised of only one competency area labeled as "Maintainability" including three competencies.

Highlights: Gaining the competencies, revealed in this research study, to classroom teachers who will support gifted students with inclusion practices in regular classrooms by discovering and developing students' different talents is of critical importance in terms of meeting the educational needs of gifted students in regular education environments.

Öz

Çalışmanın amacı: Bu araştırmanın amacı, özel yetenekli öğrencileri genel eğitim sınıflarında destekleyecek sınıf öğretmenlerinin sahip olmaları gereken yeterlikleri araştırmak ve ortaya çıkarmaktır.

Materyal ve Yöntem: Bu temel amaca ulaşmak için araştırmacı, nitel araştırma desenine ilişkin sırasıyla bir durum çalışması ve bir eylem araştırması gerçekleştirmiştir. Araştırmanın katılımcıları beş sınıf öğretmeni, özel yetenekli öğrenciler, ebeveynleri, okul yöneticileri ve diğer sınıf ve ilkokul öğretmenleridir. Durum çalışması ve eylem araştırması aşamalarında veri toplamak için yapılandırılmamış görüşmeler, gözlemler, odak grup görüşmeleri, dokümanlar ve ürünlerden faydalanılmıştır. Araştırma sürecinde yaklaşık 44 saat görüşme, 70 ders saati gözlem ile 311 adet doküman ve/veya ürün toplanmıştır. Toplanan veriler içerik analizi ile betimleyici analize tabi tutulmuştur. İçerik analizi için hesaplanan kodlayıcılar arası güvenirlik katsayısı 0,78 olarak bulunmuştur.

Bulgular: Yapılan analiz sonucunda dört farklı aşamada sekiz farklı yeterlik alanı altında otuz dört yeterlik ortaya çıkarılmıştır. Birinci aşama olan "Özel Yeteneklinin Eğitiminde Kaynaştırmaya Giriş", sırasıyla beş ve dört yeterliği içeren "Alana Özgü Temeller" ve "Mesleki İlke ve Prensipler" yeterlik alanlarından oluşmaktadır. İkinci aşama olan "Özel Yeteneklinin Kaynaştırma Eğitiminden Önce", sırasıyla beş, üç ve dört yeterliği içeren "İşbirliği ve Destekler", "Önlemler ve Düzenlemeler" ve "Planlama ve Programlama" yeterlik alanlarından oluşmaktadır. Üçüncü aşama olan "Özel Yeteneklinin Kaynaştırma Eğitimi Sırasında", sırasıyla üç ve yedi yeterliği içeren "Kaynaştırma Sınıfı Yönetimi ve İklimi" ve "Kaynaştırma Programını Uygulama ve Değerlendirilme" yeterlik alanlarından oluşmaktadır. Dördüncü aşama olan "Özel Yeteneklinin Kaynaştırma Eğitiminden Sonra" ise üç yeterliği içeren ve "Sürdürülebilirlik" olarak etiketlenen yalnızca bir yeterlik alanından oluşmaktadır.

Önemli Vurgular: Bu araştırma ile ortaya çıkarılmış olan yeterliklerin özel yetenekli öğrencileri genel eğitim sınıflarında kaynaştırma uygulamaları ile destekleyecek ve bu öğrencilerin farklı yeteneklerini keşfederek geliştirecek olan sınıf öğretmenlerine kazandırılması özel yetenekli öğrencilerin eğitimsel gereksinimlerinin karşılanabilmesi açısından kritik bir önem arz etmektedir.

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INTRODUCTION

A limited number of educational opportunities are being offered within the framework of national education options for gifted students. For these students, the failure to carry out programs specific-to-specific talent areas may cause serious priority problems for gifted students to reveal and develop their existing potentials. In addition, practices such as private school, private classroom, school within the school, and pull-out programs bring along some problems such as equality and elitism as they aim to support these students in an environment where they stand separated from their non-gifted peers (Borland, 2003; Ford, 2003; Matthews & Kitchen, 2007). In fact, inadequacies in educational options may likely to cause these students to lose their talent(s). Lack of sufficient number and quality of educational options, and also being compulsorily attended to pre-school, elementary school, middle and high schools as a must in terms of to continue their education in Turkey, makes having been supported via inclusion practices in their regular classrooms unavoidable and a priority for gifted students.

It is expected that gifted students, whose special needs can be ignored by teachers even though it should be considered within the scope of special education, will benefit from individualization and inclusion practices. These practices, in the context of developing and supporting their potentials, need to be implemented in formal education institutions where gifted students enrolled and continue their education. Correspondingly, The Ministry of National Education in Turkey was declared the necessity of providing individualization and inclusion support through its' relevant administrative texts (MEB, 2003; 2006; 2007). Moreover, the teachers of gifted students were determined as the first degree responsible for structuring and conducting related inclusion and individualization practices; and contextually emphasis is placed on supporting gifted students in the general education process.

When the national and international literature is reviewed, it is striking that there are different studies focusing on the education of gifted student in regular classrooms (Çelikdelen, 2010; Darga, 2010; Dimitriadis, 2012; Eakin, 2007; Ekinci, 2002; Johnsen, Haensly, Gail & Ford, 2002; Mazza-Davies, 2008; Moratta-Garcia, 2011; Mosse, 2003; Palladino, 2008; Perez, 1997; Tekbaş, 2004). Although these studies mostly focused on enrichment and differentiation in education, there are studies conducted with a focus on individualization. However, some of these studies reported that sufficient inclusion and individualization practices for gifted students could not be carried out effectively due to teachers' inadequacy in inclusion practices for gifted students and lack of knowledge/equipment (Ekinci, 2002; Moratta-Garcia, 2011; Mosse, 2003), or these practices were not included at all due to a series of deficiencies. Moreover, the fact that the lack of necessary arrangements for a gifted student who has been studying with his/her peers in the regular classrooms may even cause them face with the phenomenon of waiting in the class (Peine & Coleman, 2010). For a gifted student who is faced with the phenomenon of waiting in the class, the educational environment can turn into an environment where she/he wastes her time, repeats what she/he already knows, and often distracts her/himself with different pursuits. In schools, the responsibility of turning this educational environment into a supportive format for gifted and other students rests with teachers. It is critical to examine teachers, who are expected to fulfill such a responsibility for gifted students, by focusing on a much more specific and concrete situation such as the qualifications and competencies, as distinct from general or special field competencies. Simply put, those specific competencies may likely to have addressed to teachers in terms of supporting gifted students in regular education environments by meeting their educational needs.

It is possible to define the term "competence" in different ways. According to MEB (2008), in a broader definition, it is defined as "having professional knowledge, skills and attitudes required to perform tasks specific to a profession". It is also possible to talk about different competency areas of teachers from different branches. However, it is emphasized that teachers of gifted students in both inclusion classes and/or pull-out programs should have certain competencies and/or characteristics (Abraham, 1958; Bishop, 1968; Davis, 1954; Gear, 1979; Gold, 1976; Gowan & Demos, 1964; Maker, 1975; Marland, 1971; Mirman, 1964; Newland, 1976; Torrance, 1963; Ward, 1961' as cited in Seeley, 1998; Ray, 2009; VanTassel-Baska & Johnsen, 2007). In general terms, emphasis is placed on the necessity of having relevant competencies in relation with basic concepts related to the field of giftedness, characteristics of gifted students and their individual learning differences, teaching models for the education of gifted students, education and training planning skills, appropriate assessment skills, effective communication skills, collaboration with experts (VanTassel-Baska & Johnsen, 2007). In addition, it is pointed out that the necessity of having different characteristics such as teachers' maturity, experience, self-confidence, above-average intelligence, positive attitudes towards gifted children, regularity-dreaminess-flexibility and creativity in attitudes and responses, sense of humor, tendency to be a "facilitators rather than a "director" in learning, tendency to spend extra time and effort, believing in individual differences and understanding these differences (Seeley, 1998). Unfortunately, these competencies and characteristics generally indicate teachers of the gifted students, and are not intended for a unique situation such as a classroom teacher who will support a gifted student in a regular classroom. As a first step to be taken, it is necessary to design a research focusing on how classroom teacher will support the gifted student in the general education class to determine the difficulties experienced in regular classroom environments where elementary school gifted students are studying. Moreover, addressing these difficulties and development and implementation of applications to solve them; in general terms, it would be appropriate to seek a scientific-based answer to the question of what competencies a classroom teacher should have to support the gifted student in the regular classroom, in order to meet the needs of classroom teachers who will support these students.

The purpose of this study was to seek answers and reveal the competencies for a classroom teacher to support gifted students in the regular classroom. It is possible to encounter researches on the education of gifted students in international and national literature. However, it is striking that there are limited studies focusing on supporting these students in regular classroom

environments and on the characteristics/competencies that classroom teachers are expected to have in supporting these students. In addition, Turkey has not met with in any empirical research that has been conducted focusing on the current issue. In this context, it can be thought that this research study could make a serious contribution first to the national literature and then to the international literature. With the findings to be obtained from this research process and the competency statements to be developed for practice, it will be possible to develop concrete solution proposals for the problem of classroom teachers who teach gifted students in regular classrooms to cope with the situation of supporting gifted students in these classes. Besides, it will be possible to clarify the competencies that classroom teachers should have to support the elementary school gifted students in the regular classrooms. It will also be possible to lay the foundations of many options such as teacher training programs for classroom teachers, in-service training, undergraduate courses, and additional resources, on a going-forward basis. In the light of this importance of the current study, the main research question that planned to have answered is given below:

- What are the competencies for a classroom teacher to support gifted students in the regular classroom?

METHODOLOGY

Research Design

This research study is a qualitative method research, in which researchers examine the subject(s) they will research in their natural environment, explain and interpret the phenomenon of the subject being investigated (Denzin & Lincoln, 2005). Because, this research requires a complex and in-depth understanding of the research subject, as it focuses on supporting gifted students in the regular classroom environment, which is a very unique case. In order to determine the classroom teacher competencies, there is a need for a good explanation of the problems and difficulties experienced by the teachers in the classroom environment where the gifted student receives education with their peers. Similarly, teachers, students and parents are expected to share their experiences based on their own experiences and to contribute to the answer of the research question by making their own voices heard.

In this research, a case study and an action research were conducted during two sequential terms, respectively. For the case study, single case with embedded units (Yin, 2003) was chosen. Because, as more than one unit of analysis may often be needed to investigate a single situation, It is aimed to describe the educational situations and problems by feeding from intertwined data sources; such as; observations to be made in the relevant classrooms, classroom and other teachers, counselors, administrators, gifted students and their parents as a result of the education of gifted students in inclusive classrooms. For the action research, application focused action research (Grundy, 1988 qtd. as cited in Yıldırım & Şimşek, 2011) was employed. The reason underlying of this action research type was the aim that the process of the research progressed, according to the theoretical framework of the practice-oriented action research, in parallel with the observations to be made in the classroom teacher's classroom and the interviews to be made with the teacher, and the development, implementation and evaluation of the applications to be carried out for the solution of the problems.

Participants

Researcher’s aim was to reach different type of schools, classrooms, teachers, parents and managers. To achieve this, maximum variation sampling (Fraenkel & Wallen, 2006) was chosen. Case study participants were two classroom teachers from two different elementary schools, their students, other five classroom teachers, two school counselors, a vice manager, a fourth grade gifted student and her parent. Classroom teacher Güler (a pseudonym) teaching third graders had twenty-one years of experience in her job. Classroom teacher Mehmet (a pseudonym) teaching fourth graders had forty-one years of experience in his job. Other participants were attendants of two different focus group interviews. Action research participants were four classroom teachers from three different elementary schools (one of them was also one of the schools in where the case study was conducted). Classroom teacher Ferdi (a pseudonym) teaching first graders and classroom teacher Veli (a pseudonym) third graders had ten and nine years of experiences in their jobs, respectively. Classroom teacher Berna (a pseudonym) teaching second graders had more than twenty-one years of experience in her job. Classroom teacher Güler (a pseudonym) teaching fourth graders had twenty-one years of experience in her job. This teacher was also one of the attendants of the case study.

Setting

This research study took place at four different public elementary schools in Ankara, Turkey. All schools were preferred to be located in different districts to include schools from different socio-economic levels for maximum variation sampling. While two of these schools were located at a military protected area; one were located at a university campus and other one was located at a suburban area. Schools located at military area were classified as middle SES (Socio-Economic Status) schools. The one at university campus was classified as a high SES school. In addition, the other one located at the suburban area was classified as a low SES school. Among these schools, two of them were in dual education (the one located at military area and the one located at suburban) and other two were in full-time education (the one located at military area and the one located at university campus). Classroom sizes in which this research study held varied from twenty to thirty-seven and all of the classrooms included one or two students identified as gifted. Additionally, most of these classrooms were also included students with different special needs as teachers reported.

The Role of the Researcher

The author of this paper has conducted this current research study by becoming a natural part of the research process at both stages. During the case study, observations carried out in two different primary schools and all individual and focus group interviews were carried out by the researcher himself, and the researcher tried not to exhibit behaviors that could affect the environment or the participants until the end of this process. In the action research, the researcher studied with classroom teachers at different schools in where the applications were carried out, identified their problems, and developed practical suggestions for the solution of these problems by interacting with the classroom teacher and ensured that they were applied in the inclusion classroom environment. The observations, interviews, evaluations, sound recordings and product archiving at both phases were carried out by the researcher himself. The researcher has no retrospective connection with the research settings (the school and the classroom).

Instrumentation

Interviews, focus group interviews, observations, documents and products used to collect data from participants. During both case study and action research processes, researcher used unstructured and conversation interviews. Interviews and focus group interviews aimed to collect data in order to reveal classroom teachers' ways of supporting gifted student and their experienced difficulties, educational arrangements in the classroom, effects of applications in classroom settings on gifted and other students. Moreover, teachers' views about applications, issues and topics in need of academic support, school managements' support and needs, parents' problems with school and regular classroom and their expectations were part of the data. During both case study and action research processes, researcher was also used unstructured field study observation type and taken the role of participating observer. The aim of observations was to collect data in order to reveal and evaluate the state and change in classroom climate and environment from student and teacher dimensions. Products were collected during action research process. Some of those products were students' ideas, problems posed and their solutions, designs and inventions, writings, drawings and paintings. Focus on data collection phase was mainly on the following questions:

- What are the needs of the classroom teacher to support the gifted student's talent in the general education classroom?
- What kind of arrangements can the classroom teacher make in the regular classroom environment to support the gifted student?
- How should the arrangements in the classroom environment be planned, prepared and implemented in a practical way?
- How do practices in the classroom affect the classroom environment?
- How do classroom practices affect gifted students and other students?
- What are the opinions of students and classroom teachers about these practices?
- What difficulties does the teacher have in supporting the gifted student?
- How does the teacher support the student's talent?
- How are educational arrangements implemented to support the gifted students and their talent(s) in the regular classroom environment?
- In which subjects and problems does the teacher need academic support regarding the education of the gifted student?
- What opportunities and facilities does the school administration provide for gifted students?
- What kind of support does the school administration need for gifted students?
- What are the problems faced by the student and his / her parents regarding the school and general education classroom environment?
- What are the expectations of the student and their parents from the school, teacher and other students?

Procedures

Research proposal was sent to and approved by Ankara Provincial Directorate for National Education. Elementary gifted students' enrollment information (frequency) by school was gathered from two different Science and Art Centers in Ankara. The schools where the research to be conducted have been determined based on the frequency of gifted students and the socio-economic status of the school district. Case study and action research processes were conducted on spring and autumn semesters in two and three elementary schools, respectively. In schools, teachers and students' parents were acknowledged with an information letter and a voluntary participation form. While case study was conducted with 3th and 4th grades in two different elementary schools, action research was conducted with 1st, 2nd, 3th and 4th grades in three different elementary schools. During case study, two classrooms were observed and teachers were interviewed before the beginning of the school day and between courses. In addition, a vice manager was also interviewed in his office and other teachers' attended to two separate focus group interviews. Moreover, a gifted student's parent was interviewed too. During action research, the researcher worked with four classroom teachers for twelve weeks focusing on their needs in supporting gifted student in the regular classroom. Meetings were conducted weekly with each teacher and applications were planned and applied together with the researcher following this cycle: define the problem, make a plan, apply the plan and collect data. All interviews, observations and products collected and saved on digital formats.

Data Analysis

During case study and action research processes: a total of forty two interviews, two focus group interviews, seventy observations were carried out and three hundred and eleven documents/products were collected. Interview and observation notes and records were transcribed. Documents and products transformed into digital formats. All qualitative data transferred into Maxqda 11 and content analysis run through Creswell's (2007) data analysis spiral. To answer the research question, the hierarchy of sub-code, code, subcategory and category used. An illustration of this approach is given below (Figure 1).

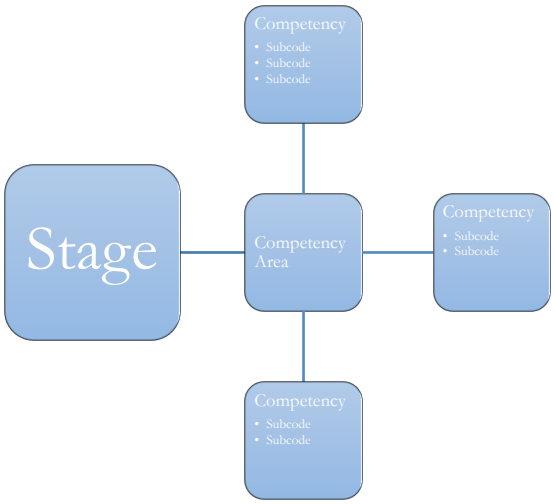

Figure 1. Creating and Revealing Competencies, Competency Areas and Stages via Sub-code, Code, Sub-category, Category Hierarchy

Figure 1 above represents the hierarchical approach in creating and revealing the competency statements, competency areas and stages. First, codes created from sub-codes as competency statements. Second, subcategories as competency areas created by grouping competency statements. Third, categories as stages derived from competency areas. Finally, a thousand and two hundred twenty three coding were formed and two hundred and six sub-codes, codes, subcategories and categories were created. Additionally, inter-coder reliability coefficient for coding was also calculated.

Credibility & Honesty

Researcher aimed at providing persuasiveness, transferability, consistency and verifiability for honesty and credibility of this qualitative research. Frequency of observations and interviews, one and/or two terms of interaction with participants, interviews with teachers, managers and parents, and use of observation, interview and student product for triangulation, advisor's support and asking of participant confirmation (especially during action research phase) were to provide persuasiveness. For transferability, detailed descriptions of participants and their classroom/schools given and participant schools were preferred to be from different socio-economic status for purposeful sampling to provide variety. For consistency; data collection, record and storage were systematically carried out and examined through the research. For verifiability, an independent specialist evaluated and confirmed data, tools and analysis. Additionally, another independent specialist was coded four different interview transcriptions for inter-coder reliability. Calculated coefficient was .78, indicating an acceptable reliability (Fahy, 2001; Kurasaki, 2000).

FINDINGS

What are the competencies for a classroom teacher to support gifted students in the regular classroom?

Content analysis revealed thirty-four competency statements of eight competency areas under four stages. These stages labeled as "Introduction to Inclusion of the Gifted", "Before the Inclusion of the Gifted", "During the Inclusion of the Gifted" and "After the Inclusion of the Gifted", respectively. Competency areas labeled as "Basics of the Domain", "Vocational Principles", "Cooperation and Support", "Precautions and Arrangements", "Planning and Programming", "Management and Climate of Inclusion Classroom", "Implementation and Evaluation of Inclusion Program" and "Maintainability", respectively. The first stage, Introduction to Inclusion of the Gifted, included "Basics of the Domain" and "Vocational Principles" competency areas that derived of five and four competencies, respectively. The second stage, Before the Inclusion of the Gifted, included "Cooperation and Support", "Precautions and Arrangements" and "Planning and Programming" competency areas that derived of five, three and four competencies, respectively. The third stage, During the Inclusion of the Gifted, included "Management and Climate of Inclusion Classroom" and "Implementation and Evaluation of Inclusion Program" competency areas that derived of three and seven competencies, respectively. The fourth stage, After the Inclusion of the Gifted, included "Maintainability" competency area that derived of three competencies. Regarding and considering the limits of a paper to be published as a research article, the

author of this paper has briefly given evidence on how each competency statements were derived. Full-length and detailed version of deriving all competencies can be accessed from Akar (2015). Evidence for uncovering the competencies within the competency areas under each stage is summarized below.

Stage 1: Introduction to the Inclusion of the Gifted

Competencies of Basics of the Domain

Themes and selected quotations which researcher determined related to five competencies under competency area named Basics of the Domain were as following (Table 1). First competency is to be able to understand giftedness and being gifted. Observations and field notes reflected issues related to classroom teachers' views on critical issue of identifying during preschool years, their intention in following a route to separate the gifted and to cover his/her talent(s), a teachers' use of a phrase such as "…going to get normalized among others in the classroom". In addition to these were school administration's unawareness of gifted students, classroom teachers problems in recognizing the gifted, misunderstanding the gifted student's behaviors and labeling those behaviors such as problem behaviors. During the action research phase, the researcher and a classroom teacher together determined in a form, which sent from ministry of national education, included the term gifted under the title of the type of student's disability. Then classroom teacher Veli criticized this situation as labeling the gifted as a "tie down" in education system. Another classroom teacher Berna noted about her views on being gifted, "Intelligence or talent? Some students comprehend what they read. Memory thing… Some students have strong memory, they remember; some students make interpretations even if they have no strong memory, they make inferences.". She added, "Intelligence is the capacity to improve talent… If you have that talent, you improve it with your intelligence.".

Table 1. Sub-codes, Codes (Competencies), Sub-categories (Competency Areas) and Categories (Stages) of the Stage 1

Stage	Competency Area	Competency (To be able…)	Sub-codes
Introduction to Inclusion of the Gifted	Basics of the Domain	1. To understand giftedness and being gifted	Meaning of being gifted, importance of early identification, who is the gifted student?
		2. To identify characteristics of gifted	Student characteristics, student profiles, student needs, difference between gifted and successful student
		3. To master basic knowledge regarding gifted education	Appropriate education environment, support options in school, rearranging the classroom environment, effects of classroom level, ways to support the gifted, teacher behaviors, teacher competencies, teacher attitudes, philosophy of educating the gifted
		4. To determine and nominate the potentially gifted student efficiently	Realizing the potential, parent effect, lack of multiple nomination techniques, teacher nomination
		5. To master administrative texts regarding gifted students and their inclusion in education	Teacher's responsibilities, school management's responsibilities, having educated with peers, providing special supports
	Vocational Principles	1. To adopt the comprehension of talent supporting and need addressing within the scope of individual differences	To address all kinds of students, attitudes towards individual differences, supporting talent in classroom
		2. To be aware of his/her vocational requirements towards gifted's inclusion in education	Being a part of general education system, teacher's experiences, being focused on teaching, lack of appropriate student and teacher books, vocational experiences, being focused on learning, awareness problems, teacher characteristics, teacher's educational background, arrangement of classroom environment, supports to be provided in school
		3. To adopt the comprehension to maintain the process of gifted student's inclusion in education by working planned and programmed	Planning skills, commitment to school, unplanned and non-programmed process, unconstructed implementations
		4. To adopt the comprehension of not only a group of students but every student's benefit from a course at his/her learning rate as an inclusion principle	Being focused on learning rate, lack of individual relevance, problem of segregating the gifted, student centeredness

Classroom teacher Veli too shared his view about giftedness,

> Can we think like this? An energy or love in that gifted child, which enables and involves him/her into both positive and negative things. Yes, being hyperactive or completing tasks in responsibility, I am not sure how these reasons connected to giftedness but a quite calm, passive, stable and non-productive child should less likely to have a potential in terms of giftedness.

Another classroom teacher Güler notified a memoir of her about the gifted student and giftedness,

> Sometime ago we held an exam, a joint exam with another class. A student from that classroom came and told that their teacher was asking for an answer key of the exam. I told him that I have not prepared yet. Gifted student, who was working with something by the time, rose his head up and asked the student, "What is the problem? Cannot your teacher find answers and ask for an answer key?" He is a very interesting student.

Second competency is to be able to identify characteristics of gifted. Observations and field notes reflected issues related to classroom teachers' reported and limited characteristics regarding gifted students such as; gifted students prefer to communicate with grown-ups, do not like writing, prefer building friendship with other gifted students, school commitment. In addition to these were being a young researcher, leadership abilities, being aware of his/her differences, prefer going towards scientific concepts, being successful at tests, having strong verbal abilities, asking extreme questions, like discussions and brainstorming, feeling frustrated when failed, perfectionism, and being extravert. Classroom teacher Mehmet stated, "My gifted student wants to become a vet. He has pets and plants at his room. Once he wanted to feed a heifer as a pet in his room just because of his deep interest in animals.". Another classroom teacher Berna reported, "I came across with my gifted student in a book fair lately. He had bought lots of books about machines.". After researchers' share of the information about gifted versus successful student characteristics, a classroom teacher reacted that "Now I started to think that one of my student may have higher potential than the gifted one." and she continued about the gifted one:

> I was aware of his potential since his 1st grade. I would like him to enter good schools. His ideas and behaviors are at grown up level. He can answer if I ask upper level questions. He was able to multiply at 3th grade level when he was only 2nd grader. He has not been interested in child or pop songs. He has been interested in dramatic songs, grownup songs; and he signs them. He gets uncomfortable if he could not fully understand something.

Third competency is to be able to master basic knowledge regarding gifted education. Observations and field notes reflected issues related to the dilemma of private school/classroom or inclusion for the gifted, gifted student as a burden for classroom teacher, lack in supporting the gifted, lack of resource room and other opportunities, need in reconstructing classrooms for supporting gifted students and course level vs. gifted student's level. Classroom teacher Berna stated, "What should immediately be done is to open schools that provide special education for gifted students, like the ones for disadvantaged students.". Another classroom teacher Veli discussed student assessments on a three-likert scale (very good, good, must developed) "…yes, this shows how he/she progressed in terms of academic aspects but this does not show how he/she is a better and a promising student. I would like them to be assessed on different criteria…". And he continued: "I was not thinking that I had talent in arts. However, when I saw my own drawings in a drawing course that I took under undergraduate minor at faculty years; I witnessed that training and/or programs can develop talent.".

Fourth competency is to be able to determine and nominate the potentially gifted student efficiently. Observations and field notes reflected issues related to parental effects in nomination process, lack of parent/self/peer nominations, teachers' difficulties in realizing students' talent(s), teachers' lack of self-confidence, non-use of ways to find potentially gifted students, non-use of alternatives to construct extraordinary problems and/or tasks, using different nomination forms can help focusing on different students and spreading the nomination process over time. When researcher suggested use of a parent nomination form, classroom teacher Veli stated that:

> Will it be possible to apply these to all students? Because I really wonder… Students wear a uniform before coming to school; both physical and identity uniforms. They wear manners on themselves that fit school, not only a blue school uniform; something beyond it. Characteristics may be restricted at home and parents tell them do not behave like this or that. Perhaps those uniforms prevent us to discover creativity, talent and sparkle in their intelligence. I would like to apply this form to all of them because they may feel more comfortable with their parents.

After using parent and teacher nomination forms together, he added, "…These forms are quite useful. To see our and parents' or a third person's thoughts about students coincide together on those forms is more convincing and motivating.". After using different forms, he also confessed that he began to realize one of his non-gifted student's potential to be identified as gifted with remarking student's curiosity, prefer in asking instead of responding, quality of questions and, nonsensical and lunatic ideas.

Fifth competency is to be able to master administrative texts regarding gifted students and their inclusion in education. Observations and field notes reflected issues related to school administration's unawareness of gifted students and their educational needs, lack of school administration support, need of a separated support unit, classroom teachers' lack of seeking and asking support/help from school administration. In addition to these were need of a private support, lack of support from ministry of education and unawareness of classroom teachers' responsibilities in inclusion of the gifted. Classroom teacher Güler noted about lack of support:

> While there are so many disappointing things, you cannot do much, you step aside. Then you do not think, what do you say to me, if the ministry does not think, if the minister does not, you say that I will get my salary and sit down. As most teachers say. You know, I don't do this, but I'm talking in general, right. The parents did not want to, what can I do, I took a step back and sat down. I don't do it, I try as much as I can, but it's not a self that is the case. There are a lot of chain links, if one link is broken, it is over ...

Competencies of Vocational Principles

Four competencies under competency area named Vocational Principles derived from themes and given as following with selected quotations. First competency is to be able to adopt the comprehension of talent supporting and need addressing within the scope of individual differences. Observations and field notes reflected issues related to lack of problems/questions posed for talented students, belief in impossibility of individualization, course level's inefficacy on gifted student's level, classroom size as a

barrier in focusing individual differences, classroom teachers' reaction of "Am I going to focus on only to gifted student?". In addition to these were beliefs in gifted students' existence brings unfair applications, beliefs in every student is different and so their needs, insensitiveness in students' individual differences, higher IQ causes problems in settling in the classroom. Moreover, classroom teachers' conflict in supporting basic skills or talents, belief in individualizing the gifted may cause problems for other students, main concerns in completing the curriculum than facing students' needs were other themes. Classroom teacher Berna reported that:

> For instance, multiplication is not among our operations on this grade but my gifted student asks if he can multiply while solving problems. I straddle between saying yes and no. Sometimes yes, sometimes no depending on the moment. If I say yes to him, I know there are others who cannot multiply because we have not yet discussed this subject. When I say to gifted student to perform an undiscussed subject, he becomes privileged. Or other students get aggrieved.

Another classroom teacher Güler added,

> …I have a curriculum to complete. Your gifted child may be different but other gifted student's parent do not react or ask that way. If your expectations are too much, you had better go find a teacher who is able to response to those. This is what I am.

Second competency is to be able to be aware of his/her vocational requirements towards gifted's inclusion in education. Observations and field notes reflected issues related to incomprehension of difference between teaching and learning, classroom teachers' self-perception of doing everything he/she can, being unaware of what they need, not to attempt to support gifted student, not to request support from school management, need of teachers with self-criticism, classroom teachers' characteristics and attitudes as essential variables. In addition to these were need in improving themselves, possibility of teacher's training college graduate classroom teachers' efficiency, needs in providing classroom environment for supporting talent, lack of resource room support, assignment of other school teachers instead of specialists in resource room, inefficacy of course books, boring and routine activities in the classroom, focusing on basic knowledge and skills. Moreover, being too much experienced in teaching, lack of teaching skills in activating the gifted student, teacher centeredness, learning outcomes in general curriculum, inefficacy of in-service training, lack of encouraging students, openness to change, teachers' undergraduate background, lack of skills in arts and music courses and problems in motivating students were other themes. Classroom teacher Berna notified that, "There is a need in in-service training programs for teachers about educating gifted students like the ones designed for educating disadvantaged students.". Another classroom teacher Veli added that, "We, classroom teachers are not competent about this issue." and "Yesterday my gifted student came and asked that why aliens are always shown as evils. This created sparkles on everybody, I mean going out of routines adds them value.". And another classroom teacher Güler's reaction while she and researcher were trying to pose different types of problems for gifted and non-gifted students using a matrix was,

> I see... I will…We will be satisfied of their responses. I give the problem to a student and then he/she finds a solution. Am I going to interfere? Like it is right or wrong. Because you know there is always one right answer..

She also added about one of her gifted student parent's expectations:

> They struggle for their child to stand out. "Our child is smart enough, he can make it; ask more than that…" they say. And I say "There is not only your child in the classroom, there are others too.". I have 25 students. All are my precious. This class has an average, has a level. I follow this grade level…

Third competency is to be able to adopt the comprehension to maintain the process of gifted student's inclusion in education by working planned and programmed. Observations and field notes reflected issues related to gifted students' behaviors to occupy him/herself because of the course level, gifted students' loss of motivation due to their needs in individual attention and always asking for more, requirement of effective programs between school and pull-out programs, classroom problems because of gifted students' learning rate, current classroom environment and climate do not address their needs. In addition to these themes were classroom teachers' difficulties in planning and programming, need in endowing planning skills, inefficacy of IEP's content, need in affective programming tool and lack of differentiation for gifted student. A classroom teacher in the focus group reported what she has been casually doing with her gifted student:

> I give guidance to my gifted student and even I ask her to assist me in my work. I try to make her benefit from me like a master-apprentice relationship. I make regulations toward her and bring different questions/problems. I give her different responsibilities. I ask her different questions in different levels.

Another classroom teacher who considered her gifted students' behaviors as problem behaviors was determined not to have a plan and/or a program for that student, as well as other participant teachers.

Fourth competency is to be able to adopt the comprehension of not only a group of students but every student's benefit from a course at his/her learning rate as an inclusion principle. Observations and field notes reflected issues related to normalization of the gifted in the classroom, possibility of talent loss, non-individualized teaching practices, perception of separation if providing individual support for gifted student, tendency and lack of constructivism, being distant from student centeredness, classroom teachers' tendency of being always active, non-constructivist classroom teachers for gifted students. In addition to these were lack of skills in activating every type of students, perception of unfair in differentiated practices, lecturer wise teaching, problems in using additional activities for gifted, concerns in getting out of the curriculum, classroom as a monotype student and problem of prominence of not student's but classroom's level. Classroom teacher Veli's statement about separating the gifted was:

> I bring science books to class to let them enjoy different things. I want to open a door to them. More could have done but here is a disadvantaged zone. I really do not want to dive into things like taking them to different places because expectations will rise and separation issues will come to the fore; why some students and why not whole class…

Stage 2: Before to the Inclusion of the Gifted

Competencies of Cooperation and Support

Five competencies under competency area named Cooperation and Support derived from themes given as following with selected experiences and quotations (Table 2). First competency is to be able to provide cooperation between gifted student's inclusion program in school and other programs out of school by collaborating with each of those programs. Observations and field notes reflected issues related to gifted student's attendance in out of school programs, content of the program, school and out of school program together as a burden, over attendance problem, gifted students drop out from out of school programs. In addition to these were out of school program's content does not match up with gifted students' needs, gifted student's waste of time and not to care in selecting out of school programs and courses. Classroom teacher Berna's statement related to this competency was "Student has been experiencing difficulties, which I think caused from the center where he goes in the morning. He becomes exhausted in there and comes to school too tired. And, he experiences difficulties in motivating to courses at school.". Another

Table 2. Sub-codes, Codes (Competencies), Sub-categories (Competency Areas) and Categories (Stages) of the Stage 2

Stage	Competency Area	Competency (To be able…)	Sub-codes
Before the Inclusion of the Gifted	Cooperation and Support	1. To provide cooperation between gifted student's inclusion program in school and other programs out of school by collaborating with each of those programs	Content of program or course attended, over-participation problem, drop out (program or course)
		2. To include gifted student's parent into his/her inclusion in education process	Parent's attitudes, activating the parent, to obtain information from parent, parent's skills, parent's behaviors towards the teacher, interaction between parent and teacher
		3. To provide required support from school management related to inclusion of the gifted in education within administrative texts	Asking support from school management, supports to be provided by school management, expectations from school management
		4. To interact with specialists who do scientific research about inclusion of the gifted in education	Working with specialists, lack of school counselor's support, specialist support
		5. To follow up scientific resources on gifted students and their inclusion in education	Improving knowledge and skills, attitudes towards the gifted, myths about being gifted
	Precautions and Arrangements	1. To take precautions in order to eliminate intraclass situations that may cause a loss in gifted student's talent(s)	Being bored in course, waiting in the class, completing assignments faster and earlier, motivation to lesson, activities in student's books, losing talent
		2. To prepare regular classroom environment and all students in the classroom to inclusion in education	Class level, analyzing factors related to classroom environment, classroom climate, problems in inclusion in education, respect to individual differences, perception of being equal to each student, performing more than one work simultaneously
		3. To cope with difficulties that may originate from different variables special to classroom environment	Physical inadequacy of classroom environment, frequency of gifted students in the class, frequency of students with special needs in the class, class size, students' level differences
	Planning and Programming	1. To gather information that is necessary to prepare an inclusion program for a gifted student	Information about the gifted student, students' emotional development, uselessness of IEP, student's curiosity and concerns, student's social development, student's talent areas, student's gifted characteristics,
		2. To determine comprehensive and efficient objectives that support and develop talent(s)	Choosing accurate objectives, being objective-focused, needs regarding on objectives, roles regarding on objectives,
		3. To include effective methods, approaches, strategies, teaching techniques and tasks being used for educating the gifted in regular classroom in the inclusion program	Lack of or non-use of acceleration, using strategies, differentiation, enrichment, grade skipping, importance of domain specific methods and techniques, supporting talent development, well-defined problems, product oriented in given tasks and assignments
		4. To find movement area for objectives of inclusion program of the gifted by being flexible in current general education program	Concerns in completing the curriculum, lack of time to implement, classroom environment and the rest of the class, objectives in general curriculum, problem of perceiving the class as one

classroom teacher Güler reported, “Student enrolled to a center. Then he got bored because he had always finished given activities faster. He argued with the teacher and quit the course.”.

Second competency is to be able to include gifted student’s parent into his/her inclusion in education process. Observations and field notes reflected issues related to parents’ needs in gaining guiding skills related to their gifted child, parents’ needs in getting trained in communication-cope with-supporting their gifted child, classroom teachers’ report on lacking request from parents’ about their gifted child and need in providing detailed information from parents about gifted students. In addition to these were need in affective advices to parents, importance of giving active roles to parents in supporting their child’s talent, sharing parents’ observations and determinations about the gifted child, providing active participation of parents’ into gifted child’s inclusion process and parents’ difficulties in supporting their child. For example, classroom teacher Ferdi believed that his gifted student had no talent in drawing. When he asked her family about this and her family sent student’s everyday drawing book to the teacher, student’s talent came in sight in her everyday drawings.

Third competency is to be able to provide required support from school management related to inclusion of the gifted in education within administrative texts. Observations and field notes reflected issues related to school administrator’s report on lacking requests regarding problems and help by teachers, school administrator’s unaware of gifted students and their needs, school administrator’s no support, classroom teachers’ work load, no training provided by school administrator, no care of gifted students on middle school level. In addition to these were need in the leadership of school administration in order to provide supporting environment, necessity of enabling resource room for gifted students, need in assistant teachers, need in specialist support in school and lack of interventions for gifted students in schools. Classroom teacher Veli reported that, “I asked for support from school administration while students were in first grade and I was told to get support on following grades.”. However, another schools’ administrator interestingly stated that “We had no request about gifted students from teachers up to the present.”.

Fourth competency is to be able to interact with specialists who do scientific research about inclusion of the gifted in education. Observations and field notes reflected issues related to classroom teachers’ request from specialist to observe their classes, lack of school counselor’s support, classroom teachers’ need of instant help, classroom teachers’ request in specialist and school interaction. In addition to these themes were gifted students’ need of specialist support, classroom teachers’ need of a specialist support to arrange classroom environment and to support gifted students, classroom teachers’ need to have trained by specialists. Classroom teacher Güler’s statement about working with the researcher was, “…I worked with you together for a short period of two/three months and once in a week. Even so I really learned a lot from you…”. Other participant teachers also mentioned their satisfaction of working with a specialist.

Fifth competency is to be able to follow up scientific resources on gifted students and their inclusion in education. Observations and field notes reflected issues related to classroom teachers’ lack of scientific resources in gifted education, their limited knowledge about gifted education, their need in developing skills on supporting gifted students, their perception level on gifted students and their education. In addition to these were different beliefs towards gifted students, differences in attitudes towards gifted students and lack of tendency to improve their knowledge and skills towards gifted education.

Competencies of Precautions and Arrangements

Three competencies under competency area named Precautions and Arrangements derived from themes given as following with quotations. First competency is to be able to take precautions in order to eliminate intraclass situations that may cause a loss in gifted student’s talent(s). Observations and field notes reflected issues related to boredom of the gifted during courses, lack of regulations to motivate the gifted to course or issue, classroom teachers’ tendency of supporting their talent with different questions/problems, course level’s inefficacy on gifted student’s level, immediate loose in their motivation, exhibiting self-entertaining behaviors during courses and gifted student’s advanced level in courses as a problem. In addition to these were completing activities faster and earlier, need in challenging activities for gifted in course books, given roles as assistant to teacher, integration of activities in the class without considering gifted student and gifted student’s desire to be always active in the classroom. A gifted 4th grade student’s parent stated that:

> For example, she does not want to move from A to B than C in a hierarchical issue like A-B-C; and she says she would like to learn it from her teacher otherwise he will get bored in the class.

And she added that: “She was completing the activities faster and responding faster during first grade, and her teacher suppressed him.”. Classroom teacher Ferdi’s confession as a precaution for his gifted student was: “I assign tasks to her like helping others in reading, practicing and some teaching roles…”. Similarly, classroom teacher Veli mentioned that:

> He finishes the test in ten minutes. That is why I created the role “checker” for him. The ones who complete the test mostly bring to him for getting their tests checked. However, if the assignment is about writing a story, he takes his whole time.

Another classroom teacher Berna reported that:

> For example, we did an activity in the classroom and both two gifted students finished that activity faster and moved to another one. When response turn came to one of them, he could not find in which activity we were working on.

In order to achieve this problem, researcher suggested to this classroom teacher to use additional activities that challenge the gifted students under teacher’s control. Researcher prepared a few sample activities and passed them to the classroom teacher to use them at her courses. Classroom teacher later reported its’ usefulness and efficacy after using those activities during another course.

Second competency is to be able to prepare regular classroom environment and all students in the classroom to inclusion in education. Observations and field notes reflected issues related to classroom climate and students in the classroom were effective variables, classroom teachers' difficulties with regard to inclusion in education, teachers and students perceptions on individual differences were effective variables, need in respect to individual differences, need in skills for classroom teachers to analyze level differences and special needs between students. In addition to these were, gifted student's classroom level as critical variable, effect of classroom climate generated by classroom teacher, differentiated practices for gifted students as a problem for others. Classroom teacher Ferdi emphasized that, "A special activity for her is impossible, other students ask for their selves too.". Another classroom teacher Berna added that, "I have problems in arranging classroom order. I have two gifted students. They always want to be active during courses. The issue of segregation comes to mind in giving different tasks to them." And she continued:

> They perform more than one task simultaneously like making a paper plane, painting etc… I do not get mad at them. They both listen and perform at the same time. But, other students try to do the same and of course non-gifted students could not achieve it. Gifted students mostly do this in Language and Life Sciences courses. They could not give it up even when they have warned.

Another classroom teacher Veli stated about his classroom climate;

> He was already reading and writing when he started to first grade. It was hard for me but also it was a good experience too. I used his potential because he was a good example. For instance, other students mostly avoid negative comments about him. Because they are aware of his talent, perhaps they think he is special…

Third competency is to be able to cope with difficulties that may originate from different variables special to classroom environment. Observations and field notes reflected issues related to the quantity of students who identified with special needs as a burden for classroom teacher, special students effect as another variable, crowded class size as a manifestation to individualization, insufficient classroom environment, students' level differences as a negative effect on classroom environment. In addition to these were, ideal class size effects classroom environment positively and more than one gifted student in the classroom has both negative and positive effects. Classroom teacher Güler of fourth grade reflected her difficulty about classroom size and students with special needs in her classroom referring to individual attention to students; "It's OK if you have a class size of twenty. But thirty seven students in the classroom even do not allow walking between them.". Another teacher Veli added about students' levels and differences:

> Existence of a variety of students… Different kinds of students in the same classroom decreases the quality of education. Communication between students, teacher's motivation, dialogue between parents… I actually faced with huge difficulties but there is nothing to do. They are all children at all. I try my best for them…

Competencies of Planning and Programming

Four competencies under competency area named Planning and Programming derived from themes given as following with quotations. First competency is to be able to gather information that is necessary to prepare an inclusion program for a gifted student. Observations and field notes reflected issues related to needs in considering gifted student's social development, needs in comparison of course content and gifted student's level, addressing gifted students' talent areas, inefficacy of IEP on supporting gifted students in the regular classroom, lack of including the classroom environment and other students in an IEP. In addition to these were, needs in addressing the interest areas of the gifted student, determining the deep interest areas, using different resources to collect data about the student and assessing gifted student on a developmental perspective. When the researcher examined a first grade gifted student's everyday drawing book, which requested to have sent by her parents caused student's talent in drawing to be questioned. Her teacher's detailed information also supported and extended her talent in this area:

> She uses details in her paintings quite well. She draws clothes in details. She likes drawing and painting. She designs clothes out of waste fabrics. Waste paper, fabric, wood, stone toy parts become her design and action materials. Among her handcrafts were painting, sculpture, weaving…

Another teacher Veli reflected his gifted student's passion and its effects on him:

> His passion is to satisfy himself, not to outrun someone. Passion with positive intentions. Consequently some negativities occur. Missing details or misread because fast reading and mistakes in responses. Like missing a question in a negatively structured sentence. When I show him later, he gets sad. There are mistakes in tests because he still has the feeling or desire to complete the test faster…Decrease in his success wears down him. Like he sits and cries because of getting a grade of 80 out of 100 on a test.

In addition, he added that:

> Extended version of the current topic in a course comes more attractive to him. But he reflects if there is an issue that burdens his memory. He mostly comes and ask me about it. It happens in mathematics or in other courses. I think he is aware of he could not be able to do other things if he had not understand that… When he asked to pose a problem with given data, he is able to create a problem with many stages and details in it… He writes the dialogues in story like he lives in it; he never goes back and reads what he has written…

A gifted student's parent reported about social issues of their gifted child: "One day he had a problem because a child took his stuff without asking. He desired to exhibit extreme behaviors towards her. Socializing harms him.". And same student reported about his social condition and loneliness: "One of the most thing I have ever wanted to do is riding bikes with friends.". His classroom teacher Güler added about his abilities:

> If we look at our topics like anatomy, I give research tasks without diving into details. But, he says I researched and we have this quantity of veins, we have this, we have that in details… He likes reading thick books. Sometimes he quits because of getting bored. It is hard for him because the topic and book is above his age… He likes mathematics and science. He has a strong reasoning ability. He responses too many problems without operating on a paper. When I say you have to use a pen and a paper, he finds it unnecessary. He finds different ways of solutions… I know he is well in drawing but he draws with a high hand even if a topic is given. He never uses a composition. I babble he says. Free and original. I do not try to do something or create something. When you give a topic and say draw, he creates an irrelevant combination. But, his drawing is well. He draws mini figures and objects on every part of his books and notebooks. He even can draw while reading something.

Second competency is to be able to determine comprehensive and efficient objectives that support and develop talent(s). Observations and field notes reflected issues related to gifted student's level above the course's level, given roles in assisting teachers, loading unstructured different responsibilities to gifted students, need in providing independent learning options by using gifted student's research interests, inefficacy of students books and teaching materials, need in effective programs that include objectives, being distant from talent supportive objectives. In addition to these were, practicing monotonous activities, non-use of open ended processes, ill-structured tasks given to gifted student, lack differentiation to gifted, lack of using planning tools, limitedness of objectives in the general curriculum, courses being held via lecturing and question-answer method, tasks without objectives given to gifted student. Classroom teacher Berna observed to have given a gifted student an activity paper including a number of multiplication operations that gifted student completed in minutes. She later reported about being distant from objectives that supports talent: "I did something in mathematics for them, using pencils in different colors. When they used those pencils, they could not have finished the task earlier… I specifically told them to use different colors for each digit…". She added, "I let one of my gifted student to be my assistant and gave him errands.". While researcher was trying to show two different classroom teachers how to develop objectives that supports creativity and talent in mathematics and literature, Berna was one of those teachers who agreed to apply objectives not only for the gifted student but for all of the students in the classroom.

Third competency is to be able to include effective methods, approaches, strategies, teaching techniques and tasks being used for educating the gifted in regular classroom in the inclusion program. Observations and field notes reflected issues related to assessing grade skipping as an acceleration, classroom teachers' need in appropriate methods and teaching techniques, need in activities and problems that develop talent, need in skills to prepare implementations to be included in gifted student's program, course books as a barrier to support talent. In addition to these were, need in enrichment and differentiation practices in the classroom, inefficacy of activities in course books, limitedness of performance tasks given in course books, unawareness of real life problems in developing talent and performance tasks structured as knowledge oriented. Researcher tried to show classroom teacher Berna how to use differentiation in a course focusing on topic "the space" using a video from NASA in which an astronaut was trying to conduct an experiment about things to happen when a wet cloth squeezed in space station. Researcher and classroom teacher Berna structured tasks as group works and applied it to whole classroom. End of the day, classroom teacher Berna reported, "I really liked this. It has nothing to do with the general curriculum, it is a very different one and it lets students' mind work.". Another one was trying to show another classroom teacher Veli how to differentiate a course in mathematics using model-eliciting activities. Researcher explained the activity to the teacher and teacher applied it as a group work in his classroom. He then found activities different and efficient. Moreover, the gifted student's assessment about the activity was also supported teacher's ideas:

> It was just my cup of tea. Because I like working with operations. I sometimes play with a calculator. For instance, we calculated two hundred and forty nine as a solution, and you wish to find better solutions after every trial. The better result you reach, the better you understand. When you understand better, what we found, how we found… It was a very good activity. Doing it as a group brought us to upper levels. It was very good.

Researcher also showed the same classroom teacher how to pose seven different types of problems using a matrix called Discover Problem Matrix. Then, he prepared different problems using the matrix and applied it to his classroom as he named it "Mathematics in Seven Steps". He assessed his experience as,

> It has a characteristic like addressing to all levels. It almost acts as a measuring tool, at least an indicating tool. For instance, when you give a student problems that posed using the matrix and ask him/her to solve one of them, the problem that student verged may be an indicator. Apart from those, I really enjoyed to have mastered a tool like this. It was also fun and different for students.

Fourth competency is to be able to find movement area for objectives of inclusion program of the gifted by being flexible in current general education program. Observations and field notes reflected issues related to topics on courses take a long time of period, necessity of considering non-gifted students, limitedness of existing objectives and implementations, classroom teachers' fear of going out of the curriculum, tendency of moving objectives out of the classroom. In addition to these were, difficulties in finding time to get prepared, effects of teachers' time management skills and convenience of enrichment and differentiation on existing objectives in the curriculum. Classroom teacher Veli criticized the objectives in the general curriculum: "It's like a field manual at the army. Dry your hands, touch the socket… It was always emphasized like, prepares for listening.". Another teacher Güler added: "We cannot conduct too many brain storming in the class, there is no chance for it. Prepares for listening, uses his/her foreknowledge. What kind of objective is that? Take this, prepares for listening, determines his/her purpose of reading…". Additionally, she continued about going out of the curriculum:

> We have a curriculum and we cannot go out of it. I told you we have no time for it. I cannot finish my topics. I could not have finished the language book yet and we are almost at the end of the year. If you do more activities, you drop behind.

Stage 3: During the Inclusion of the Gifted

Competencies of Management and Climate of Inclusion Classroom

Three competencies under competency area named Management and Climate of Inclusion Classroom derived from themes given as following with quotations (Table 3). First competency is to be able to construct an effective classroom climate by using gifted student's talent(s). Observations and field notes reflected issues related to gifted student positive effect on their teachers, gifted student foster teachers and other students into research by going out of routines, they motivate the class in a positive way, gifted student effects the class in a positive way and they teach subjects to students when teacher cannot. In addition to these were, existence of the gifted may create a unique classroom climate in a well-constructed classroom environment, gifted students affect

others in a course with their different ideas, ill or well-constructed tasks and responsibilities as an assistant to teacher. A classroom teacher pointed out in a focus group: "I cannot teach some issues to students. I get help from my gifted student at those times. Interestingly, she succeed in teaching those issues to her friends and let them learn by using her choice of methods.". In classroom teacher Mehmet's class, researcher observed a gifted student during his presentation and noted about what a gifted student can do even if the task is limited:

> He was presenting about electricity. He used different images and he prepared a presentation plan. During the presentation, he asks questions like what if there was no electricity. But his teacher do not care about the question. However, it was a quite good question to start a discussion of an hour. He used animations in his presentation. He emphasized electricity sources and things to do in case of hazards. He used comics focusing on what to do at school. Additionally, he highlighted students about wet and dry batteries.

Table 3. Sub-codes, Codes (Competencies), Sub-categories (Competency Areas) and Categories (Stages) of the Stage 3

Stage	Competency Area	Competency (To be able…)	Sub-codes
During the Inclusion of the Gifted	Management and Climate of Inclusion Classroom	1. To construct an effective classroom climate by using gifted student's talent(s)	Effect of the gifted, assistant roles in teaching, using the gifted as an engine
		2. To exhibit classroom management skills unique to inclusion of the gifted in education	Sense of humor, being every students' teacher, quality of teacher instructions, basic skills in classroom management, philosophy of education in unified classrooms
		3. To manage gifted student's behaviors that may affect teaching-learning process in the regular classroom	Perfectionism, self-regulative tasks, to avoid from extra-ordinary behaviors, warning and punishment, lack of technique use, urge of being active, over-curiosity, over-excitabilities, unexpected behaviors, relationships with friends, bite back
	Implementation and Evaluation of Inclusion Program	1. To adapt gifted and non-gifted students' educational attainments and learning experiences by arranging them to support talent development	Reaching each student, positive effect of the gifted, all students' benefit
		2. To accurately and effectively apply methods, approaches, strategies and teaching techniques that develop talent(s) of the gifted in the regular classroom	Choosing effective method, technique and strategy, surpassing the phenomenon of waiting in the class, talent development,
		3. To apply tasks given to the gifted student during his/her inclusion in education process by constructing each task such as to product oriented and talent supportive	Product oriented tasks and assignments, elective tasks and assignments
		4. To encourage gifted and non-gifted students in the classroom to group studies by grouping students in accordance with different grouping types	Conducting group works, grouping types, encouraging students to group works
		5. To foster gifted student's creativity and productivity by making arrangements and applications to perpetuate his/her creativity and productivity	Fostering creativity and productivity, given importance to being creative and productive, differentiating the process with instant modifications
		6. To provide integration of applications and/or given tasks within gifted student's inclusion in education program by analyzing each to be applied individually/group/class	Implementations towards the whole class, group work opportunities, parent's choice, equality problem, individual work opportunities, problems in task development
		7. To make evaluations towards the objectives in gifted student's inclusion in education program	To make righteous evaluations, mistakes in test items, traditional evaluation approaches, lack of domain specific evaluation methods and techniques

Same gifted student was observed in mathematics class in which teacher asked a question of "How many straight lines pass on three dots?" and students in the class started to response as "Only one.". After when three non-linear dots marked on the board, gifted student used these terms: Linear and non-linear. Another classroom teacher Veli reported about using gifted student's talent, "I make a point of choosing the student to sit next to gifted one, to be able to have a capacity to learn from him. I use gifted student as a feeder. Both in terms of academic and behavioral…".

Second competency is to be able to exhibit classroom management skills unique to inclusion of the gifted in education. Observations and field notes reflected issues related to needs for self-criticism of teacher, classroom teachers with low control level and emancipatory, teachers with unified classroom experience come through difficulties while managing classrooms with gifted student, necessity of endowing classroom teachers with unified classroom teaching model, teachers with sense of humor could effectively manage these classrooms. In addition to these were classroom teachers lack of basic classroom management skills experience more difficulties, mistakes in teachers' instructions which gifted students easily debug, teachers with strong

communication skills could effectively manage these classrooms, use of negative feedbacks (wrong, it cannot be, etc…). Moreover, teachers prefer of being the classroom's teacher instead of appealing each student in the classroom, lack of dealing with problems emerging from gifted students' desire to be always active (asking a lot of questions, desire to speak and go out of the topic etc…) and classroom teachers experience problems in motivating the gifted and class were other themes. Researcher observed and noted a conflict between teacher Mehmet and the gifted student in the classroom,

> Gifted student debug a mistake of teacher. Teacher did not listen to the student again and student has been trying to attend without asking permission. Thus, teacher mostly do not listen to his ideas because of focusing on asking permission before speaking. Then student debug another mistake.

Same gifted student's responses to his teacher's questions were,

> Teacher: What cities does Germany have?
> Gifted student: What do you mean by "what cities"?
>
> Teacher: Which direction we should follow to go to Bulgaria from Ankara?
> Gifted student: To airport…

In another classroom where researcher and classroom teacher Güler were conducting a group work with students which requires group discussion; classroom teacher suddenly reacted to class because of noise in the class: "The one who wishes to be a good scientist does not talk a lot like this.". Same teacher gladly pointed out her inacceptable "three warnings and then a punishment approach" as,

> Courses are being completed in full since I began to apply this method. I do not feel the need of warning students. If you do not feel that need, course flow occurs more positively. We can go faster. Now, we have more time for activities.

Third competency is to be able to manage gifted student's behaviors that may affect teaching-learning process in the regular classroom. Observations and field notes reflected issues related to jealousy of the gifted, intolerance of unfairness that creates conflict with teacher, gifted student does not like writing, exhibiting problem behavior when their achievement not appreciated, perfectionism, exhibiting insulting behaviors towards other students, having difficulties in reflecting their emotions, introversion, hiding their emotions, non-enthusiastic, over-sensitiveness. In addition to these were, they seem as a problem student because of curiosity and activeness, being dominant to their friends, speaking without permission, having a tendency to go out of the topic, use of warning and punishment technique for behavior management, lack of behavior analysis by questioning its reasons, not being encouraged to self-regulation. Researcher suggested to classroom teacher Berna to use an observation form focusing on understanding gifted student's problem behaviors in order to create solutions by analyzing reasons and effects of the behavior within the environment. Teacher refused to use the form and continued on her own ill-structured approach, "For instance he was warned because of not following the course. He's going to get a punishment after third warning.". She added about consequences of her approach,

> Both gifted students and a non-gifted student punished. Punishment was an assignment to find a dialogue about two characters in a topic in language course. I told both of them research and present it together. One of them rose against me and told me he is not going to do it. He objected but objection is one his characteristics.

She noted about one of his gifted student's perfectionism, "I think this is because of his parents. For instance, he continuously checks his exam paper. He asks me about questions that confuses him because he wants to get a clue for the answer.". Another classroom teacher Güler complaint about gifted student's problem behaviors and she asserted that student quit those behaviors in order not to make the teacher upset. Researcher criticized and suggested teacher to give the gifted student a well-structured task focusing on self-regulation. Task was assisting teacher in observing problem behaviors of students in and out of the classroom. Additionally, teacher Güler asked to observe and note gifted student's exhibited problem behaviors in terms of frequency. Teacher then reported about effects of this task,

> He is not calm, still restless but we have no problem now. His English Language teacher also thanked to him about the change in his behaviors… Observing other students' behaviors and their effects stopped him to exhibit his own problem behaviors… I observed positive changes in his behaviors in a period of a week.

Same student's parent pointed out about his problem behaviors emphasizing the necessity of understanding reasons of behaviors, "He seemed as a problem child which was not originated from him, but his potential. He was misunderstood at most of the times.". This issue also refers to a situation, which mostly experienced by gifted students; because gifted students may likely waste their time in vain and labeled as a child with problem behaviors if no structured or planned supports in the classroom.

Competencies of Implementation and Evaluation of Inclusion Program

Seven competencies under competency area named Implementation and Evaluation of Inclusion Program derived from themes given as following with quotations. First competency is to be able to adapt gifted and non-gifted students' educational attainments and learning experiences by arranging them to support talent development. Observations and field notes reflected issues related to teachers' following non-structured processes, lack of analysis of students' talent(s), unawareness of supporting gifted student means discovering other students' talent(s), need in determining non-gifted students' readiness for differentiated implementations, lack of considering other students in IEP planning and necessity in recognizing implementations in the classroom to support both gifted and non-gifted students as a criteria.

Second competency is to be able to accurately and effectively apply methods, approaches, strategies and teaching techniques that develop talent(s) of the gifted in the regular classroom. This competency is directly related to and derived simultaneously

with one of the previous competencies under competency area called planning and programing; to be able to include effective methods, approaches, strategies, teaching techniques and tasks being used for educating the gifted in regular classroom in the inclusion program. Both competencies share same reasons.

Third competency is to be able to apply tasks given to the gifted student during his/her inclusion in education process by constructing each task such as to product oriented and talent supportive. Observations and field notes reflected issues related to limitedness of given tasks, focus on knowledge-based works, lack of given significance to support talent(s), lack of focusing on creativity and productivity and lack of creating different options in given tasks. Researcher prepared and showed classroom teacher Güler how to create selective performance tasks in a theme of a science class by using a matrix. They together created four different types of problems as different levels of tasks. When teacher shared the task list with the classroom, gifted student observed to have chosen the hardest task. A week later, gifted student presented his extraordinary design to classroom and reported, "I did not have difficulty in creating this. It was totally my idea.". His teacher added about tasks,

> I mostly use course activities as a basis for tasks…I cannot conduct and give tasks as edge as this… I tell my students that there are four-five themes in science and choose one of them. Gifted student had better choose the one above his level.

Fourth competency is to be able to encourage gifted and non-gifted students in the classroom to group studies by grouping students in accordance with different grouping types. Observations and field notes reflected issues related to lack of group works, lack of group work order or arrangement in the classroom, physical inadequacy of classroom to conduct group works, lack of significance in arranging and conducting group works, advantage of group works in classroom with huge classroom size. In addition to these were, argue of students with different abilities manifest group works, teachers' incompetency in grouping types and group works and necessity in fostering teachers to focus on group works and co-operative learning environments. Researcher observed in teacher Berna's classroom that students in a group work tended to raise their fingers to speak where they were ought to discuss each other with group members. Another classroom teacher Veli and researcher applied a model-eliciting activity as a group work in the classroom and teacher previously warned, "Probably half of the students in the class will sit and wait without doing anything. They will keep themselves away without contributing because this activity is very different to them; too far, too meaningless, too unreachable". Then he assessed the group work, "We could not get efficiency because of group works have not been conducting enough in our classroom. Students far from group work discipline prevented the work to be efficient". But his gifted student reported about the same group work, "It was just my cup of tea. Because I like working with operations… It was a very good activity. Doing it as a group brought us to upper levels. It was very good."

Fifth competency is to be able to foster gifted student's creativity and productivity by making arrangements and applications to perpetuate his/her creativity and productivity. Observations and field notes reflected issues related to that students' products exhibited on classroom boards indicated a non-creative and non-productive supportive environment, limitedness of tasks given to students, use of studies that prepared mostly including multiple-choice items. In addition to these were, lack of given importance to open-endedness, lack of transferring real life problems in the classroom, lack of well-constructed processes to foster students creativity, over use of practice papers focused on revising, being knowledge-oriented effects productivity on a negative way, average students' lack of readiness to open-ended processes and teachers' lack of techniques that improve creativity. In teacher Mehmet's classroom, researcher observed that students' were encouraged to tell a fairy tale but no one was being encouraged to create or write a fairy tale of their own. After the course, classroom teacher Mehmet assigned them to learn a fairy tale from their elders. In another classroom teacher Güler's drawing class, students' were observed to ask at the beginning of a drawing course; "What are we supposed draw and paint?". On the contrary, researcher also showed classroom teacher Veli how to differentiate a task by changing its instruction. The task was "Tell and write about your house of your dreams". After completing the task, students started to tell about their houses of dreams and samples included villas with a swimming pool, flats with elevators, homes where a limousine parker in front of it etc.. Gifted student in that classroom stated about his house of dream, "An apartment on a garden with apple trees; a coach and a TV in its elevator". Then researcher and teacher Veli changed the instruction by differentiating it into "Imagine, design and draw a house of your dream that does not exist in anywhere". Consequently, differentiated instruction leaded students into different and extraordinary designs including a shoe shaped house, an apple shaped house, a house on three legs with mathematical operations on its walls etc…

Sixth competency is to be able to provide integration of applications and/or given tasks within gifted student's inclusion in education program by analyzing each to be applied individually/group/class. Observations and field notes reflected issues related to needs in individual study times and activities for both gifted and non-gifted students, thought of continuous individual activities special to gifted may cause problems in the classroom, parent's negative attitudes towards individual applications, perception of discrimination if differentiating for gifted student and lack of encouragement in and out of class group works. Classroom teacher Berna stated about staying distant to individual applications, "I conduct activities for the whole class, not for some of them. Without letting students feel in an individualized way". Another classroom teacher Veli reported as,

> We apply this into the classroom as a whole… This is not a type of work that I could be able to conduct only with the gifted student. We can use this for other students' foreknowledge. I would like all of them to experience different things.

Classroom teacher Güler which criticized by parents' in the way that "Do we raise inventors here?" because of assigning students selective and open-ended tasks stated that,

> …I think I have not forced you enough. Why do not you become inventors? Inventors used to sit in these classrooms too. Everyone has a special talent. Everyone has things to do in accordance with his/her talent. What is necessary is to be aware of ourselves and reveal our talent. My purpose here is to enable you to discover your talents.

Seventh competency is to be able to make evaluations towards the objectives in gifted student's inclusion in education program. Observations and field notes reflected issues related to classroom teachers' needs in gaining different evaluation methods and techniques, needs in using problems posed with different techniques to assess gifted and non-gifted students fairly, insignificance of multiple-choice items in talent development. In addition to these were, needs in focusing on open-endedness, dominance of classic evaluation items(multiple-choice, infilling, match-up etc.), being knowledge-oriented in evaluation, applying processes in planned and objective based bring objective focused evaluations. In teacher Mehmet's classroom, researcher observed a gifted student while class was taking an exam, and he noted,

> Gifted student finished the exam very fast, even if he found mistakes in items. This means items in the exam were below his level, or quite easy for him. If there was a different evaluation for him, this condition would be more efficient too.

Classroom teacher Berna reported about effects of gifted student's aim at earning the highest grades in exams on him,

> For instance, he continuously checks his exam paper. He asks me about questions that confuses him because he wants to get a clue for the answer. This way or that way. However, he does this if he is not sure about the answer. His purpose is to earn the highest or full grade as he always expected to have.

Stage 4: After the Inclusion of the Gifted

Competencies of Maintainability

Three competencies under competency area named Maintainability derived from themes given as following (Table 4). First competency is to be able to make a perpetual and detailed evaluation towards gifted student's applied inclusion in education program. Observations and field notes reflected issues related to classroom teachers needs in gaining planning, programing and evaluating skills, inefficacy of objectives in the general curriculum to assess gifted students' talent, needs in considering products as a strong evaluation criteria instead of test/exam scores, needs in evaluations towards talent supportive objectives separately and need in evaluating the program extensionally whilst applying it.

Table 4. Sub-codes, Codes (Competencies), Sub-categories (Competency Areas) and Categories (Stages) of the Stage 4

Stage	Competency Area	Competency (To be able…)	Sub-codes
After the Inclusion of the Gifted	Maintainability	1. To make a perpetual and detailed evaluation towards gifted student's applied inclusion in education program	Lack of planning and programming skills, needs in use of objective oriented evaluation types, evaluations towards talent development, objectives in the curriculum,
		2. To edit/progress/reprogram gifted student's inclusion in education program with regard to evaluation results	Lack of planning and programming skills, following up an unplanned and non-programmed term, achieving the issue of talent loss
		3. To make provisions for maintainability of gifted student's inclusion in education on following grade and/or school levels	To provide and seek support in following class levels, subject matter teacher problems, unwillingness to school

Second competency is to be able to edit/progress/reprogram gifted student's inclusion in education program with regard to evaluation results. Observations and field notes reflected issues related to needs in extinguishing the problem of normalization of the gifted, lack of planning and programing, being unaware of the importance of evaluating the program, teachers needs in gaining skills in interpretation of evaluation results, critical issue of questioning and revealing whether talent has been supporting. In addition to these were, being distant to IEP applications that requires individual evaluations, needs in determining the level of achievement of objectives, needs in determining the effects of precautions and regulations, teachers' needs in gaining editing/processing/reprograming skills.

Third competency is to be able to make provisions for maintainability of gifted student's inclusion in education on following grade and/or school levels. Observations and field notes reflected issues related to lack of given attention to gifted students at middle school level, subject matter teachers' difficulties in identifying and supporting talent, lack of persistence in support may cause unwillingness to school and need in items and/or statements in administrative texts that provide persistence in terms of supporting gifted students' talent(s). Classroom teacher Veli stated about his future expectations about the gifted student regarding on supports during following school levels, "I would like him to be offered supportive and prudential opportunities or provide options." In addition, researcher observed teachers' complains in a focus group interview about lack of following supportive environments for gifted students, especially at middle school levels.

DISCUSSION

The purpose of this qualitative study was to research and reveal the competencies for a classroom teacher to support gifted students in the regular classroom. The first stage, introduction to inclusion of the gifted, included basics of the domain and vocational principles competency areas. The competencies under the basics of the domain competency area are generally supported by a number of previous research (Akar & Sengil-Akar, 2012; Akar & Uluman, 2013; Gokdere & Ayvacı, 2004; Hultgren & Seeley, 1982; Karnes, et al., 2000; Mosse, 2003; Neumeister, et al., 2007; Ray, 2009; Rohrer, 1995; Seeley, 1998; Schack & Starko, 1990; VanTassel-Baska & Johnsen, 2007; VanTassel-Baska & Stambaugh, 2005). These studies have mentioned issues related to

teachers of the gifted such as; having limited knowledge about being gifted and associating giftedness with being successful in courses, having limited knowledge about conceptions and definitions of giftedness and characteristics of gifted students. Besides, being trained in educating the gifted, having domain specific knowledge in gifted education, problems in determining the gifted potential, having competence in identifying the gifted and talented and having competence in laws and regulations regarding gifted students and their education were also emphasized. Likewise, competencies under the vocational principles competency area are also in line with previous research (Hultgren & Seeley, 1982; Seeley, 1998; VanTassel-Baska & Johnsen, 2007) in terms of individual differences in teaching gifted students and paying attention to individualization. In addition, requirements such as teacher competence in intellectual vocational interests, self-evaluation, determining his/her individual teaching skills, planning and programing skills for educating the gifted were highlighted as other critical issues.

The second stage, before the inclusion of the gifted, included cooperation and support, precautions and arrangements, planning and programing competency areas. Competencies under cooperation and support competency area are grounded by different research (Akar, 2010; Blumen-Pardo, 2002; Darga, 2010; Tekbas, 2004; Mosse, 2003; VanTassel-Baska & Stambaugh, 2005; VanTassel-Baska & Johnsen, 2007). In brief, those research findings have pointed out issues such as gifted students' over attendance to pull-out programs which may likely lead dropouts unless a unique cooperation and ties exist between school and program and parents of the gifteds' concerns and needs about supporting their child. Additional issues were school administration's weak or lacking support in teaching gifted students which may likely change if teachers of the gifted begin seeking and asking for support based on administrative texts and their need to have encouraged to cooperate with specialists regarding the importance of specialist and teacher interaction in teaching the gifted as well as selecting resources proper to student characteristics. Competencies under precautions and arrangements competency area are also supported by previous research (Dimitriadis, 2012; Peine & Coleman, 2010; Yang, Gentry & Choi, 2012) in terms of a phenomenon called waiting in the class (the less or no special regulations for gifted in the class/school, the more likely for gifted students to sit and wait), and other factors such as the size of the classroom which effects the efficacy of methods applied in the regular classrooms for the gifted. Furthermore, another research findings unavoidably advocate the necessity of such competencies as highlighting that gifted students, compared to their non-gifted peers, do perceive regular classroom environment more positive, but they also perceive out of school programs more positive than their regular classroom environment (Yang, Gentry & Choi, 2012). Planning and programing competency area's competencies are also in line with previous research (Eakin, 2007; Hultgren & Seeley, 1982; Johnsen et. al., 2002; ; Ray, 2009; Seeley, 1998 VanTassel-Baska & Johnsen, 2007; VanTassel-Baska & Stambaugh, 2005) regarding on the necessity of assessing the gifted from his/her superior and weak aspects to gather critical information about the student, possessing skills about determining student's needs in advance, having theoretical knowledge about evidence based teaching models in teaching the gifted, becoming a facilitator for independent research and promoting study skills, fostering creative problem solving and individualized teaching techniques, competence to apply enrichment in students' program, cognitive teaching at a quite high level, effective teaching and learning strategies with applying advanced level thinking and metacognition models and, teaching creativity in problem solving, competence to apply differentiation strategies in the curriculum, competence to teaching and learning towards the gifted and lack of time for individual planning to provide course of action for teaching the gifted in the regular classroom.

The third stage, during the inclusion of the gifted, included management and climate of inclusion classroom, and implementation and evaluation of inclusion program competency areas. Competencies under management and climate of inclusion classroom competency area are argued and emphasized in different researches (Ray, 2009; VanTassel-Baska & Stambaugh, 2005) in terms of lack of classroom management skills, having sense of humor, being a facilitator in the classroom, managing gifted students' behaviors by using sufficient techniques in order to reveal underlying reasons to develop affective solutions. Likewise, competencies under implementation and evaluation of inclusion program competency area have mentioned in several researches (Feldhusen, 1997; Karnes, et al., 2000; Moratta-Garcia, 2011; Renzulli, 1986; Sternberg & Zhang, 1995; VanTassel-Baska & Johnsen, 2007) with regard to benefits of supporting the gifted on non-gifted students, teachers be endowed with skills to have competence to apply teaching methods, techniques, approaches and strategies etc. effectively. Moreover, developing and creating alternatives in tasks given to gifted students to encourage his/her to create, lack of conducting group works in the classroom, creativity and productivity as critical components of giftedness, competence to creativity and productivity, competence to perform academic, formal, informal, alternative and differentiated assessments for gifted students were also pointed out as necessary issues regarding to teacher competence.

The fourth stage, after the inclusion of the gifted, included maintainability competency area. Only one of the competencies of this competency area have mentioned such as possessing skills to assess and evaluate the gifted properly via differentiated and alternative evaluations (VanTassel-Baska & Johnsen, 2007) in terms of the need of the gifted to have assessed regarding on his/her own objectives focusing on talent development as an ongoing and independent process. The remaining competencies are related to other critical issues like revealing the effects of gifted student's applied program by assessing and evaluating it periodically in order to make evidence based decisions such as to edit/progress/reprogram. Besides, to prepare and forward a formal but detailed report about gifted's progress may likely form a basis for possible individual supports during upcoming classroom/school levels.

CONCLUSION & RECOMMENDATIONS

In conclusion, this qualitative research study revealed thirty-four competencies under eight different competency areas in four different stages. The provision of educational environments and options for gifted students and the ability to conduct and run programs for talent development in general education classroom environments require classroom teachers to be equipped with specific and field-specific competencies. Riley (2011) emphasized that gifted students need their talents to be recognized, acknowledged, validated and supported, and by providing inclusive classroom teachers with the support to meet their specificity, gifted students will also feel a sense of belonging to today's diverse learners communities. In order to support the gifted and overcome the phenomenon of waiting in the class (Peine & Coleman, 2010), classroom teachers need to gain unique competencies in addition to general ones.

Competencies researched and revealed in the current study are suggested to be used in both practical and research aspects. These unique and research based competencies can be considered as facilitators for developing and applying classroom teacher training programs and courses (undergraduate, graduate, in-service etc…) focusing on teaching the gifted in regular education environments . On the other hand, overall competencies can be used as an evaluation or assessment criteria for examining and reviewing regular classrooms including gifted students and to be included among general competencies as guiding principles for classroom teachers. Current competencies also have a potential to be used to conduct surveys focusing on determining the state and revealing needs of classroom teachers regarding their competence in supporting gifted students in the regular classrooms. Finally, the author of this current study strongly recommends conducting qualitative researches to reveal preschool and subject matter teachers' competencies to support gifted students in the regular classrooms.

LIMITATIONS

Due to the nature of qualitative researches, the findings of this research do not have any generalization concerns. It is possible to reveal different competencies with research to be carried out in different school and classroom settings. The findings of the current study are limited to the classes in which observations were made, and interviews conducted with the teachers of those classes, counselors, administrators, gifted students and their parents, classroom teachers who participated in the implementation process, gifted students and other students in inclusion classes. The data collected during the study process are also limited to the data collection, application and evaluation tools developed by the researcher. The results to be obtained from this research are also limited to the people and environments of those participated in the research.

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Statements of Publication Ethics

I hereby declare that this study has no unethical issues and that research and publication ethics have been observed carefully.

Ethics Committee Approval Information

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|Research Article / Araştırma Makalesi|

An Examination of University Students' Level of Assertiveness According to Self Construal and Five-Factor Personality Traits[1]

Üniversite Öğrencilerinin Güvengenlik Düzeylerinin Benlik Kurgusu ve Beş Faktör Kişilik Özelliklerine Göre İncelenmesi

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Keywords
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Abstract

This study aimed to examine undergraduate students' level of assertiveness with regard to gender, class level, self-construal, and five-factor personality traits. The participants consisted of 507 (194 male, 313 female) undergraduate students receiving education at a state university in Ankara. The study data were collected via Voltan-Acar Assertiveness Inventory, Adjective Based Personality Test, Relational-Individual-Collective Self Construal Scale, and Personal Information Form. The multiple regression analysis was used to identify the predictive power of five-factor personality traits and self-construals predictive power on the participants' level of assertiveness. Independent samples t-test was used to determine whether there was a statistically significant difference between university students' level of assertiveness according to gender. One-way ANOVA was used to compare university students' level of assertiveness in accordance with class level. SPSS 21.0 package was used for statistical analysis. The current findings showed that the personality traits of extraversion, neuroticism, agreeableness, and openness to experience, as well as individual and collective self-construals, predict undergraduate students' level of assertiveness at a statistically significant level. Also, undergraduate students' level of assertiveness did not differ at a statistically significant level according to their gender and class level. The findings were discussed in the light of the related literature, and some recommendations were made.

Öz

Bu araştırmanın amacı üniversite öğrencilerinin güvengenlik düzeylerini beş faktör kişilik özellikleri, benlik kurgusu, cinsiyet ve sınıf düzeyine göre incelemektir. Araştırmanın çalışma grubunu Ankara'da bir devlet üniversitesinde öğrenimlerine devam eden 507 (194 erkek, 313 kadın) lisans öğrencisi oluşturmaktadır. Araştırmada veri toplamak amacıyla Voltan Acar Kendini Belirleme (Güvengenlik) Envanteri, Sıfatlara Dayalı Kişilik Testi, Toplulukçu-İlişkisel-Bireyci Benlik Kurgusu Ölçeği ve Kişisel Bilgi Formu kullanılmıştır. Beş faktör kişilik özellikleri ile benlik kurgusu boyutlarının üniversite öğrencilerinin güvengenlik düzeylerini yordama gücünü belirlemede çoklu doğrusal regresyon analizinden yararlanılmıştır. Öğrencilerin güvengenlik düzeylerinin cinsiyete göre anlamlı farklılık gösterip göstermediğini belirlemek için bağımsız örneklemler t testi kullanılmıştır. Sınıf düzeyine göre lisans öğrencilerinin güvengenlik düzeylerini karşılaştırmada ise tek yönlü varyans analizinden yararlanılmıştır. Verilerin istatistiksel analizinde SPSS 21.00 paket programı kullanılmıştır. Araştırma bulgularına göre dışa dönüklük, nevrotizm / duygusal denge, yumuşak başlılık ve deneyime açıklık kişilik özellikleri ile bireyci ve toplulukçu benlik kurgusu özellikleri üniversite öğrencilerinin güvengenlik düzeylerini anlamlı bir şekilde yordamaktadır. Ayrıca lisans öğrencilerinin güvengenlik düzeylerinin cinsiyete ve sınıf düzeyine göre anlamlı bir farklılık göstermediği sonucuna ulaşılmıştır. İlgili bulgular alanyazın ışığında tartışılmış ve önerilerde bulunulmuştur.

[1] This article is produced from the master's thesis titled ''An Examination of University Students' Level of Assertiveness According to Self-Construal and Five Factor Personality Traits" supervised by Assoc. Prof. Meliha Tuzgöl Dost.

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INTRODUCTION

University years constitute a period when individuals start to step into young adulthood. Those who are in university years neither possess all the characteristics of the adolescence period nor have the actual features of young adulthood. This period, which is called emerging adulthood and includes individuals between the ages of 18 and 25, is a relatively more independent stage in terms of social roles and society's expectations (Arnett, 2000). This period has its own characteristics. It is a period when individuals go through identity seek; it comprises changefulness; it includes focusing on oneself; it represents a transition between adolescence and adulthood. The identity seek during adolescence gets more apparent as of this period (Atak & Çok, 2010).

During the years of university, when individuals move away from their parents and start to undertake more responsibilities on their own, it gets more important for them to express themselves (Güven, 2016). Throughout this period, teenagers need to acquire the skill of assertive behaviours more than ever. Individuals display three patterns of behaviours while expressing their feelings and thoughts. These three patterns are passiveness, which denotes shying away from conflict or expressing oneself by behaving acceptably; aggressiveness, in which one sees others as unworthy without giving them any choice; and assertiveness, which is a way of expressing oneself directly without hurting others while voicing one's demands (Alberti & Emmons, 1998; Uz-Baş, 2014; Voltan-Acar, 2013). Individuals' personal qualities affect the way of expressing themselves. Different theoreticians have tried to explain the nature of personality, defined by Cervone and Pervin (2016) as psychological qualities supporting one's continuous and distinctive emotions, thoughts, and behaviours. The distinctive features model is one of the theories that focus on concrete and conscious points rather than abstract concepts to explain personality. In this model, the concept of feature refers to emotions, thoughts, or behavioural patterns which are resistant to change in time and which people tend to display on different occasions and under different conditions (Cervone & Pervin, 2016). Studies carried out by theoreticians with a great number of individuals have revealed that personality traits can be divided into five factors: Openness to experiences, conscientiousness, extraversion, agreeableness, and neuroticism (Costa & McCrae, 1992).

The model of five-factor personality, which is addressed under the approach of distinctive features, was fundamentally developed as a hypothesis based upon linguistics (Bacanlı, İlhan & Aslan, 2009). Known as the big quintet, the personality traits of openness to experiences, conscientiousness, extraversion, agreeableness, and neuroticism can be described as follow: Neuroticism is associated with being anxious and pessimist as well as not trusting people around. Emotional stability and flexibility are not apparent in this dimension of personality (Holland & Roisman, 2008). Extraversion refers to being outgoing and active, thinking positively, treating others in a friendly way, and being sociable (Burger, 2006). Those who possess aesthetics sensitivity have a depth of emotions and need variety to represent the openness to experience (McCrae & Costa, 1989). The dimension of agreeableness refers to people who are well-mannered, forgiving, helpful, and trustful to others (Cervone & Pervin, 2016). Conscientiousness defines people who are responsible, decisive, organized, consistent, and temperate (Doğan, 2013). This dimension of personality refers to people who are goal-oriented and face up to work hard until they achieve success (Soto, 2018).

Individuals' personality traits, as well as their sense of self that represent their perceptions and evaluations about themselves, influence their behaviours. Although ideas regarding the self-first dimension developed around individual and collective self, a third dimension has recently been added as relational self (Ercan, 2011). While those who possess the traits of an individual self are expected to behave considering their own needs, those possessing the traits of a collective self are expected to behave considering the good of society rather than their own wishes and needs. However, the motive of behaviours might be different for those who have a relational self and, accordingly, exhibit traits of autonomic self while paying attention to relations with people around them at the same time. Whereas such people are likely to prioritize their own demands and interests, they also tend to give particular importance to the wishes and needs of those around them. Establishing harmony and cooperation rather than conflict in interpersonal relations is closely associated with building a relationship based on confidence. As the reservoir of assertive behaviours improves, individuals, know how to behave, and decide on their reactions accordingly (Alberti & Emmons, 2017).

Self, which is a concept referring to people's perceptions about themselves, cannot be addressed in itself independently from the current cultural context (Ercan, 2011). Individualism-collectivism, which tries to explain cultural differences at the cultural level, plays an important role as it attributes meaning to differences in the world (Kağıçıbaşı, 2010). The impact of different cultures on individuals naturally differs (Tutar, 2016). Individualism has always been associated with modern values such as gender equality in society, freedom, and human rights, which are all accepted to indicate modernity. On the other hand, collectivism has been associated with traditionalism (Kağıtçıbaşı, 2010). As self-construals that include individual self (autonomous) and collective self (dependent) were far from meeting the needs, a third self-construal was required. In this respect, relational self-construal refers that individuals prioritize others' goals and interests when they go into action, attach importance to both their own success and others' success, act in cooperation, and consider the wishes of people around them into consideration (Başay, 2015).

In the light of this, it seemed necessary to investigate which factors of personality traits and self-construals predict university students' level of assertiveness. Literature review on assertiveness shows that assertiveness does not exhibit a statistically significant difference according to age (Dinçyürek, Çağlar, & Birol, 2010; Şahin, 2007). There is no statistically significant difference between the scores of assertiveness according to gender (Çelik, 2016; Pourjali & Zarnaghash, 2010; Şenol, Akyol, & Can-Yaşar, 2018; Voltan-Acar, Arıcıoğlu, Gültekin, & Gençtanırım, 2008; Zengin, 2017). Self-respect is positively associated with assertiveness

at a statistically significant medium level (Dinçer, 2008). On the other hand, there are also studies in the literature that have revealed a statistically significant difference in the level of assertiveness according to gender (Arı, 1989; Güneş, 2018; Kimble, Marsh, & Kiska, 1984; Metin, 2014). Furthermore, some study findings indicated that a democratic parenting attitude creates a statistically significant difference in the level of assertiveness (Voltan-Acar et al., 2008). The level of assertiveness increases as class level increases (Deltsidou, 2009). There is a statistically significant positive relation between assertiveness and being sociable, whereas there is a statistically significant negative relation between neuroticism and assertiveness (Tripathi, Nongmaithem, Mitkovic, Ristic, & Zdravkovic, 2010).

Investigating university students' level of assertiveness according to self-construals and personality traits is thought to be important to understand the factors that affect behaving with assertiveness. Behaving with assertiveness turns out to be a necessary skill to be acquired for college students who move away from their parents and start to undertake individual responsibilities. Identifying the personality traits and self-construals that predict assertiveness will contribute to have a better understanding of the quality of these behaviours and skills. In this line, the two questions for which an answer is sought in the current study are "Do self-construal, and five-factor personality traits predict university students' level of assertiveness?" and "Do university students' level of assertiveness differ at a statistically significant level according to gender and level of class?"

METHOD

This study investigated the relationship between university students' level of assertiveness and some variables such as self-construal, five-factor personality traits, gender, and class level. A quantitative research design has been adopted in the study. The study is based on a correlational model, which is a research model in which the relation between at least two variables are investigated without any intervention by the researcher(s) (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2016).

Participants

The study group comprises undergraduate students attending a public university in Ankara in the spring term of the 2018-2019 academic year. The analysis was conducted with data gathered from 507 students. 38.3% of the participants were male (n=194), while 61.7% of them were female (n=313). The participants' ages varied between 18 and 32, where most of them were between the ages of 20 and 21. 45.65% of the participants were in that age group. 168 of the participants (33.1%) were attending either school of foreign languages or in their first year at the department, 108 of them (21.3%) were second-year students; 120 of them (23.7%) were third-year students, and 111 of them (21.9%) were in their fourth year. As the number of students attending the school of foreign languages was only 25, the data gathered from them were presented combined with the first-year students.

Data Collection Tools

Voltan-Acar Assertiveness Scale

The scale was developed by Voltan Acar & Öğretmen (2007) to identify individuals' levels of assertiveness. The scale is composed of twenty-eight items and two sub-factors. The sub-factors of the scale are passiveness and assertiveness. It is a 6-point Likert-type scale, and the responses to the scale items can vary between 'not at all descriptive of me'' (1) and 'very descriptive of me'' (6). The lowest score to be obtained in the scale is 28, whereas the highest score can be 168 (Voltan-Acar & Öğretmen, 2007). Construct validity of the scale was tested through confirmatory factor analysis (CFA). According to the results of fit indices regarding the confirmatory factor analysis, the ratio of x^2/sd was 1.55, GFI=0.95, AGFI=0.94, RMSEA value was 0.05. These values approve the two sub-factors of the scale and prove that Assertiveness Inventory has a valid structure. The internal consistency reliability coefficient as to the sub-factor of passiveness was 0.83 (17 items), while the internal consistency reliability coefficient as to the sub-factor of assertiveness was 0.78 (11 items). On the other hand, the reliability coefficient as to all 28 items was 0.87. Factor loads of items as to the sub-factor of passiveness (17 items) varied between 0.32 and 0.65, whereas factor loads of items as to the sub-factor of assertiveness (11 items) varied between 0.36 and 0.74 (Voltan-Acar & Öğretmen, 2007). On the other hand, the internal consistency reliability coefficient of the scale was found to be .88 in the current study.

Adjective-Based Personality Test (ABPT)

The scale was developed by Bacanlı, İlhan, & Aslan (2009) to identify five-factor personality traits. ABPT, which is composed of forty pairs of adjectives, is a 7-point Likert-type scale. Five factors of the scale are as below: Emotional stability/neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Construct validity of the scale was tested via principal components factor analysis. At the end of the analysis, five factors accounted for 52.63% of the variance as to ABPT. The sub-factors of extraversion and agreeableness each had nine items, while the sub-factors of conscientiousness and neuroticism each had seven items. There are eight items that measure the sub-factor of openness to experience. According to the test conducted to reveal the reliability of adjective-based personality test, the internal consistency coefficient of ABPT varied between 0.73 and 0.89, the highest value of internal consistency was found to belong to extraversion (0.89). On the other hand, the lowest internal consistency coefficient belongs to the sub-factor of emotional stability/neuroticism (0.73) (Bacanlı, İlhan, & Aslan, 2009). Reliability coefficients of the sub-factors of ABPT vary between .69 and .88 in the current study. The highest coefficient of internal

consistency belongs to extraversion (.88), whereas the lowest coefficient of internal consistency belongs to the sub-factor of neuroticism (.69).

Relational-Collective-Individual Self Aspects Scale

This scale was developed by Kashima & Hardie (2000), and it was adapted into Turkish culture by Ercan (2011). The scale is composed of twenty-seven items and three sub-dimensions. It is a 7-point Likert-type scale, which is scored between ‘‘not at all descriptive of me’’ 1 and ‘‘very descriptive of me’’ 7. Cronbach's alpha reliability coefficient was found to be .73 for the subscale of the individual self, .68 for the subscale of the relational self, .77 for collective self, and .86 for the whole scale. Construct validity of the scale was tested through confirmatory factor analysis.

Fit indices values of the scale were calculated to be 2.66 for x^2/sd ratio, GFI = .85, AGFI= .82, RMSEA= 0.07 (Ercan, 2011). The reliability coefficient of the scale was found to be .85 in the current study. The scale proved to be reliable with this value (.60 ≤ α < .90) (Yıldız & Uzunsakal, 2018). Cronbach's alpha reliability coefficient was found to be .75 for the individual self, .71 for relational self, and .74 for the collective self in the current study.

Personal Information Form

A personal information form was developed by the researchers to get demographic information from the participants. The personal information form consisted of questions about the participants’ gender, age, and class level.

Data Collection Process

The necessary permissions were received via e-mail from the researchers who developed and/or adapted Voltan Acar Assertiveness Scale, Relational-Collective-Individual Self-Construal Scale, and Adjective-Based Personality Test. Then an application was submitted to Hacettepe University Ethical Commission. After receiving legal permission from the ethical commission (decree dated 20.05.2019 and numbered 35853172-300), the data collection process was started. Instructors lecturing at different departments were asked for permission to come into their class, and the students were asked to fill in the scales. The participants, first of all, read the voluntary participation form and gave their consent. Then they filled in personal information form, adjective-based personality test, Voltan Acar assertiveness scale, and relational-collective-individual self-construal scale, respectively. It took about 15 minutes for the participants to give a response to the items in the scales.

Data Analysis

The normality distribution of the data set was examined to carry out statistical analyses regarding the sub-problems of the study. In this direction, normality distribution of the variables, which are assertiveness, five-factor personality traits, self-construal, were tested via histogram graph as well as calculating values of skewness and kurtosis. Then it was identified whether the distribution was normal or not. The statistical analyses revealed that histogram graphs had a normal distribution, whereas mean, median, and peak values were close to each other. Moreover, values of kurtosis and skewness related to the variables varied between -1.96 and + 1.96. When the confidence level is set according to 0.05 in SPSS, the interval between -1.96 and +1.96 was found to be normal (Field, 2009). According to the test results regarding the homogeneity of variances, the p confidence level between dependent and independent variables was calculated to be higher than 0.05. The condition of equality of variance was met as the assumption that there is no statistically significant difference in terms of the homogeneity of variances accepted in the current study (Taşpınar, 2017).

Considering the results mentioned above, it was concluded that the variances had a normal distribution, and it was suitable to carry out statistical analysis with parametric tests. Cohen’s *d* effect size was examined to see the impact of independent variables on the dependent variable. According to the results, independent variables have a low and medium level effect on assertiveness, which is the dependent variable of the current study. The first sub-problem of the current study was examined via multiple regression analysis, a method of analysis in which the dependent variable is predicted based on at least two predictors (independent) variables. Multiple connectedness is one of the problems faced in multiple regression analysis (Büyüköztürk, 2019).

Multiple connectedness refers to a high level of relationship between independent variables. Bilateral correlations between independent variables can be examined to discover the problem of multiple connectedness in the data set. A relation higher than .80 means that the problem of multiple connectedness might be present in the data set (Field, 2009). It is possible to mention about the presence of multiple connectedness when the analyses result in a tolerance value, which is the ratio of the variance of an independent variable that cannot be explained by other independent variables, lower than ($1-R^2$) .20, and variance inflation factor of VIF = $1/(1-R^2)$ higher than 10 (Gürbüz & Şahin, 2017). The tolerance value and variance inflation factor (VIF) of the current data set were examined, and it was found out that there was not a problem of multiple connectedness. Before carrying out multiple regression analysis, a correlation analysis was conducted between dependent and independent variables to see whether there is a problem of multiple connectedness in the data set. The results of the analysis are given in Table 4.

RESULTS

The first sub-problem of the current study seeks to determine whether five-factor personality traits and self-construal qualities predict university students' level of assertiveness at a statistically significant level. The results of the multiple regression analysis as to the first sub-problem of the study are given in Table 1.

Table 1. Results of multiple linear regression analysis regarding the predictors of the level of assertiveness

Variables	B	Standard Error	β	*t*	*p*	Paired r	Partial r
(Constant)	62.731	6.829		9.186	0.00**		
Neuroticism	-4.266	0.640	-0.224	-6.667	0.00**	-0.23	-0.29
Extraversion	9.356	0.707	0.540	13.240	0.00**	0.62	0.42
Openness to experience	1.868	0.941	0.085	1.985	0.05*	0.45	0.09
Agreeableness	-1.669	0.820	-0.079	-2.035	0.04*	0.19	-0.09
Conscientiousness	1.286	0.671	0.070	1.917	0.06	0.30	0.09
Individualism	5.410	0.952	0.221	5.681	0.00**	0.34	0.25
Relationalism	-1.261	1.105	-0.051	-1.141	0.25	0.19	-0.05
Collectivism	-2.228	0.877	-0.106	-2.540	0.01*	0.08	-0.11
R = 0.70	R^2=0.49	Adjusted	R^2=0.48				

$F_{(8.498)}$= 60.313, *p<0,05, **p≤0.001

As is clear in the results of multiple linear regression analysis given in Table 1, all the independent variables were included in the analysis to identify their predictive power. The variance analysis indicated that the regression equation obtained at the end of the analysis was statistically significant (F(8. 498) = 60.313; p≤0.001). In line with this, it is possible to state that at least one of the regression coefficients belonging to the variables included in the multiple linear regression analysis was statistically significant. The multiple regression analysis showed that neuroticism, agreeableness, openness to experience, extraversion, and conscientiousness, as well as individual, relational and collective self-construal, accounted for almost 49% of the variance in participants' scores of assertiveness. Standardized regression coefficients (β) and values of significance (p) were examined.

The study results indicated that the dimensions of neuroticism (β= -0.224, p<0.05), agreeableness (β= -0.079, p<0.05) and collectivism (β= -0.106, p<0.05) predicted university students' level of assertiveness at a statistically significant level in the negative direction; whereas the dimensions of extraversion (β= 0.540, p<0.05), openness to experience (β= 0.085, p<0.05) and individualism (β= 0.221, p<0.05) positively predicted university students' level of assertiveness at a statistically significant level. It was also clear at the end of the analysis that conscientiousness, a sub-factor of five-factor personality traits (β= 0.070, p>0.05) as well as relationalism, a sub-factor of self-construal (β= -0.051, p>0.05) did not predict university students' level of assertiveness at a statistically significant level. The study also included analyzing the predictor variables' order of significance in terms of the level of assertiveness in the light of regression coefficients and partial correlation coefficients (partial r) of independent variables. According to this, the order of significance was extraversion (β= 0.540, partial r=0.42), neuroticism (β= -0.224, partial r= -0.29), individualism (β= 0,221, partial r= 0,25), collectivism (β= -0,106, partial r= -0,11), agreeableness (β= -0,079, partial r= -0,09) and openness to experience (β= 0.085, partial r= 0.09). The second sub-problem of the study, 'Do university students' scores of assertiveness differ according to gender at a statistically significant level?' was tested via an independent samples t-test. The results are given in Table 2.

Table 2. T-test results regarding university students' scores of assertiveness according to the variable of gender

Gender	*n*	$\bar{x}$	*SS*	*df*	*t*	η^2	*p*
Male	194	115.38	17.42	505	1.27	0.01	0.20
Female	313	113.21	19.36				

As shown in Table 2, there was no statistically significant difference between male and female participants' mean scores received on the assertiveness scale (p>0.05). Male participants' mean score was 115.38, and the standard deviation was 17.42, whereas female participants' mean score was 113.21 and the standard deviation was 19.36. Furthermore, the eta square value (η^2) was calculated to see how influential the independent variable was on the dependent variable. According to this result, the independent variable had a low level of effect size on the dependent variable (η^2=0.01). Although the current result showed that male participants' mean score as to assertiveness was 2.17 more than female participants' mean score, this difference was not

statistically significant. Therefore, it is possible to state that participants' level of assertiveness did not differ at a statistically significant level according to the variable of gender (t=1.272, p>0.05).

The third sub-problem of the current study, 'Do university students' scores of assertiveness differ according to class level at a statistically significant level?' was tested via a one-way analysis of variance. Moreover, a homogeneity test of variances, one of the criteria to carry out a one-way analysis of variance, was conducted. According to the results of the Levene test, the hypothesis saying "there is not a statistically significant difference between variances" was approved (p>0.05). This result showed that a one-way analysis of variance could be conducted. Before presenting the results of one-way analysis of variance, the results of the descriptive analysis regarding undergraduate students' scores of assertiveness according to a class level were given. The results of the descriptive analysis are presented in Table 3.

Table 3. The results of the descriptive analysis regarding university students' scores of assertiveness according to their class level

Dependent Variable	Class Level	*n*	$\overline{X}$	*SS*
Assertiveness	Prep-class and 1st Grade	168	114.26	18.81
	2nd Grade	108	115.05	17.65
	3rd Grade	120	113.58	18.09
	4th Grade	111	113.23	20.13

As presented in Table 3, university students' scores of assertiveness according to their class level were close to each other. The mean score of prep class and first-grade students was 114.26 (SS=18.81), the mean score of second-grade students was 115.05 (SS=17.65); the mean score of third-grade students was 113.58 (SS=18.09), and the mean score of fourth-grade students was 113.23, (SS=20.13). One-way analysis of variance was conducted to see whether university students' level of assertiveness differed according to their class level at a statistically significant level. The results of the analysis are given in Table 4.

Table 4. The results of one-way analysis of variance regarding university students' scores of assertiveness according to the variable of class level

Source of variance	Sum of squares	sd	Mean Square	*F*	η^2	*p*
Inter-groups	214.724	3	71.575	0.205	0.01	0.89
Intra-groups	175952.321	503	349.806			
Total	176167.045	506				

It is clear in Table 4 that there was no statistically significant difference between university students' scores of assertiveness according to their class level (F=0.205, p>0.05). Moreover, the value of effect size was calculated to identify the effect of an independent variable on the dependent variable. The analysis showed that the effect size value was at a low level (η^2=0.01).

DISCUSSION

The study results indicated that extraversion and openness to experience predict university students' level of assertiveness in the positive direction at a statistically significant level. On the other hand, personality traits of neuroticism and agreeableness predicted university students' level of assertiveness in the negative direction at a statistically significant level. The variable that had the highest level of predictive power regarding assertiveness was extraversion. Extraversion was followed by neuroticism, agreeableness, and openness to experience in line with their predictive power, respectively. Sims (2017) carried out a study in which the effect of five-factor personality traits on assertive communication was examined and concluded that five-factor personality traits had a predictive power on skills of assertive communication. Supporting the finding of the current study, Sims found out that being extravert was a personality trait that had the most effect on assertiveness. The results of the two studies are similar in this respect. Furthermore, the findings of the current study were supported by other findings , which addressed the relation between assertiveness and personality in the context of comparative cultural differences. The related study also concluded that the most closely associated personality trait associated with assertiveness was extraversion (Tripathi et al., 2010). Costa & McCrae (1992) also carried out a study in which they focused on the four components of five-factor personality traits, and they addressed assertiveness as an aspect of extraversion in the revised inventory of five-factor personality traits. Considering this, it seems an expected result that the personality which predicts assertiveness at the highest level is extraversion. According to another study's findings, the variable that came second to predict assertiveness at a high level was neuroticism, which is a trait that is characterized by people who are anxious, do not trust people around them, angry and vulnerable (Doğan, 2013). A study

aimed at investigating the relationship between five-factor personality traits and communication skills revealed was a statistically significant relationship between communication skills and neuroticism in the negative direction. In other words, the higher people's level of neuroticism is, the less they can use communication skills effectively (Yiğit & Deniz, 2012). In this light, the literature supports the current study finding that neuroticism predicts assertiveness significantly at a statistically significant level. On the other hand, the personality trait of agreeableness refers to being friendly, harmonious, charming, and considerate (Chamorro-Premuzic, 2011). Agreeableness, which is also associated with altruist behaviour (McCrae & Costa Jr., 1989), differs from assertiveness, associated with expressing one's own needs, wishes, and demands (Potter, 2007). Individuals who possess the personality trait of agreeableness, considering others before themselves, are expected to have difficulty in expressing their discomforts or wishes easily or express themselves easily. Multiple regression analysis showed that another variable that had predictive power on assertive behaviour was the personality trait of openness to experience. Openness to experience, which predicts assertive behaviour at a statistically significant level positively, is closely associated with behavioral flexibility, untraditional attitude, and innovation (Chamorro-Premuzic, 2011). Likewise, assertiveness includes a behavioral pattern specific to a person and condition (Alberti & Emmons, 1998). In other words, it should be noted that assertiveness may not be perceived in the same way in all cultures and may appear differently in different cultures. In this light, an assertive person can be expected to have behavioral flexibility and adopt an innovative attitude. In this respect, it is possible to indicate that the personality trait of openness to experience has a tendency to assertive behaviours. Lastly, the current study indicated that the personality trait of conscientiousness did not predict assertiveness at a statistically significant level. Sims (2017) defined conscientious individuals as success-oriented and underlined that they could reach their goals via adopting an assertive communication style. Whereas a similar result was expected in this study, the current findings showed no statistically significant relationship between the two.

At the end of the analysis, which was conducted in the current study to see whether the sub-factors of self-construal predict university students' level of assertiveness, it came out that individual self-construal predicted university students' level of assertiveness at a statistically significant level in the positive direction. Those who have an individualistic self-construal were stated to be self-sufficient, autonomous, and self-centered (Markus & Kitayama, 1991). On the other hand, collective self-construal was associated with traditionalism (Kağıtçıbaşı, 2010), and people who had this type of self-construal thought that they would not be welcomed if they assertively expressed their ideas(Markus & Kitayama, 1991). From this point of view, it seems possible to indicate that people who have collective self-construal cannot express themselves easily. On the other hand, the current study has concluded that relational self-construal did not predict assertiveness at a statistically significant level. Relational self-construal included the need to being independent and being attached to somebody at the same time (Kağıtçıbaşı, 1996) and meant that people attach importance to both their own success and others' success around them (Başay, 2015). In this context, relational self-construal was expected to predict assertive behaviour because relational self-construal designates that people not only take their own needs and wishes into consideration but also try to preserve their social relations. However, the findings of the current study do not refer to such a relation. It would be better to address this study problem in further studies.

The current study revealed that university students' level of assertiveness did not differ according to gender at a statistically significant level. This finding supports previous research results (Çelik, 2016; Pourjali & Zarnaghash, 2010; Şenol, Akyol, & Can-Yaşar, 2018; Voltan-Acar et al., 2008; Zengin, 2017). However, there are also studies in the literature whose findings do not comply with the current study results and accordingly showed that gender created a statistically significant difference (Arı, 1989; Güneş, 2018; Kimble, Marsh & Kiska, 1984; Metin, 2014). This brings to mind that there might be some other mediating factors in the relationship between gender and assertive behaviour. These factors can include the social environment or maybe the society. In today's world, societies are changing very quickly, and this brings along the development. The change in society can also change individuals' expectations about themselves and society. Keeping up with these changes may require people to separate from their parents and make their own case as a separate person from their parents (Aslan & Güven, 2015). Education can contribute to people's development in this respect and help women acquire modern roles rather than traditional ones (Attanapola, 2004). A study carried out by Esen, Siyez, Soylu, and Demirgürz (2017) revealed that women's roles in daily life based on gender have started to change, masculine roles were also preferred by women now, and this was realized with an equalistic approach. Furthermore, old generations are replaced by the new ones, leading to changes in people's attitudes, behaviors, lifestyles, and life views (Adıgüzel, Batur, & Ekşili, 2014). From this point of view, female participants might have obtained assertiveness scores close to male participants as women are leaving gender stereotypes behind and starting to take masculine roles that are mostly associated with self-confidence, expressing oneself, and being assertive. Besides this, the way how a social environment perceives assertive behaviour, the conditions in which one has grown up, whether one is aware of his/her own weaknesses and strengths are also influential. Consequently, assertive behaviour is not specific to gender; individual differences and improving oneself can be more effective on assertive behaviour.

University students' level of assertiveness did not differ according to their class level at a statistically significant level. Literature review showed more studies focusing on the relation between age and level of assertiveness than the ones addressing the relation between class level and assertiveness. Within this framework, the literature review showed that there are studies having similar findings. In a study which aimed at investigating whether university students' level of assertiveness and adaptation were affected by their dominant self and some other variables, it was found out that there was no statistically significant difference between the levels of assertiveness of 4th and 1st -grade students (Arı, 1989). In another study, the scores of assertiveness of university students of nursing did not differ from each other at a statistically significant level (Metin, 2014). Furthermore, in a study that

addressed assertiveness and gender role attitudes, there was no statistically significant difference between university students according to age (Yaycı & Düşmez, 2016). On the other hand, a study that examined university students' gender, age, and cultural differences in terms of self-reported assertiveness scores expected an increase in people's level of assertiveness as their age increased (Kimble et al., 1984). As people get older, they are expected to have a higher level of assertiveness in line with the increase in their knowledge and experience (Şenol et al., 2018). The reason why the current study finding indicated no statistically significant difference according to age might be about the fact that the participants of the current study were around the same age. On the other hand, individuals' parents' attitudes and personality traits could be more effective on their level of assertiveness when compared to short-term effects of age.

CONCLUSIONS AND SUGGESTIONS

The current study has revealed that university students' level of assertiveness is closely associated with their personality traits and self-construal. Based on the findings of this study, it seems possible to state that people who have the personality traits of neuroticism and agreeableness, as well as those who possess a collective self-construal, need to improve their assertiveness more than others. Psychological counselors can refer to the results of the current study to establish psycho-education groups for individuals who have neurotic and agreeable personality traits but a low level of assertiveness as well as those having collective self-construal. Experts working at psychological counseling centers of universities can prepare leaflets or other kinds of materials that focus on the importance of the skill of assertiveness. Thus, they can help to raise awareness about the skill of assertiveness.

When it comes to preventive programs, the findings of the current study point out the need for families to have a more extravert but less repressive and autocratic attitude while bringing up their children. Experts can warn families in this direction during parenting education. Parents' attitudes can be affected by the cultural structure of individualism-collectivism, and these cultural attitudes are transferred from one generation to the next. Individualism and collectivism can have different advantages and disadvantages. However, it is of vital importance for individuals to be able to express themselves in interpersonal relations, to express their needs, feelings, and wishes; it is crucial for people to defend themselves. These are very closely associated with assertiveness. Therefore, psychological counselors and experts can focus on the relationship between being an assertive person and mental health and emphasize that adopting mostly a collectivist attitude can affect people's assertiveness negatively.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Author contributions

First author conceived of the presented idea and collect the data. Second author verified the analytical methods. All authors discussed the results and contributed to the final manuscript.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

Ethics committee approval was received for this study from the Ethics Committee of Hacettepe University (Date: May 20, 2019; Approval Number: 35853172-300).

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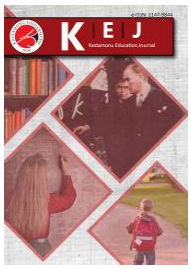

| Research Article / Araştırma Makalesi |

Evaluation of Listening Texts of Gazi University Level B2 Textbooks

Gazi Üniversitesi B2 Düzeyi Ders Kitabı Dinleme Metinlerinin İçerik Olarak Değerlendirilmesi

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Keywords
Turkish as a foreign language
texts of listenings
listening skills
textbook
evaluation

Anahtar Kelimeler
yabancı dil olarak Türkçe
dinleme metinleri
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Abstract

Language skills are grouped into two main categories namely comprehension (reading-listening) and speaking (writing-speaking) skills. The listening skill is one of the basic skills within the comprehension skill subcategory. Listening is a skill. Listening is a skill is more difficult skill than other the language skills to acquire during foreign language studies. For this reason, more activities should be carried out to improve listening skills. This study aims to examine the listening activities of the B2 level Teaching Turkish to Foreigners textbook authored by Gazi University, in terms of contents employed in teaching Turkish as a foreign language. Fort his purpoese a total of 20 texts were examined from the B2 level textbook of Gazi University. The following were examined according to the criteria of European Language Portfolio: the number of listening texts; the topics of the texts; the types of questions in each activity; their suitability to the level of grammar; the compatibility of the vocabulary with the level; the speed and comprehensibility of the texts; the use of visuals; the compatibility of visuals with the level and their subjects if visuals were used; and the suitability of the pronunciation and texts in the audio file. In this study, the listening texts in the B2 level textbook prepared by Gazi University Turkish for foreigners were examined using the document analysis method from the qualitative research methodology. According to the results of the research, it has been observed that cultural topics are not included in the listening sections. This study recommends that that cultural topics should be included because cultural topics will support the transfer of culture. Additionally, no visuals were provided for some of the listening texts while other visuals were incompatible with the listening text. This study suggests that the inclusion of visualizations and their compatibility with listening texts will increase the comprehensibility of the text. Therefore, this study concludes that the visuals, which include the listening texts without visuals, are also incomplete.

Öz

Dil becerileri anlama (okuma-dinleme) anlatma (yazma-konuşma) becerileri olarak ikiye ayrılmıştır. Bu temel becerilerden biri olan dinleme becerisi anlama becerileri içinde yer almaktadır. Dinleme yabancı dil öğreniminde diğer becerilere göre daha zor edinilen bir beceridir. Bu sebeple dinleme becerisini geliştirmeye yönelik etkinliklerin daha fazla kullanılması gerekmektedir. Bu çalışmanın amacı Türkçenin yabancı dil olarak öğretiminde Gazi Üniversitesi Yabancılara Türkçe Öğretimi Ders Kitabı B2 düzeyi dinleme etkinliklerinin içerik olarak incelenmesidir. Bu amaçla Gazi Üniversitesi B2 seviyesindeki toplam 20 metin incelenmiştir. Araştırmada dinleme metinlerinin sayısı, metinlerin konuları, etkinlik soru tipleri, dil bilgisel olarak düzeye uygunluğu, kullanılan kelimelerin seviyeye uygunluğu, metinlerin hız ve anlaşılırlığı, görsel kullanımı, görsel kullanılmış ise seviye ve konuya uyumu, ses dosyasındaki telaffuz ve metinlerin kültür aktarımı açısından uygunluğu Avrupa Dil Portfolyosu kriterlerine göre incelenmiştir. Çalışmada Gazi Üniversitesi Yabancılar İçin Türkçe B2 seviyesi ders kitabı dinleme metinleri nitel araştırma yönteminden doküman incelemesi yöntemi kullanılarak incelenmiştir. Araştırma sonucunda dinleme bölümlerinde kültürel öğelere fazla yer verilmediği görülmüş olup kültürel öğelere daha fazla yer verilmesinin kültür aktarımını destekleyeceği düşünüldüğü için kültürel öğelere daha fazla yer verilmesi önerilmektedir. Ayrıca dinlemelerin bazılarında görsele hiç yer verilmezken bazılarında ise dinleme metni ile uyumlu olmayan görsele yer verildiği görülmüştür. Dinleme metinlerinde görsellere yer verilmesi ve metinlerin görsellerle uyumlu olmasının metnin anlaşılırlığını artıracağı düşünülmektedir bu sebeple görsele yer verilmeyen dinleme metinlerinde görsele yer verilmesi yer verilen görsellerin de metinle uyumu konusunda eksik kalındığı sonuçlarına ulaşılmıştır.

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INTRODUCTİON

The history of teaching foreign languages is rooted in ancient times. Looking at the history of teaching the Turkish language, it is clear that it dated back many years ago. Teaching Turkish as a foreign language has gained importance in recent years. Both the developing trade network of our country and the studies conducted by various institutions and organizations have significantly increased the number of people who want to learn Turkish.Both foreigners who came to our country for various reasons and those who want to cooperate with Turkey on the territory of their country began to learn Turkish.

There are four basic language skills in foreign language teaching. As in all languages, Turkish is taught as a foreign language through four basic language skills. Each of these language skills has particular importance. All these skills must be developed from a basic level. As with all language skills, listening skilled is a skill field that needs to be developed from the primary level. Therefore, it is believed that teaching a foreign language should be more activities to improve listening skills.

Although the listening skill in learning a foreign language is usually perceived as a passive skill, listening is an active skill field that starts with hearing and ends with meaning. Listening is not only about hearing voices; it is not just a hearing activity. It is also necessary to make sense of what he hears. Listening is accepted as a more difficult skill to acquire in foreign language learning than other skills. For this reason, more activities should be used to improve listening skills.

Purpose of the Study

This study examines the listening activities and B2 level as content in Turkish as a foreign language. A total of 20 texts were examined in Gazi University B2 level Student's book. In the research, the number of listening texts, the topics of the texts, types of activity questions, their suitability to the level of grammar, the compatibility of the used words with the level, the speed and comprehensibility of the texts, the visual use, the compatibility of the level and the subject if the visual was used, the suitability of the pronunciation and texts in the audio file has been examined according to the criteria of the European Language Portfolio.

METHOD

In this study, Gazi University Turkish B2 level Student's book listening texts for foreigners were examined using the document analysis method, one of the qualitative research patterns.

Conclusıon, Dıscussıon and Suggestıons

The research has reached the following conclusions: In language teaching, all language skills are complementary skills. One skill area is not independent of the other, but in language teaching, it is known that more importance is given to reading and writing skills in teaching Turkish as a foreign language. In this context, it was observed that writing and reading skills were included more in Turkish teaching Students' books for foreigners, and fewer listening skills and activities were included.

Despite listening to voice recordings, it was determined that the title is not included in the listening sections in the book. It is thought that having a title in listening will prepare the student mentally.

Listening activities can be selected by selecting authentic texts for B2 level Turkish language learners. The use of authentic materials gained importance with the Communicative Language Teaching Approach that emerged in the 1970s. It is observed that authentic texts are not included in the Students' book of Gazi University. It is thought that giving more place to authentic texts in B2 and C1 levels will be more appropriate as it will make the student more familiar with the sounds they will hear in daily life.

It has been determined that some of the topics selected in the B2 level listening texts reflect Turkish culture, while others do not reflect Turkish culture sufficiently. Considering that the language cannot be learned independently from culture, it can be said that this is not positive. Because learning a second language is the easiest and perfect way to learn another culture and perceive it completely.

While teaching language, culture is also taught and learned. The inclusion of the values of this culture in books of foreign languages promotes cultural transmission. In this context, giving more and qualified cultural elements in Turkish books as a foreign language can provide a more successful cultural transfer.

According to the results of the research, the question types included in the activities differ. With this aspect, question types can be accepted, but the questions are not given in the order of voice recording. Failure to ask questions in order leads to students not finding places for questions during listening. Because they cannot find a place for questions immediately, they are

stressed and may not correctly answer questions from the listening. For this reason, it is thought that giving the questions in order will be appropriate in terms of listening quality. In addition, listening question types generally aim to teach students to write what they understand while listening. In addition, it was determined that the question type as re-reading or voicing in the listening activities was not included.

According to the European Language Portfolio, the words used in the listening activities were generally appropriate for the level. However, some listening texts were found to contain unknown words. It can be said that the explanation of these words by the teacher before starting listening by giving them a table at the beginning of the listening text will increase the comprehensibility of the text.

The visuals were primarily used in the listening texts in the book with were studied. Some listening texts do not include visuals. Some texts and images are not compatible with each other. Therefore, it can be stated that increasing the text visual harmony in the studied book will increase the comprehensibility of the listening texts.

Result and Discussion

The research reached the following conclusions: In a language teaching process, all language skills are complementary skills. A skill is not independent of the other, but in language teaching, it is known that more importance is given to both reading and writing skills during the teaching of Turkish as a foreign language. In this context, it has been observed that writing and reading skills are given more place in Turkish textbooks for foreigners . In contrast, listening skills and activities are given less priority.

Although there is a title/label for the listening sound record, this study identified that this title is not included in the listening sections of the book. This study suggests that having a title for the listening session will prepare the student mentally.

The listening session can be done by selecting authentic texts in listening activities of B2 learners. The use of authentic materials gained importance with the Communicative Language Teaching Approach that emerged in the 1970s. It is observed that authentic texts are not included in the textbooks of Gazi University. It is thought that giving more place to the authentic texts in B2 and C1 levels will be more appropriate as they will make the student more familiar with the sounds, they will hear in their routine daily life activities.

The teaching and learning of culture are also important during the teaching of a foreign language.

The inclusion of cultural values in language studies books also supports the cultural transfer. In this context, the insertion of more and eligible cultural elements in Turkish books for language studies can provide a more successful cultural transfer.

According to research results, there is a difference in the question types of the activities in the textbook. Different question types are acceptable with this aspect, but the questions are not given in the order presented in the voice recording. The failure to present the questions in an orderly manner causes students not to find the locations of the questions while listening. Because they cannot find the questions immediately, , and because they cannot find the locations of the questions immediately, they get stressed and fail to answer the listening questions correctly. For this reason, this study suggests that giving the questions in order will improve the listening quality. The listening question types generally aim to teach students to write what they understand while listening. This study identified that the question types for re-reading or voicing were absent.

The use of grammar in the listening activities of the textbook is generally appropriate to the level by the European Language Portfolio. With an increase in the language level, it is acceptable for high-level grammar rules to be included in the texts as they will understand the subject from the context.

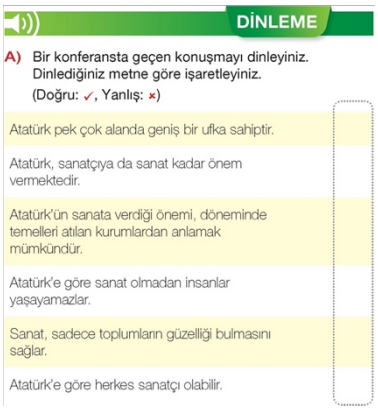
According to the European Language Portfolio, the words used in the listening activities were generally appropriate for the level. However, some listening texts were found to contain unknown words. A tabular presentation of these words before the listening text will allow the teacher to explain these words before the students commence the listening recordings.

An increase in the vocalization speed of the listening text increased with an increase in the language study level. Listening appears as more demanding learning skill in all languages. Even in moderate vocalization, it is known that students get stressed, and this situation decreases concentration and slows down the understanding. This study suggests that the vocalization of the listening texts should be carried out at a slower pace to increase the intelligibility of listening.

Visuals were mainly incorporated in the listening texts of the books selected in this study.

Some listening texts did not include visuals, whereas some texts and images were not compatible. Therefore, this study recommends an increase in the harmony between the listening text and the visuals in the selected books, which will increase the comprehensibility of the listening texts.

RESULTS

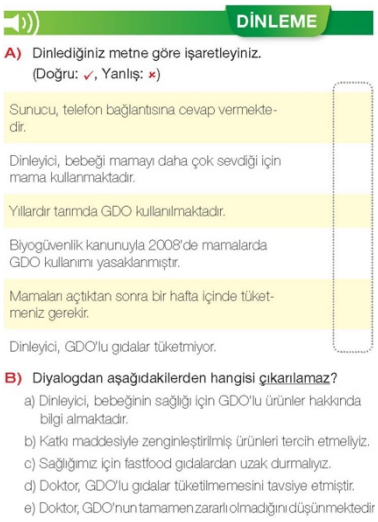

DİNLEME

A) Bir konferansta geçen konuşmayı dinleyiniz. Dinlediğiniz metne göre işaretleyiniz.
(Doğru: ✓, Yanlış: ×)

Atatürk pek çok alanda geniş bir ufka sahiptir.	
Atatürk, sanatçıya da sanat kadar önem vermektedir.	
Atatürk'ün sanata verdiği önemi, döneminde temelleri atılan kurumlardan anlamak mümkündür.	
Atatürk'e göre sanat olmadan insanlar yaşayamazlar.	
Sanat, sadece toplumların güzelliği bulmasını sağlar.	
Atatürk'e göre herkes sanatçı olabilir.	

Figure 1. Listening 1: Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 1 Listening Text 1: "ATATÜRK'S LOVE OF ART"

The listening activity included a dialogue that took place in a conference. At the conference, the value that Atatürk gave to art and artist was covered. In the activity, 6 true-false questions were asked. The grammar structures used in the text are appropriate for the level. The words and phrases used in the text are at a level that students can understand. In terms of the comprehensibility of the text, the speaker's voice is unmistakable. However, the speech resembles the speech of a radio announcer rather than a conference, and it is thought that the real wanted emotion cannot be given due to the inability of the speaker to express feelings. No visuals were used in the text. First of all, it is thought that it would be more appropriate to include a picture of Atatürk to understand the text better and include a few of our traditional art and artists in terms of cultural transfer. It was observed that the title was included in the audio recording of the listening text, while the title was not included in the book.


DİNLEME

A) Dinlediğiniz metne göre işaretleyiniz.
(Doğru: ✓, Yanlış: ×)

Sunucu, telefon bağlantısına cevap vermektedir.	
Dinleyici, bebeği mamayı daha çok sevdiği için mama kullanmaktadır.	
Yıllardır tarımda GDO kullanılmaktadır.	
Biyogüvenlik kanunuyla 2008'de mamalarda GDO kullanımı yasaklanmıştır.	
Mamaları açtıktan sonra bir hafta içinde tüketmeniz gerekir.	
Dinleyici, GDO'lu gıdalar tüketmiyor.	

B) Diyalogdan aşağıdakilerden hangisi çıkarılamaz?
a) Dinleyici, bebeğinin sağlığı için GDO'lu ürünler hakkında bilgi almaktadır.
b) Katkı maddesiyle zenginleştirilmiş ürünleri tercih etmeliyiz.
c) Sağlığımız için fastfood gıdalardan uzak durmalıyız.
d) Doktor, GDO'lu gıdalar tüketilmemesini tavsiye etmiştir.
e) Doktor, GDO'nun tamamen zararlı olmadığını düşünmektedir

Figure 2. Listening 2: Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 1 Listening Text 2: "GMO, GENETICALLY MODIFIED ORGANISM"

The listening activity included a telephone call from a television program. It also included a presenter, doctor, and a mother talking to a live phone connection. Five true-false questions and one multiple-choice question were included in the activity. In the activity, structures that are grammatically not suitable to the level were used. While passive structured sentences are at the C1 level in the European Language Portfolio, it is seen that they are used in the B2 level listening activity. The words used in listening are appropriate for the level. Since the words used in the voice recording are parallel to the reading text processed before the listening text, the listener can easily understand the text. GMO visuals were not included in the listening. Since using visuals in the activity will enable the student to understand the text better, it will be beneficial to use an appropriate visual. It is believed that instead of the English "fast food" phrase in the listening text, it would be appropriate to use "hazır yiyecek" in Turkish.

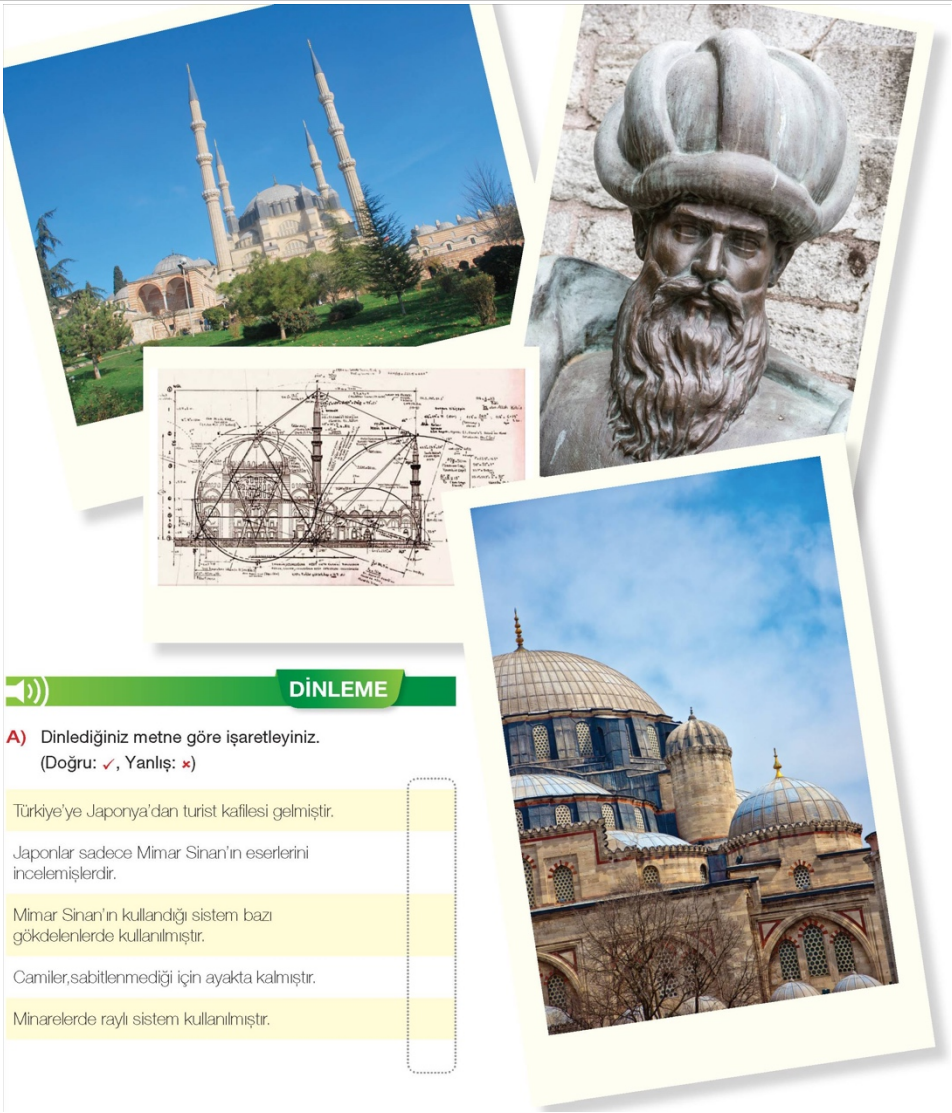


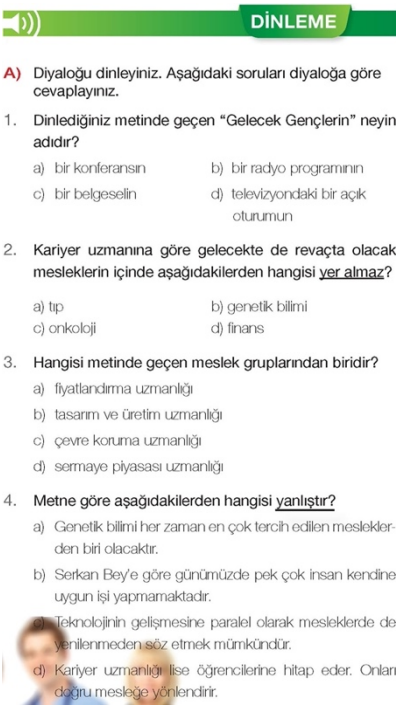
Figure 3. Listening 3: Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 1 Listening Text 3: "MİMAR SİNAN"

A convoy of Japanese tourists coming to Turkey to study Mimar Sinan's works and the convoy's admiration towards Mimar Sinan's works are explained in the activity. Five true-false questions were included in the activity. In the text, some structures are grammatically not suitable to the level. According to the European Language Portfolio, while passivity should be given at the C1 level, it was used in B2 listening activity. It has been observed that there are such words (resettlement, journeyman, tremendous) in the text that students may have difficulty understanding. In the audio listening recording, the words are pronounced clearly and understandably.

The visuals of both Mimar Sinan and some of the historical buildings in the listening were included. The listening section is visually appropriate. The text supports the cultural transfer. Mimar Sinan is an essential figure in terms of our history and culture. Including him in the texts Is thought to be correct and appropriate.

Figure 4. Listening: Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 1 Listening Text 4: "CIRCULAR ANIMALS"

The training of circus animals and their living conditions in the circus are discussed in the listening text. Five true-false questions were included in the activity. Passive verbs that are grammatically not suitable for the level are frequently used. Words like "hook, scream, torture, bulk, scare, etc.," which are thought to be impossible for students to know at this level, are included. Although a circus subject was covered in the listening, only a visual image of an elephant in the forest was shown. It is thought that the visual does not integrate the subject. It is thought that including a circus visual and a circus instructor visual will make the listening text more understandable. Since the text is about a universal subject, it has not been evaluated in cultural transmission. It was determined that the title of the listening text was included in the audio recording, while the title was not included in the book.



DİNLEME

A) Diyaloğu dinleyiniz. Aşağıdaki soruları diyaloğa göre cevaplayınız.

1. Dinlediğiniz metinde geçen "Gelecek Gençlerin" neyin adıdır?
   a) bir konferansın
   b) bir radyo programının
   c) bir belgeselin
   d) televizyondaki bir açık oturumun

2. Kariyer uzmanına göre gelecekte de revaçta olacak mesleklerin içinde aşağıdakilerden hangisi yer almaz?
   a) tıp
   b) genetik bilimi
   c) onkoloji
   d) finans

3. Hangisi metinde geçen meslek gruplarından biridir?
   a) fiyatlandırma uzmanlığı
   b) tasarım ve üretim uzmanlığı
   c) çevre koruma uzmanlığı
   d) sermaye piyasası uzmanlığı

4. Metne göre aşağıdakilerden hangisi yanlıştır?
   a) Genetik bilimi her zaman en çok tercih edilen meslekler-den biri olacaktır.
   b) Serkan Bey'e göre günümüzde pek çok insan kendine uygun işi yapmamaktadır.
   c) Teknolojinin gelişmesine paralel olarak mesleklerde de yenilenmeden söz etmek mümkündür.
   d) Kariyer uzmanlığı lise öğrencilerine hitap eder. Onları doğru mesleğe yönlendirir.

Figure 5. Listening 5 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 2 Listening Text 5: "FUTURE YOUTH"

In the listening text, a dialogue between the presenter and a career expert in a radio show, "Future Young People," was included. The listening activity included four multiple-choice questions and a written explanation question asking students to write the name of the two texts they heard. It has been observed that the text is suitable for the level according to the European Language Portfolio in terms of grammar structure. The words used in the text are at a level that students can understand. The words used are suitable for the level. However, since some of the names of the occupations used are professions that students may not have heard before, students will think that the listening activity is challenging. They will not be able to answer the text well since they will approach the text with prejudice; it is thought that using more familiar professions will make the student more active in the listening activity.

In the 5th question of the listening activity, the student is asked to write the two professions he heard in the listening. However, the audio recording says the names of the professions so fast that it is difficult for the student to write. In this section, instead of asking the student to write, it is thought that students will be able to understand and answer a question such as which profession is mentioned or not. The pronunciation of the words is understandable in the listening voice recording.

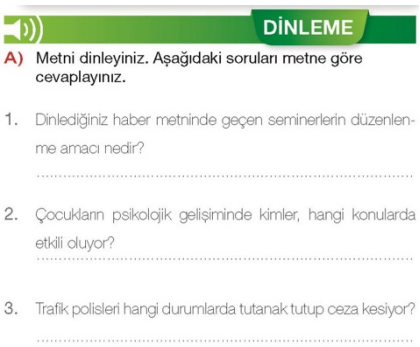
There are many professions mentioned in listening, but only a doctor or a health personnel image is used in the image. It is thought that it would be more appropriate to have visuals of some of the other professions involved in the listening activity, such as engineering, advertising, and consultancy, to revive the text in students' minds.

It is thought that it would be more appropriate in terms of cultural transfer to give a place to the professions and artisans reflecting the Turkish culture rather than a listening text which talks about choosing a general profession at a level where students' comprehension capacities are increased like B2.In the listening text, a dialogue between the presenter and a career expert in a radio show "Future Young People" was included. The listening activity included four multiple-choice questions and a written explanation question asking students to write the name of the two texts they heard. It has been observed that the text is suitable for the level according to the European Language Portfolio in terms of grammar structure. The words used in the text are at a level that students can understand. The words used are suitable for the level, but since some of the occupations names used are professions that students may not have heard before, students will think that the listening activity is difficult and they will not be able to answer the text well, since they will approach the text with prejudice, it is thought that using more familiar professions will make the student more active in the listening activity.

In the 5th question of the listening activity, the student is asked to write the names of the two professions he heard in the listening, but the audio recording says the names of the professions so fast that it is difficult for the student to write. In this section, instead of asking the student to write, it is thought that students will be able to understand and answer a question such as which profession is mentioned or not. The pronunciation of the words is understandable in the listening voice recording.

There are many professions mentioned in listening, but only a doctor or a health personnel image is used in the image. It is thought that it would be more appropriate to have visuals of some of the other professions involved in the listening activity - such as engineering, advertising, and consultancy - in terms of reviving the text in students' minds.

It is thought that it would be more appropriate in terms of cultural transfer to give a place to the professions and craftsmen reflecting the Turkish culture rather than a listening text which talks about choosing a general profession in a level where students' comprehension capacities are increased like B2.



DİNLEME

A) Metni dinleyiniz. Aşağıdaki soruları metne göre cevaplayınız.

1. Dinlediğiniz haber metninde geçen seminerlerin düzenlenme amacı nedir?

2. Çocukların psikolojik gelişiminde kimler, hangi konularda etkili oluyor?

3. Trafik polisleri hangi durumlarda tutanak tutup ceza kesiyor?

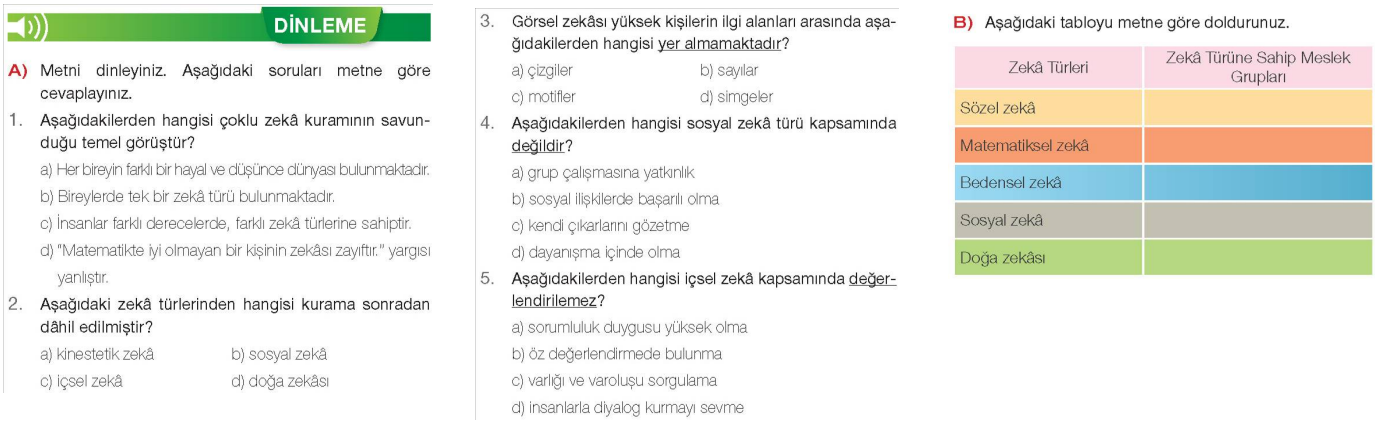
Figure 6. Listening 6 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 2 Listening Text 6: "SAFETY OF LIFE"

In the listening activity, a dialogue was given under the title of Life Safety about providing training to bus drivers to ensure students' life safety on school buses. The activity included three open-ended questions. Although the activity is generally suitable for the grammar level, the words in which the C1 level topic roof suffixes are used were also included. The words used in the activity are composed of words that students can hear in their daily lives. It may be difficult for the student to write the answer while listening and after listening.

The visual text used in the activity is not related to the text. None of the persons involved in the event, such as the seminar service driver and traffic police, were included. The image used evokes a lady who goes to a job interview. Although there is a lady and a gentleman in the visual at the event, two gentlemen speak in the sound recording. It has been observed that the text and the visual are not compatible.

It is thought that supporting the activity with a more appropriate visual and having a more diverse question type used in the activity will make the students more eager and active in listening.

It has been observed that the title is included in the audio recording of the listening text, while the title is not included in the book.



DİNLEME

A) Metni dinleyiniz. Aşağıdaki soruları metne göre cevaplayınız.

1. Aşağıdakilerden hangisi çoklu zekâ kuramının savunduğu temel görüştür?
   a) Her bireyin farklı bir hayal ve düşünce dünyası bulunmaktadır.
   b) Bireylerde tek bir zekâ türü bulunmaktadır.
   c) İnsanlar farklı derecelerde, farklı zekâ türlerine sahiptir.
   d) "Matematikte iyi olmayan bir kişinin zekâsı zayıftır." yargısı yanlıştır.
2. Aşağıdaki zekâ türlerinden hangisi kurama sonradan dâhil edilmiştir?
   a) kinestetik zekâ b) sosyal zekâ
   c) içsel zekâ d) doğa zekâsı
3. Görsel zekâsı yüksek kişilerin ilgi alanları arasında aşağıdakilerden hangisi yer almamaktadır?
   a) çizgiler b) sayılar
   c) motifler d) simgeler
4. Aşağıdakilerden hangisi sosyal zekâ türü kapsamında değildir?
   a) grup çalışmasına yatkınlık
   b) sosyal ilişkilerde başarılı olma
   c) kendi çıkarlarını gözetme
   d) dayanışma içinde olma
5. Aşağıdakilerden hangisi içsel zekâ kapsamında değerlendirilemez?
   a) sorumluluk duygusu yüksek olma
   b) öz değerlendirmede bulunma
   c) varlığı ve varoluşu sorgulama
   d) insanlarla diyalog kurmayı sevme

B) Aşağıdaki tabloyu metne göre doldurunuz.

Zekâ Türleri	Zekâ Türüne Sahip Meslek Grupları
Sözel zekâ	
Matematiksel zekâ	
Bedensel zekâ	
Sosyal zekâ	
Doğa zekâsı	

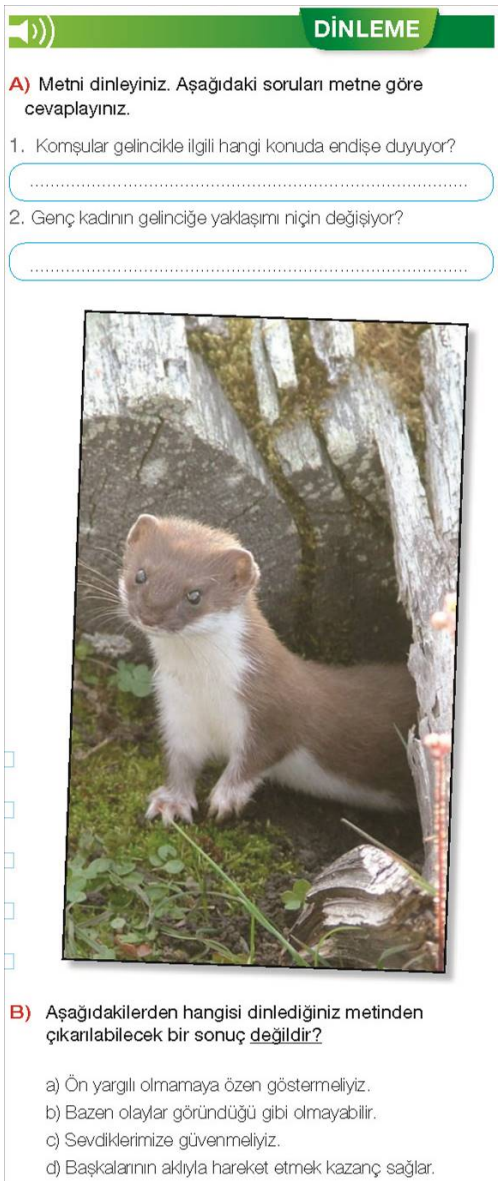
Figure 7. Listening 7 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 2 Listening Text 7: "MULTIPLE INTELLIGENCE THEORY"

In the listening text, the "Theory of Multiple Intelligences" put forward by Howard Gardner is handled. Ten questions were asked in the activity, including five multiple-choice questions and five gap questions. The listening text is suitable for the level in terms of grammar. Although the words used in the activity are generally understandable, there are also words that students cannot understand (oratory, eloquence, synthesis, capable, avoiding, etc.). The text is clear in terms of comprehensibility. However, it is thought that students will have difficulties in answering the questions since the question types in the activity vary

widely. The listening questions do not follow the same order as the audio recording. In addition, individuals who do not have information about these types of intelligence may have more difficulty performing the activity than others.

There is no vision in the text. It is thought that not using visuals will not reduce the understandability in terms of the text's subject matter and comprehensibility level.

It was determined that the title was included in the audio recording of the listening text, while the title was not included in the book.


DİNLEME

A) Metni dinleyiniz. Aşağıdaki soruları metne göre cevaplayınız.

1. Komşular gelincikle ilgili hangi konuda endişe duyuyor?

.....

2. Genç kadının gelinciğe yaklaşımı niçin değişiyor?

.....

B) Aşağıdakilerden hangisi dinlediğiniz metinden çıkarılabilecek bir sonuç değildir?

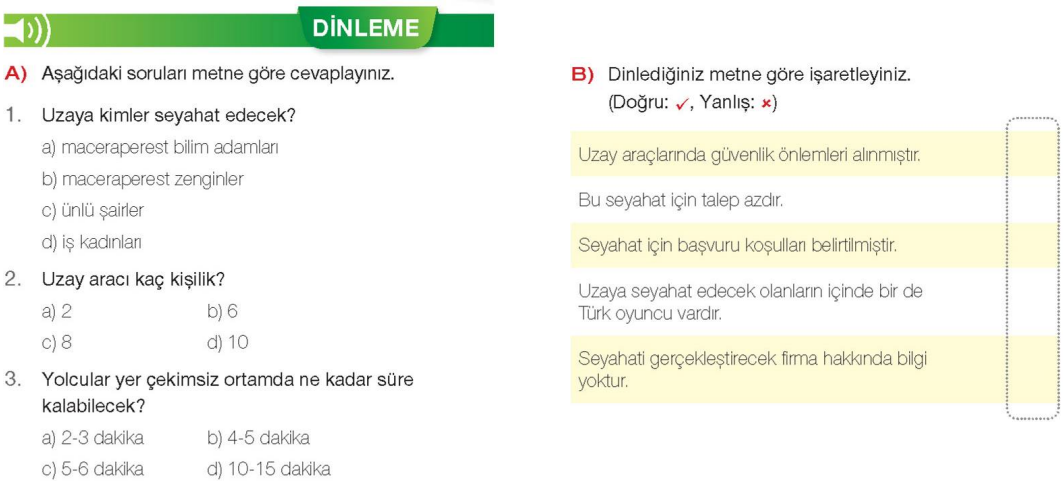
a) Ön yargılı olmamaya özen göstermeliyiz.
b) Bazen olaylar göründüğü gibi olmayabilir.
c) Sevdiklerimize güvenmeliyiz.
d) Başkalarının aklıyla hareket etmek kazanç sağlar.

Figure 8. Listening 8 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 2 Listening Text 8: "The Story of the Bride"

The listening text is about a family of farmers who first did not have children but started to take weasels to their home and feed them at their home and later had children. The activity includes two open-ended questions and a question with multiple choice idioms. It is thought that it would be appropriate to explain the idioms included by the teacher before starting the listening activity. The text is suitable for the B2 level in terms of grammar. Although the words in listening and the phrases used generally follow the level, some words and word groups that the students cannot understand (cradle, with rage, inability to get their ambition, chasing, etc.) are included.

In the listening section, a picture of a weasel is included. It is integrated with the text title and subject. The listening text is long, but it is thought that students will not have much difficulty because it is not complex in terms of sentence structure.

It was observed that the title was included in the audio recording of the listening text, while the title was not included in the book.



DİNLEME

A) Aşağıdaki soruları metne göre cevaplayınız.

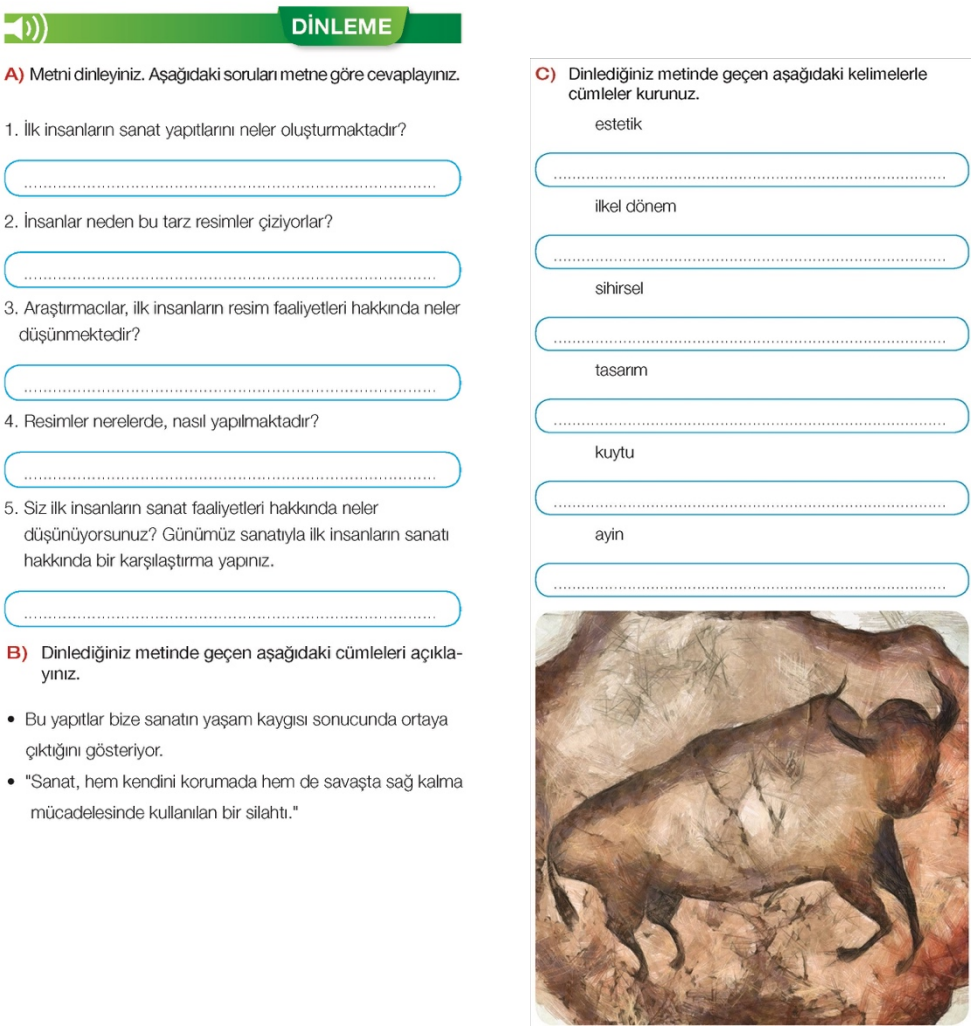
1. Uzaya kimler seyahat edecek?
   a) maceraperest bilim adamları
   b) maceraperest zenginler
   c) ünlü şairler
   d) iş kadınları
2. Uzay aracı kaç kişilik?
   a) 2 b) 6
   c) 8 d) 10
3. Yolcular yer çekimsiz ortamda ne kadar süre kalabilecek?
   a) 2-3 dakika b) 4-5 dakika
   c) 5-6 dakika d) 10-15 dakika

B) Dinlediğiniz metne göre işaretleyiniz.
(Doğru: ✓, Yanlış: ×)

Uzay araçlarında güvenlik önlemleri alınmıştır.	
Bu seyahat için talep azdır.	
Seyahat için başvuru koşulları belirtilmiştir.	
Uzaya seyahat edecek olanların içinde bir de Türk oyuncu vardır.	
Seyahati gerçekleştirecek firma hakkında bilgi yoktur.	

Figure 9. Listening 9 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 3 Listening Text 9:"TRAVEL TO SPACE"

The listening text is about the news that a young man named Ayhan read to his friend Mustafa about traveling to space. The listening activity included three multiple-choice questions and five true-false questions. The activity is grammatically suitable for the level. The words used in the activity are suitable for the level. No visual was used to support the activity. When students hear the words spacecraft or capsules, it is thought that they will not be able to focus on the listening text because the vehicle does not come alive in their minds. They will have more difficulty grasping it, although it is not a problematic text. It was determined that the title was included in the audio recording of the listening text, while the title was not included in the book.The listening text is about the news on the internet a young man named Ayhan read to his friend Mustafa about traveling to space. The listening activity included three multiple-choice questions and five true-false questions. The activity is grammatically suitable for the level. The words used in the activity are suitable for the level. No visual was used to support the activity. When students hear the words spacecraft or capsules, it is thought that they will not be able to focus on the listening text because the vehicle does not come alive in their minds and they will have more difficulty grasping it, although it is not a difficult text. It was determined that the title was included in the audio recording of the listening text, while the title was not included in the book.



DİNLEME

A) Metni dinleyiniz. Aşağıdaki soruları metne göre cevaplayınız.

1. İlk insanların sanat yapıtlarını neler oluşturmaktadır?

.....

2. İnsanlar neden bu tarz resimler çiziyorlar?

.....

3. Araştırmacılar, ilk insanların resim faaliyetleri hakkında neler düşünmektedir?

.....

4. Resimler nerelerde, nasıl yapılmaktadır?

.....

5. Siz ilk insanların sanat faaliyetleri hakkında neler düşünüyorsunuz? Günümüz sanatıyla ilk insanların sanatı hakkında bir karşılaştırma yapınız.

.....

B) Dinlediğiniz metinde geçen aşağıdaki cümleleri açıklayınız.

- Bu yapıtlar bize sanatın yaşam kaygısı sonucunda ortaya çıktığını gösteriyor.
- "Sanat, hem kendini korumada hem de savaşta sağ kalma mücadelesinde kullanılan bir silahtı."

C) Dinlediğiniz metinde geçen aşağıdaki kelimelerle cümleler kurunuz.

estetik

.....

ilkel dönem

.....

sihirsel

.....

tasarım

.....

kuytu

.....

ayin

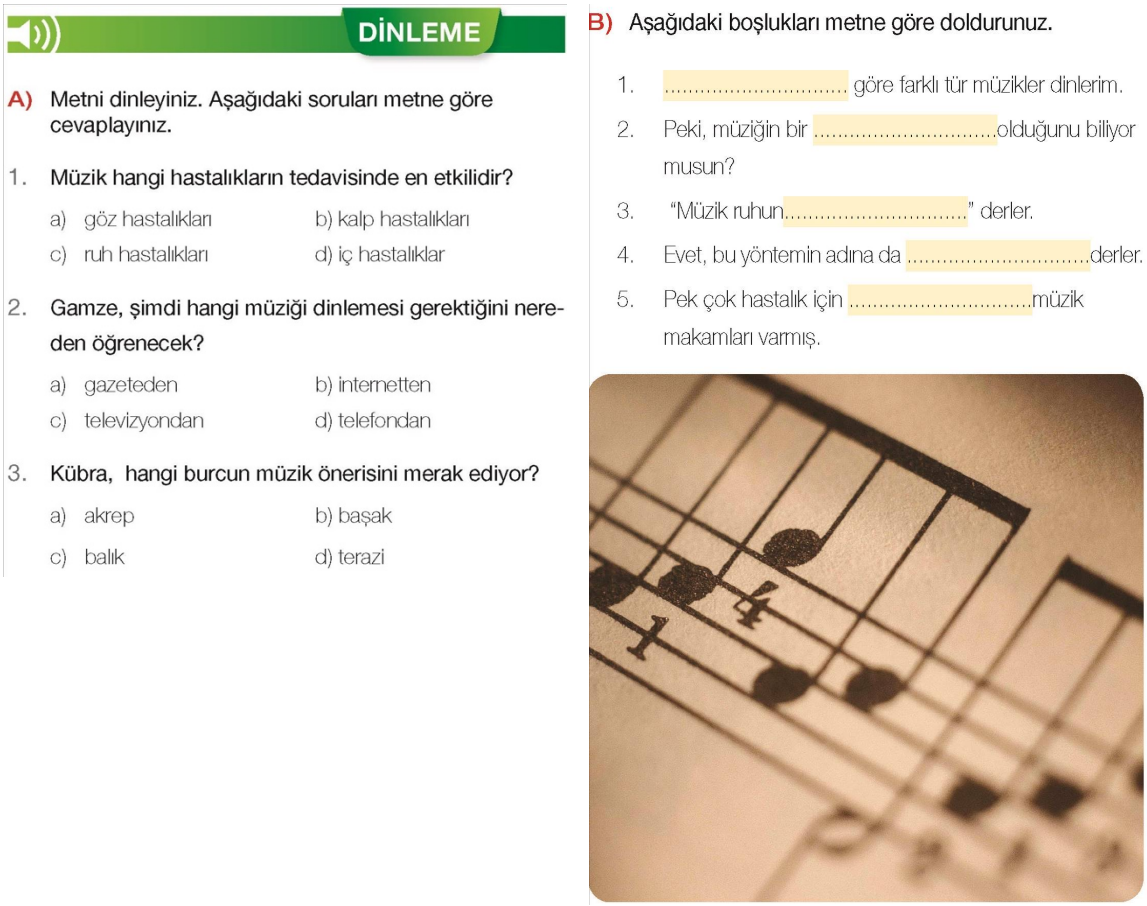
.....

Figure 10. Listening 10 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 3 Listening Text 10: "CAVE PICTURES"

In the listening, cave paintings, which were the works of art of the first people, were mentioned. The activity questions are 5 open-ended questions, two-sentence explanations and making separate sentences with given six words. While the grammar in the text generally conforms to the level, the roof suffixes given at the C1 level in the European Language Portfolio are used. In terms of word structure, the student cannot understand (primitive period, ritual, magical, sheltered, aesthetic, etc.) are included. Writing sentences with some of these words was even included in the activity.

The text includes a visual of a drawing on a cave wall. The visual is thought to be in harmony with the text but insufficient. It is thought that including a picture describing the word cave will increase comprehensibility.

The listening text does not support the issue of cultural transfer. In this unit, the subject of art is covered in the book. It is thought that mentioning a branch of art that reflects our culture related to art in listening will be more exciting and more appropriate in terms of cultural transfer. It has been determined that the title of the audio is included in the audio recording of the listening text, while the title is not included in the book.



DİNLEME

A) Metni dinleyiniz. Aşağıdaki soruları metne göre cevaplayınız.

1. Müzik hangi hastalıkların tedavisinde en etkilidir?
   a) göz hastalıkları b) kalp hastalıkları
   c) ruh hastalıkları d) iç hastalıklar
2. Gamze, şimdi hangi müziği dinlemesi gerektiğini nereden öğrenecek?
   a) gazeteden b) internetten
   c) televizyondan d) telefondan
3. Kübra, hangi burcun müzik önerisini merak ediyor?
   a) akrep b) başak
   c) balık d) terazi

B) Aşağıdaki boşlukları metne göre doldurunuz.

1. ..... göre farklı tür müzikler dinlerim.
2. Peki, müziğin bir .....olduğunu biliyor musun?
3. "Müzik ruhun....." derler.
4. Evet, bu yöntemin adına da .....derler.
5. Pek çok hastalık için .....müzik makamları varmış.

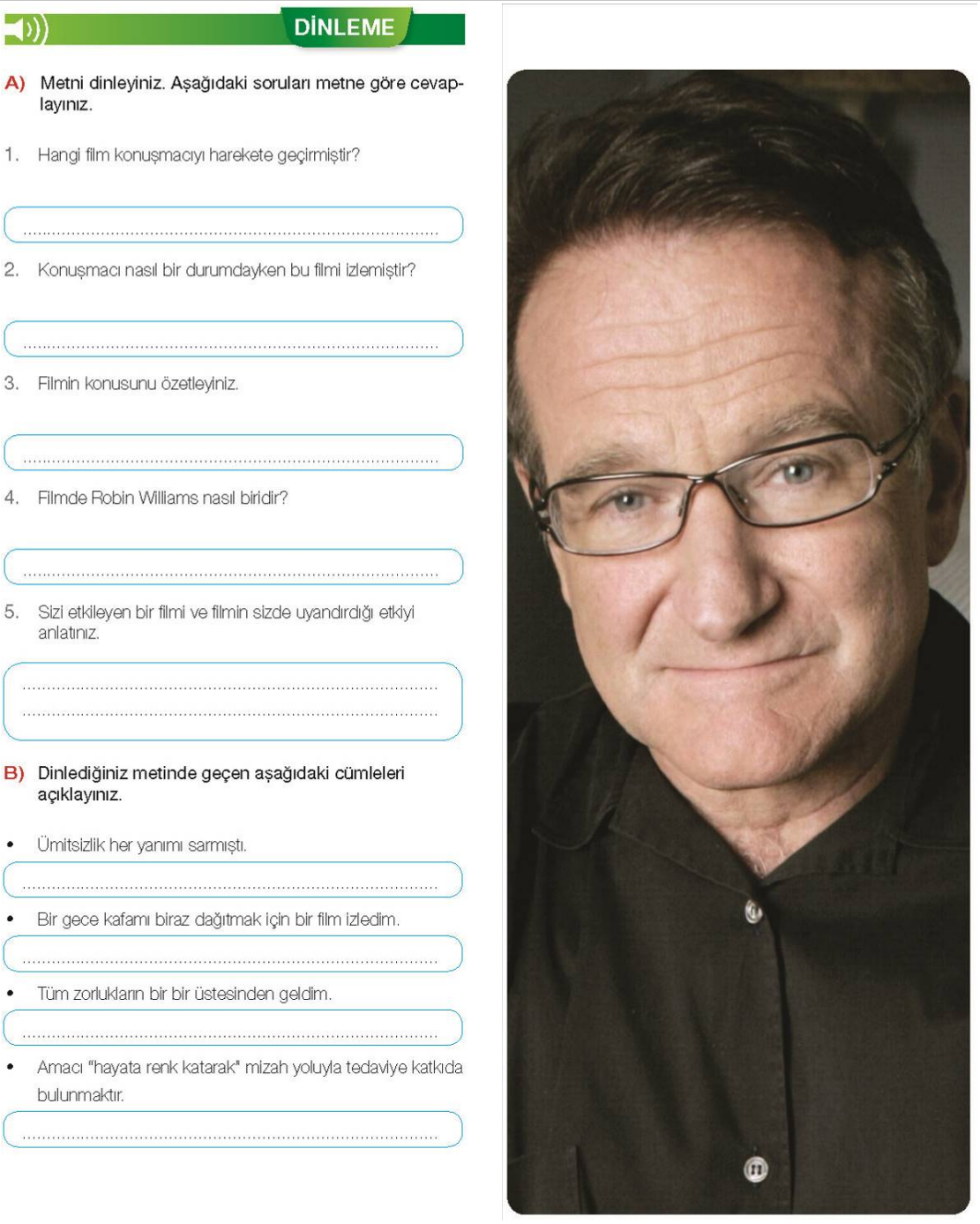
Figure 11. Listening 11 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 3 Listening Text 11: "MUSIC IS RU-HUN FOOD"

Listening is about using music as therapy. The listening activity included three multiple-choice questions and five blank-filling questions. The grammar used in the listening is parallel to the level. The words used are generally suitable for the level, but some expressions (heart fatigue) and the idiom "Music is the food of the soul" are included. Some words that the student cannot understand are included (horoscope, literal, authority). It is thought that both of the people performing the listening activity are female, and their voices are close to each other may reduce the comprehensibility of the listening.

A visual showing the musical notes was included in the event. It is compatible with the visual text.

Explaining "Gevher Nesibe Healing Center," in which music therapy is used in our history or introducing musical instruments reflecting our culture such as baglama, saz fiddle, reflects our music and music therapy history and would be more appropriate in terms of cultural transfer.

It was determined that the title was included in the audio recording of the listening text, while the title was not included in the book.



DİNLEME

A) Metni dinleyiniz. Aşağıdaki soruları metne göre cevaplayınız.

1. Hangi film konuşmacıyı harekete geçirmiştir?

.....

2. Konuşmacı nasıl bir durumdayken bu filmi izlemiştir?

.....

3. Filmin konusunu özetleyiniz.

.....

4. Filmde Robin Williams nasıl biridir?

.....

5. Sizi etkileyen bir filmi ve filmin sizde uyandırdığı etkiyi anlatınız.

.....
.....

B) Dinlediğiniz metinde geçen aşağıdaki cümleleri açıklayınız.

- Ümitsizlik her yanımı sarmıştı.

.....

- Bir gece kafamı biraz dağıtmak için bir film izledim.

.....

- Tüm zorlukların bir bir üstesinden geldim.

.....

- Amacı "hayata renk katarak" mizah yoluyla tedaviye katkıda bulunmaktır.

.....

Figure 12. Listening 12 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 3 Listening Text 12: "A MOVİE"

The listening is about a movie seen by a girl who works on a project and has effectively completed her project. The movie is introduced briefly. The activity included five open-ended questions and four sentences to be explained. Although the activity is generally suitable for the level in terms of grammar structure, there are also roof suffixes, C1 subjects. The activity included words (didactic, script, humor, donation, unlicensed, etc.) and expressions (adding color to life, in one breath, suicidal, eating blows, spreading across the country) that students will not understand. The person vocalizing the text does not seem to be saying something but in the mood of reading a book, which may psychologically create reluctance to listen by boring the students.

The text visually includes a photograph of a middle-aged man. It is unclear whether this male photograph is Patch Adams in the listening dialogue or is the director or the film's screenwriter. Instead, it is thought that it would be more appropriate to use a frame from the movie or include a movie poster. In addition, it is thought that it would be more appropriate in terms of cultural transfer to include a Turkish film instead of choosing a foreign film.

It was determined that the text title was included in the audio recording of the listening text, while the title was not included in the book.

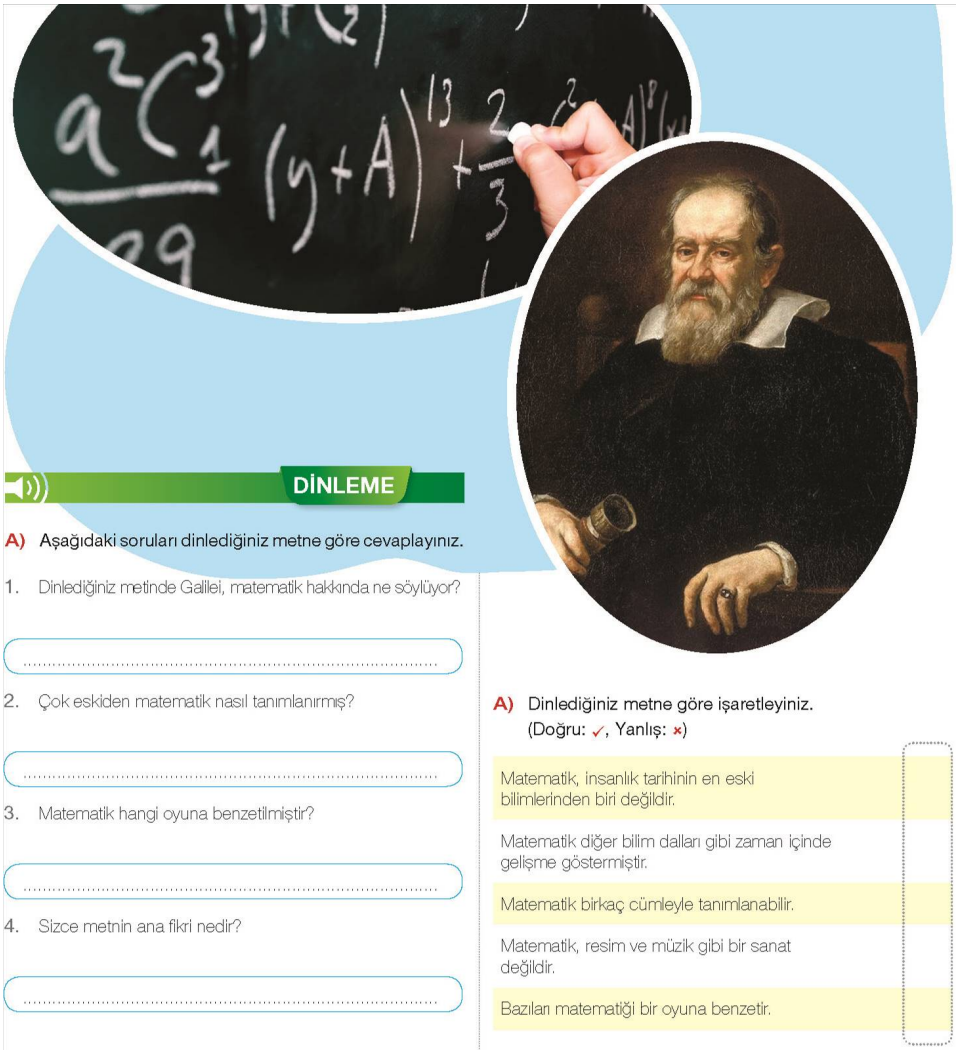


Figure 13. Listening 13 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 4 Listening Text 13: "WHAT IS MATHEMATICS?"

The listening text is about the science of mathematics. It talks about the science of mathematics and Galileo. In the activity, four open-ended questions and five true-false questions were included. It has been observed that the grammar structure of the text conforms to the level. Only a few words have a passive voice. Word choice is generally suitable for the level.

Visually, there are a photo of Galileo and a mathematical solution on the board. The text was found to be suitable as visual and subject. The visuals in the text were sufficient.

In terms of cultural transfer, it is thought that including a scientist who reflects our own culture will support culture transfer better. As many Turkish and Islamic scientists reflecting our culture exist, selecting Galileo is thought to be inappropriate for cultural transfer.

It has been observed that the title is included in the audio recording of the listening text, while the title is not included in the book.

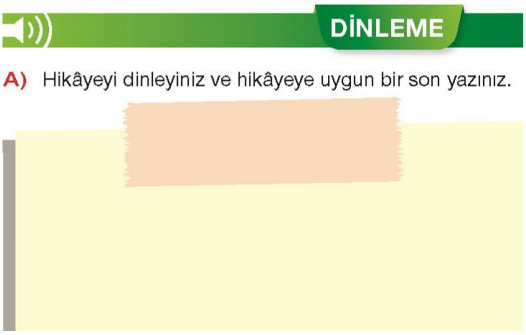


Figure 14. Listening 14 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 4 Listening Text 14: "OLD MEN AND HİS SONS"

In the listening text there is an older adult who is about to die. The activity gives a message about his sons living in unity and togetherness after he dies and what will happen to them when they separate. The question type in the activity is text completion. The students were asked to guess and complete what was left in the gaped story which is left in the middle in the listening audio recording. The text grammar structure is suitable for the level. The words used in the text are also generally suitable for the level. Some words and word groups that are difficult to understand (to gain reason, arrow, advice) are included in the text. No visuals were used in the listening text. It is thought that giving place to a picture of an arrow or an elderly father in bed will support the activity in terms of clarity. The listening text and the message given in the story are thought to be suitable for cultural transmission.It was determined that the title was included in the audio recording of the listening text, while it was not included in the book.

Özellik	Ben	Dede	Torun
heyecanlı			
sakin			
idealist			
çekingen			
girişken			
çekimser			
hareketli			
bilge			

Özellik	Ben	Dede	Torun
hayalperest			
iyimser			
kötümser			
gerçekçi			
pratik			
kuşkucu			
cana yakın			
tutucu			
yardımsever			
mükemmeliyetçi			
duygusal			
mantıklı			
açıksözlü			
gergin			
vesveseli			
karizmatik			
özgün			
rahat			
ciddi			
açıkgözlü			

Figure 15. Listening 15 Gazi University Teaching Turkish to Foreigners Textbook B2 Level Unit 4 Listening Text 15: "TO BE A LAKE"

The listening includes a dialogue between an elderly grandfather and his grandson. As the activity question type, the students were asked to summarize the text they listened to in the first part, and in the second part, twenty-eight adjectives were given and they were asked to match these adjectives with the heroes of the story (grandfather and grandchild) based on the listening text. The text is suitable for the level in terms of grammar structure. The words used in the text are also suitable for the level. However, the adjectives used in the text should be explained to the students or the students should figure them out from the dictionary before listening to the text. The person who voiced the grandfather in the listening text changed his voice trying to make it looks like a grandfather, which reduced the comprehensibility of the listening text.

Visuals were not used in the listening. It is thought that it would be more appropriate to include a photograph of a grandfather and a grandchild in conversation in terms of comprehensibility of the text.

It was determined that the title of the text was included in the audio recording of the listening text, while it was not included in the book.

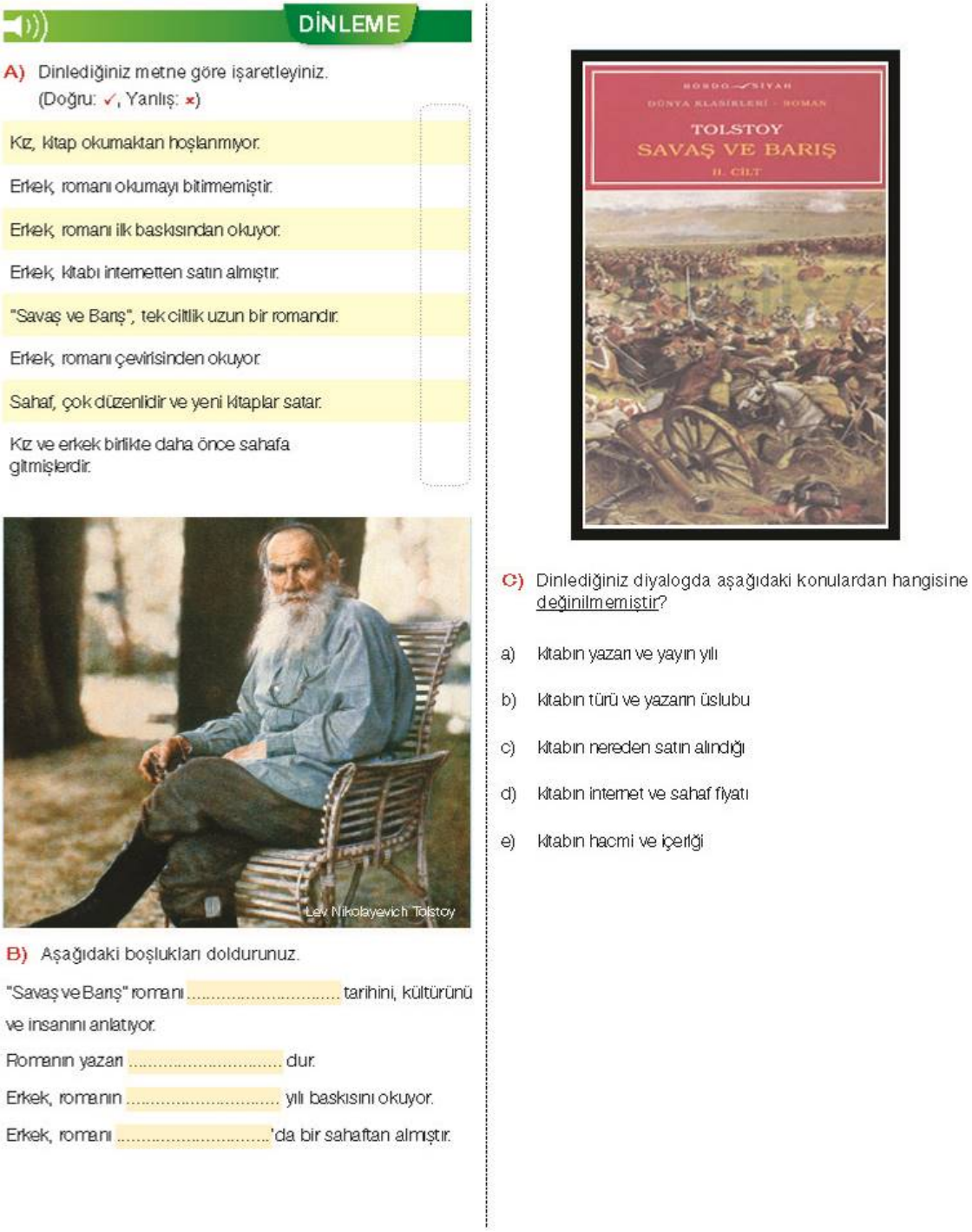


Figure 16. Listening 16 Gazi University Teaching Turkish to Foreigners Textbook B2 Level Unit 4 Listening Text 16: "READING A BOOK"

”

The listening activity included a dialogue about a boy and a girl reading and buying books. In the activity, eight true/false questions, four gap-filling questions and one multiple-choice question were included. The text is suitable for the level in terms of grammar. Although the words used in the text are generally learnable according to the level, the text includes words and phrases that cannot be understood by students (character analysis, writing, much, good translator pen, translation of the language etc.). The listening text is suitable for the level in terms of speed and clarity.

Tolstoy's novel "War and Peace" was included in the listening. Visually, a photo of Tolstoy and a visual of his book War and Peace are included. The visual is considered to be adequate and appropriate.

While there are many authors and works belonging to Turkish culture, instead of choosing War and Peace novel; choosing another book of a common author who belonges to our culture would be considered right and appropriate in terms of culture transfer.

It was determined that the title of the text was included in the audio recording of the listening text, while it was not included in the book.

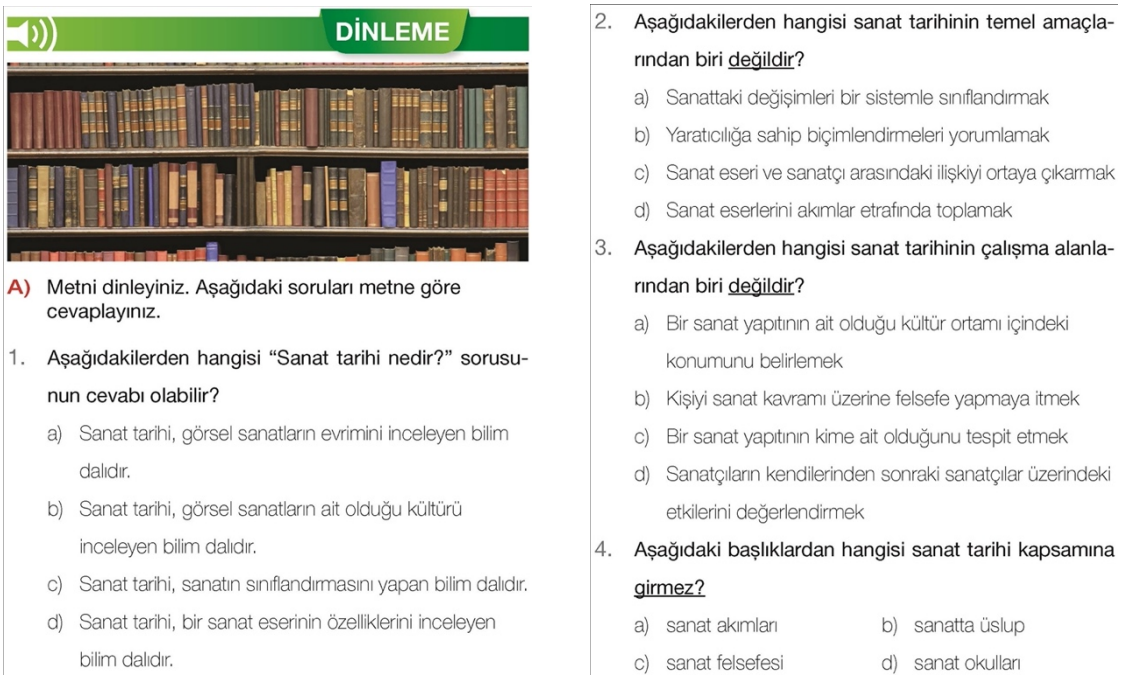
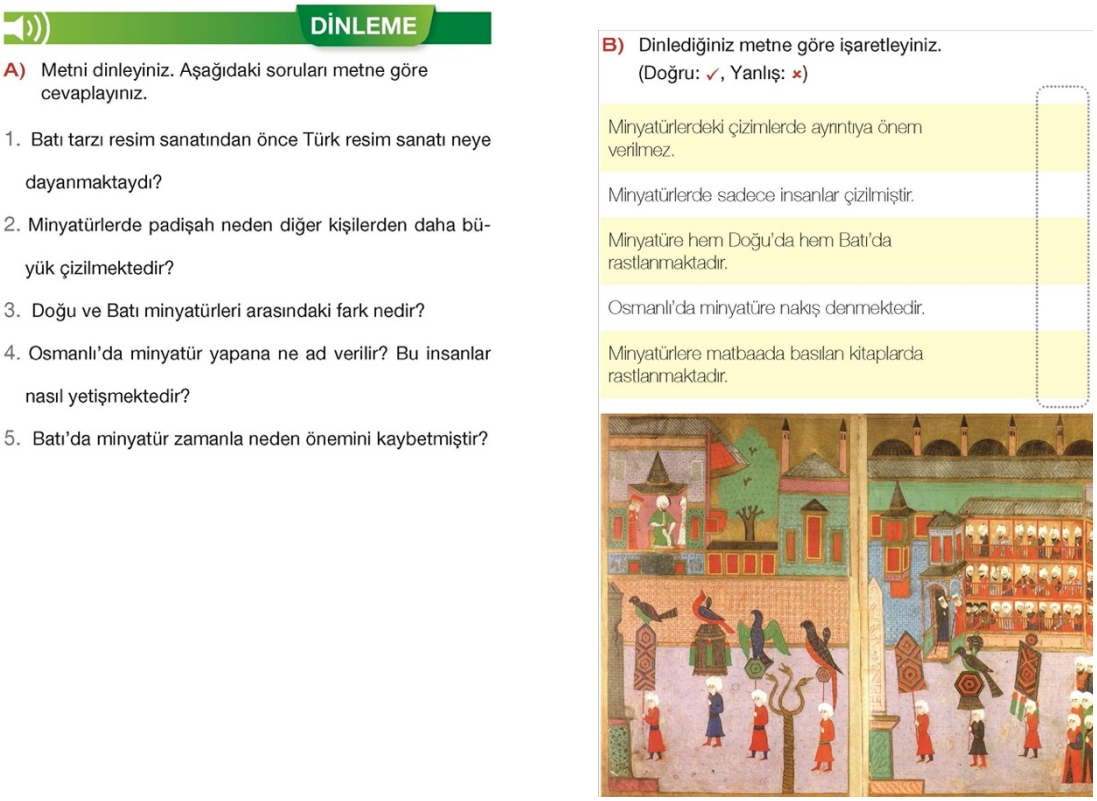


Figure 17. Listening 17 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 5 Listening Text 17: "INTRODUCTION TO ART HISTORY"

In the listening text, information was given about art history; art history researches and art historiography were mentioned. Four multiple-choice questions were included in the activity. The activity is suitable for the level in terms of grammar structure. The words and some expressions used in the activity are words that students will have difficulty understanding (evolution, trends, successor, iconography, determination, intuitive comprehension, etc.). Although the audio recording of the text is understandable, it is thought that it will be difficult for students to understand and interpret due to the question style and subject content.

Visually, there is only one picture of a library in the text. It is thought that it will not be suitable for use as the library photo does not evoke the art history. Instead, it is thought that using a few architectural structures with visual or artistic value taken from the museum would be more appropriate in terms of integrity with the subject. As our country is rich with art and art history, it is thought that it will be appropriate to use historical images in terms of both cultural transfer and compatibility with the text.

It was observed that the title was included in the audio recording of the listening text, while the title was not included in the book.



DİNLEME

A) Metni dinleyiniz. Aşağıdaki soruları metne göre cevaplayınız.

1. Batı tarzı resim sanatından önce Türk resim sanatı neye dayanmaktaydı?
2. Minyatürlerde padişah neden diğer kişilerden daha büyük çizilmektedir?
3. Doğu ve Batı minyatürleri arasındaki fark nedir?
4. Osmanlı'da minyatür yapana ne ad verilir? Bu insanlar nasıl yetişmektedir?
5. Batı'da minyatür zamanla neden önemini kaybetmiştir?

B) Dinlediğiniz metne göre işaretleyiniz.
(Doğru: ✓, Yanlış: ×)

Minyatürlerdeki çizimlerde ayrıntıya önem verilmez.	
Minyatürlerde sadece insanlar çizilmiştir.	
Minyatüre hem Doğu'da hem Batı'da rastlanmaktadır.	
Osmanlı'da minyatüre nakış denmektedir.	
Minyatürlere matbaada basılan kitaplarda rastlanmaktadır.	

Figure 18. Listening 18 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 5 Listening Text 18: "MINIATURE AND EMBROIDERY"

"Miniature", one of the Turkish painting arts, was introduced in the activity. In the activity, five open-ended questions and five true-false questions were included. In terms of grammar structure, the text is generally suitable for the level, but the passive words in the C1 curriculum are included in the listening texts. Although the words used in the activity are also understandable, it has been observed that there are also words that cannot be understood (plato, execute, gilT, copy, etc.).

There is a visual about the miniature art in the text. However, although there much mention about the miniature paınter in the listening, there is not a picture of a miniature painter or it is mentioned that the Miniature was also made to illuminate the book, and there is no visual image that ıt made to books for illuminatıng the text.

It is thought that including Miniature, one of the arts belonging to Turkish culture, in the listening text is beneficial in terms of cultural transfer.

It was determined that the title was included in the audio recording of the listening text, while the title was not included in the book.


4. Ahmet'den kendi isteğimle ayrıldım.

5. Okulda ki toplantıya kimse katılmış.

6. Böyle davranışlar daha önem taşır.

7. Geçen hafta sonu Beypazarı'ya geziye gittik.

8. Yaptığın yanlışları sendemi farkettin?

9. Söylediklerine göre amaliyat çok uzun sürmüş.

10. Hiçkimse onun ne yaptığını biliyor.

C) "Mutluluk nedir?" konulu bir kompozisyon yazınız.

DİNLEME

A) Dinlediğiniz metinlerin konularını yazınız.

1. Metin

2. Metin

3. Metin

B) Dinlediğiniz metne göre işaretleyiniz.
(Doğru: ✓, Yanlış: ×)

Televizyon programları insanların günlük hayatlarına göre planlanmaktadır.

Bilgisayarda kullanılacak programları çocukların kendileri seçmelidir.

Son zamanlarda beyinde tümör oluşumuna sebep olan etkenlerden biri de cep telefonudur.

Çocuklar bilgisayarda oyun oynarken yalnız bırakılmalıdır.

Medya sektörü insanları televizyon bağımlısı hâline getiriyor.

Figure 19. Listening 19 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 5 Listening Text 19: "DO YOU KNOW THESE?"

In the listening text, three of the most important communication tools of our age (computer, television, mobile phone) are explained in three different dialogues. In the activity, three open-ended questions were asked and the students were asked to write the topics of the texts they listened in order in the first section. In the second part, five true-false questions are included. The text is generally level-appropriate in terms of grammar structure, and passivity structure, which is in the C1 level curriculum, was used in only two words. The text is suitable for the level in terms of word structure and comprehensibility. The audio recording is understandable, but it is thought that students will have difficulty answering the open-ended questions given in the listening activity.

A photo frame consisting of parents and children is included in the text. It is thought that the photograph cannot be connected to the activity or the communication. It is thought that putting a computer, telephone and television picture instead will increase comprehensibility. Also, the title of the text is not compatible with the content.

It was determined that the title of the text was included in the audio recording of the listening text, while it was not included in the book.

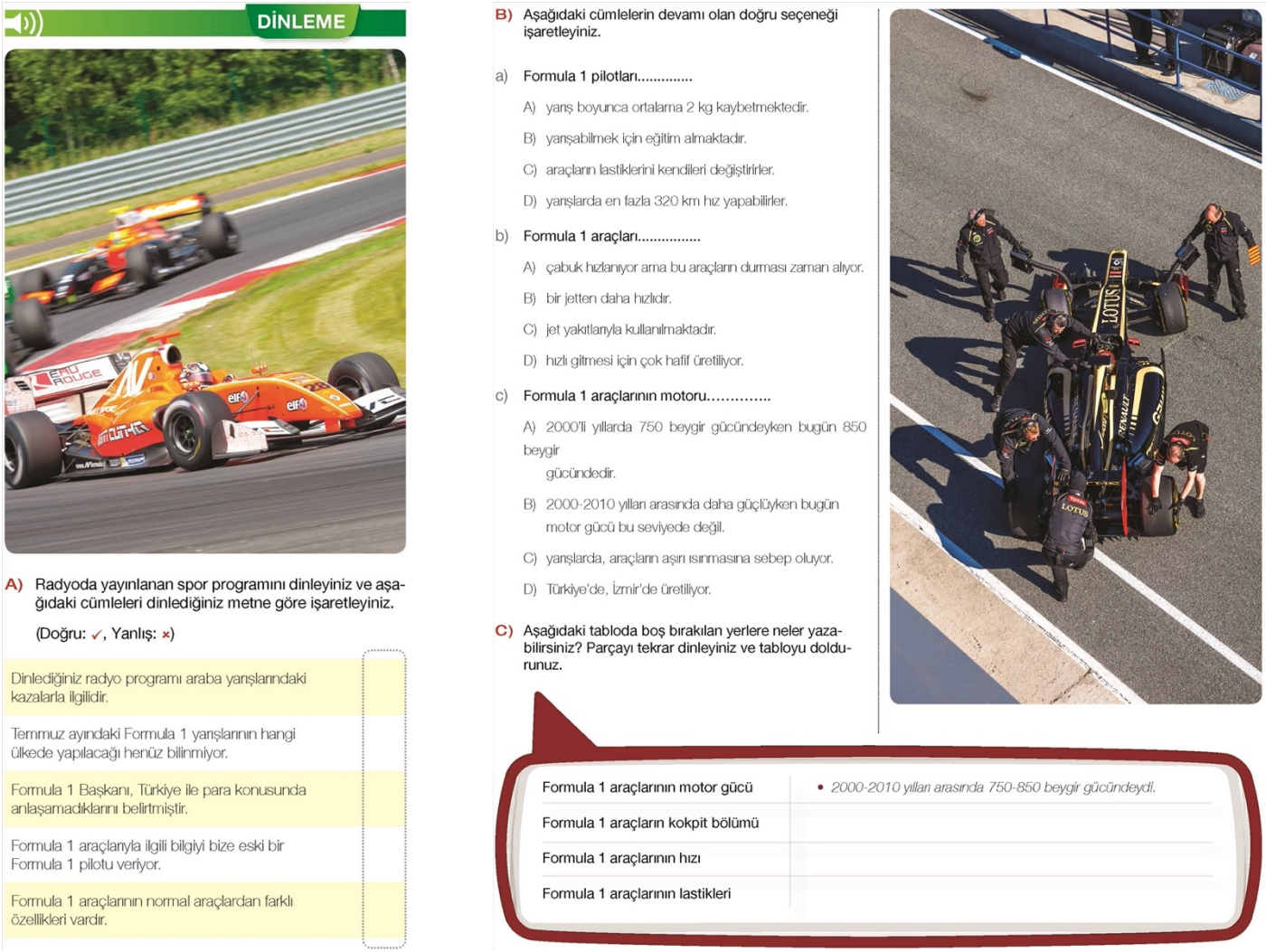


Figure 20. Listening 20 Gazi University Teaching Turkish to Foreigners Textbook Level B2 Unit 5 Listening Text 20: "SPORTS NEWS"

In the listening text, sports news from a radio program are presented and the "Formula 1" races held in Istanbul are the subject of the news. In the activity, five true-false questions, three multiple choice questions and three open-ended questions were included. Although the text is generally suitable for the level in terms of grammar structure, passive structured words in the C1 curriculum are also included. There are some words in the text that the student cannot understand (cockpit, horsepower, jet, can not believe in his ears).

The text includes a visual of the Formula 1 vehicle while changing tires. The image is considered to be compatible with the text. In addition, it is thought that using a photo taken during the race would also make it more understandable.

It was determined that the title was included in the audio recording of the listening text, while the title was not included in the book.

CONCLUSION AND RECOMMENDATIONS

Books on teaching Turkish as a foreign language have been the subject of different studies in many respects. Studies on these books are generally concentrating on reading and writing in our country. When looking at both the education provided in TÖMER in our country and the researches in the field of Turkish, it is seen that reading and writing are predominant. Parallel to this, researches on Turkish as a foreign language have been mainly conducted on reading and writing education.

All language skills in language teaching are skills that complement each other. One skill area is not independent from the other, but it is known that more emphasis is placed on reading and writing skills in language teaching. In this context, it is observed that writing and reading skills are given more place in Turkish textbooks and also in Turkish teaching books for foreigners, and listening skills and activities are less included. Şimşek (2016), in the study in which he examined Istanbul Turkish Teaching Set for Foreigners and Yunus Emre Turkish Teaching Set, stated that the number of activities related to listening in these books is less than the activities of other skills.

Just as individuals first acquire the listening skill in the mother tongue acquisition process, the situation is not different in teaching Turkish to foreigners. The student first hears the letters and words and tries to learn and make sense. Although it is a ignored in language teaching, listening skill is the basis of language teaching. The first information about our mother tongue begins to be acquired through listening. From this point of view, "listening" forms the basis of language learning (Baş, 2002).

In this study, listening activities at the B2 level of Gazi University Teaching Turkish to Foreigners Textbook, which teaches Turkish as a foreign language, were examined by document analysis method, one of the qualitative research methods.

The scientific discussion about the results obtained at the end of the research is given below:

Although there are titles in the listening audio recordings, it was determined that the title is not included in the listening sections of the book. It is thought that including the title in the listening process can mentally prepare the student for the subject he will listen to.

Since the student is at B2 level, in the listening section authentic texts can be chosen and listened. The use of authentic materials has gained importance with the Communicative Language Teaching Approach that emerged in the 1970s. During this period, various audio, visual and printed documents used in the lessons began to be called authentic materials (Özdemir, 2013). It has been determined that Gazi University Textbooks on Teaching Turkish to Foreigners do not include authentic texts. The dialogues in the text were voiced in a studio environment. It is thought that giving more space to authentic texts at B2 and C1 levels will be more consistent as it will get the student more accustomed to the sounds they will hear in daily life.

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The question types in the activity differ. In this respect, question types are acceptable, but the questions are not given in the same order of the audio recording. Failure to give the questions in order causes the students not to be able to find the places of the questions while listening; so they feel stressed because they cannot find the places of the questions immediately and they cannot answer the listening correctly. For this reason, it is thought that giving the questions in order will be appropriate in terms of listening quality. In addition, it is seen that listening question types generally aim to teach students to write what they understand from what they listened. It is seen that there is no question type asking the students to reread or speak out what they understood.

In terms of grammar usage, the listening is generally suitable for the level according to the European Language Portfolio. It is acceptable to include high-level grammar rules in the texts, as students will understand the topic from the context in parallel with the high level.

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Visuals were mostly used in the listening. Visuals were not included in some listening activities. Some texts and images are not compatible with each other. It is thought that text visual harmony will increase the comprehensibility of the text. Tüfekçioğlu (2014) also states in his study that the use of visuals in listening activities is an application that affects the comprehensibility of the text

Suggestions

-Wider place should be to Listening activities in Turkish as a foreign language books.

-While there is a title in the listening soundtrack, it is not included in the book. Since it is thought that the students will be mentally ready for the subject by including the title; It is useful to include the relevant titles in the book.

-Authentic sound recordings are not included in the listening texts. As the B2 student level increases, using authentic texts may have more beneficial results.

-There are very few texts reflecting Turkish culture in listening texts, so the number of texts containing Turkish culture in listening texts should be increased.

- The questions in the listening texts were not given in the same order of the audio recording. It is thought that giving it sequentially will both reduce anxiety of the students and increase comprehension. For this reason, it is beneficial to keep the order of the questions and the order of information in the listening text in parallel.

- Unknown words in the listening texts are thought to affect students' anxiety levels negatively and make comprehension difficult. For this reason, giving unknown words in boxes for the teacher's explanation before listening can increase the efficiency of the lesson.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

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| Research Article / Araştırma Makalesi |

The Impact of Early Literacy Skills Curriculum on Early Literacy and Mathematics Skills[1]

Erken Okuryazarlık Becerileri Eğitim Programının Erken Okuryazarlık ve Erken Matematik Becerileri Üzerine Etkisinin İncelenmesi[1]

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Keywords

1. Early literacy
2. Early mathematics
3. Preschool age

Anahtar Kelimeler

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2. Erken matematik
3. Okul öncesi dönem

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Abstract

Purpose: The present study aimed to investigate the impact of the early literacy skills curriculum on preschool children's early literacy and early mathematics skills.

Design/Methodology/Approach: The study group included 38 kindergarten children attending Aydınlıkevler Public Primary School in Karabuk urban center, Turkey, during the 2017-2018 academic year. The study was conducted with a pretest-posttest, quasi-experimental design with a control group methodology. In the study, the early literacy skills curriculum was implemented in the instruction of experimental group children. The regular curriculum was used in the control group instructed by classroom teachers. Post-test was applied after the application. Early Literacy Skills Assessment Tool and The Test of Early Mathematics Ability-3 (TEMA-3) were used to collect the study data.

Findings: It was concluded that the "Early Literacy Skills Curriculum" employed in the experimental group by the author had a positive effect on the early literacy and mathematics skills of the children.

Highlights: As a result of the study, it was designated a relationship between phonemic awareness ability and writing awareness ability and early mathematics skills.

Öz

Çalışmanın amacı: Bu araştırmada, erken okuryazarlık becerileri eğitim programının okul öncesi dönemindeki çocukların erken okuryazarlık ve erken matematik becerileri üzerindeki etkilerinin incelemesi amaçlanmıştır.

Materyal ve Yöntem: Çalışma grubunu, 2017–2018 eğitim-öğretim yılında Karabük il merkezinde Milli Eğitim Bakanlığı'na bağlı Aydınlıkevler İlkokulu'nda anasınıfına devam eden toplam 38 çocuk oluşturmaktadır. Araştırmada ön test-son test, kontrol gruplu yarı deneysel desen kullanılmıştır. Araştırmada, deney grubundaki çocuklara erken okuryazarlık becerileri eğitim programı uygulanmıştır. Kontrol grubundaki çocuklar ise sınıf öğretmenleriyle normal eğitimlerine devam etmişlerdir. Uygulama sonrası son testler uygulanmıştır. Araştırma verilerinin toplanmasında, Erken Okuryazarlık Becerilerini Değerlendirme Aracı ile Erken Matematik Yeteneği Testi-3 (TEMA-3) kullanılmıştır.

Bulgular: Deney grubuna araştırmacı tarafından uygulanan "Erken Okuryazarlık Becerileri Eğitim Programı'nın çocukların erken okuryazarlık ve erken matematik becerileri üzerinde olumlu etkisinin olduğu sonucu elde edilmiştir.

Önemli Vurgular: Araştırma sonucunda, çocukların ses bilgisel farkındalık becerileri ve yazı farkındalığı becerileri ile erken matematik becerileri arasında ilişki olduğu belirlenmiştir.

[1]The study was prepared within the scope of the first author's doctoral thesis.

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INTRODUCTION

Preschool age is a critical developmental stage. Rapid changes are experienced in the acquisition of cognitive and academic skills and concepts during this period. It was reported that early literacy and early mathematics skills are significant precursors of academic achievement (Duncan et al., 2007).

The literacy knowledge, attitudes, and skills developed before formal education are described as "early literacy skills." Early literacy skills begin to develop before the first five or six years of life and are continuous (Whitehurst & Lonigan, 1998). Basic early literacy skills generally include verbal language, phonological awareness, alphabet awareness, alphabet and letter knowledge, vocabulary and writing skills (Muter, Hulme, Snowling, & Stevenson, 2004). Verbal language skills include vocabulary knowledge, vocabulary and grammar rules (Storch & Whitehurst, 2002). Phonological awareness is associated with the ability of children to perceive and manipulate language through tasks such as developing audio sensitivity, separating words into sounds, and creating words by combining sounds. Alphabet awareness includes knowledge of the names and sounds of the letters, basic typefaces in the books, how to hold and use the books, and the direction of text (Whitehurst & Lonigan, 1998). Alphabet and letter knowledge includes understanding that words include a sequence of letters, the relationship between the letter and the sound, and forming new words by combining letters.

During preschool age, children begin to acquire early mathematics skills that are the foundation of advanced skills. Mathematical skills develop cumulatively based on the early mathematical skills (Aunola, Leskinen, Lerkkanen, & Nurmi, 2004). Early mathematical skills include counting, size comparison, classification of objects, counting skills, numerical knowledge, memorizing the numbers, geometry, ordering and quantity skills acquired before formal mathematics instruction (Krajewski & Schneider, 2006). These skills entail three interrelated but different fields: The concept of numbers and counting skills, numerical relationships and arithmetic operations (Jordan, Kaplan, Locuniak, & Ramineni, 2007). Numerical and counting skills include the number system, counting principles, and the ability to determine the total number of elements (cardinality). Numerical relationships entail knowing the connection and correlation between two or more elements and the relations between the numbers in the number system. Arithmetic operations include the ability of the child to understand changes in quantity and calculate new amounts based on the change in cluster size (Jordan, Kaplan, Nabors Oláh, & Locuniak, 2006). Children first learn to recognize small numerical sets without counting (by heart), distinguish (compare) small quantities, and learn the verbal counting order. They then use the one-to-one counting method, establishing connections between numerical terms and related quantities. For example, they learn the cardinal numbers principle. Finally, they combine numerical terms and related quantities with new numerical terms and quantities without using objects.

Mathematics and reading are two essential skills that affect the development of the other. Starting from a very early age, these two areas are correlated, and they are long-term predictors of the development of the other (Welsh, Nix, Blair, Bierman, Nelson, 2010). Children who experience difficulties are likely to suffer in the other (Barbaresi et al. 2010). Among early literacy skills, phonological awareness skills are significantly associated with early mathematical skills. Several theories argued that there was a direct or indirect correlation between phonological awareness and early mathematical skills. Phonological awareness skills allow children to distinguish and direct the words in the number system (Krajewski & Schneider, 2009; Simmons, Singleton, & Horne, 2008). There is a correlation between alphabet awareness and the basic concepts of mathematics, such as the identification of numbers and letters (Piasta, Purpura, & Wagner, 2010). Comprehension of the functions and nature of writing could logically be associated with early mathematics skills because formal and informal mathematics is based on numbers or symbols. Alphabet awareness is associated with mathematical development, such as familiarity with numbers. As in understanding that the symbol 3 corresponds to the number three. Similarly, non-numeric symbols such as the question mark (?) and the subtraction mark (-) provide information about the mathematical alphabet, as in knowing that the "-" mark is the symbol of the subtraction operation (Purpura, Hume, Sims, & Lonigan, 2010).

Academic skills that were developed early in life are the foundation of later academic skills. Early literacy and mathematics skills are correlated and interactive. Thus, the analysis of early literacy and early mathematics skills of the children, the development and implementation of an early literacy skills curriculum are essential for a substantial investigation of the effects of the curriculum on early literacy and mathematics skills. Literature review revealed that several studies reported a correlation between early literacy skills and early mathematics skills (Krajewski & Schneider, 2009; Purpura, Hume, & Sims, 2010; Davidse, De Jong & Bus, 2014). However, in Turkey, scientific studies on the correlation between early literacy and early mathematics skills are pretty limited. Thus, the present study aimed to investigate the impact of the early literacy skills curriculum on kindergarten children's early literacy and early mathematics skills. It was expected that the study findings would contribute to the acquisition of early literacy skills included in the Ministry of National Education Preschool Curriculum, raise the awareness of preschool

teachers about these skills and encourage further studies on the topic. To achieve these aims, the following research problems were determined:

1. Is there a difference between the "Early Literacy Skills Assessment Tool" pretest and posttest mean scores of experimental and control group children?

2. Is there a difference between the "The test of early mathematics ability-3" pretest and posttest mean scores of experimental and control group children?

3. Is there a correlation between "Early Literacy Skills Assessment Tool" and "The Test of early mathematics ability-3" scores of experimental and control group children?

METHOD

The research design, study group, data collection instruments, study procedures, analysis and data limitations are included in this section.

The Research Design

The present study was conducted with the quasi-experimental design with pretest-posttest and control group method. The pretest was applied both to the experimental and control groups. The instruction was conducted with the "Early Literacy Skills Curriculum" in the experimental group, while the children in the control group were instructed based on the conventional curriculum. At the end of the instruction, the posttest was applied to both groups. The retention test was applied to both groups four weeks after the posttest (Karasar, 2015).

The Study Group

The study group included 5-6 years old kindergarten children attending two different classes at the same school in Karabük province urban center. Nineteen children were assigned to the experimental group, and 19 children were assigned to the control group. Eleven children in the experimental group were female, and 8 were male. Eleven children in the control group were female, and 8 were male.

Data Collection Instruments

Early Literacy Skills Assessment Tool (ELSAT): The Early Literacy Skills Assessment Tool was developed by Karaman (2013) to assess early literacy skills in preschool children. ELSAT includes five subtests: Phonological Awareness, Alphabet Awareness, Story Comprehension, Image Matching, Pre-Writing Skills, and 96 items. All correct answers are scored with 1 point in the assessment tool. Since the normative values were not determined for the subtests in the present study, it was accepted that a higher subtest score denoted a higher level of achievement (Karaman, 2013).

The Test of Early Mathematics Ability-3 (TEMA-3): The Test of Early Mathematics Ability (TEMA) was developed by Ginsburg and Baroody (2003). The test aimed to assess children's mathematical abilities whose calendar age is between three and eight years eleven months. TEMA was revised twice, and it was published as TEMA-2 in 1990 and TEMA-3 in 1993. TEMA-3 includes two forms: Form A and Form B. The reliability and validity of the scale for 60-72 months old children were determined by Erdogan (2006) in Turkey. Each item is marked as true and false by the child. The number of correct answers is the raw score. Math quotient is calculated with the calendar age and raw score of the child. A high math score indicates high math ability (Ginsburg & Baroody, 2003).

The Study Procedure

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"Early Literacy Skills Curriculum" aims to support the acquisition of early literacy skills by kindergarten children. The program was applied three days a week for the first four weeks and two days a week for the remaining six weeks during a 10-week timeframe. In the curriculum, 24 activities were included. Each activity was conducted for about 60 minutes. The curriculum was based on four achievements and ten indicators that were associated with the acquisition of early literacy skills in lingual cognitive, self-care, and social-emotional development areas included in the "Ministry of National Education General Directorate of Preschool Education, Curriculum for 36-72 Months Old Children," and ten novel acquisitions and thirty-five indicators were added.

Activities were developed based on these achievements and indicators. The activities were developed based on learning principles such as from simple to complex, concrete to abstract, and school facilities. The activities ensured that children learned by doing and living the activities promoted curiosity and included diverse methods. The activities were conducted to integrate specific Turkish language, literacy preparation, game, art, music and drama, and significant group activities.

The pretest was applied to the children in the experiment and control groups. The application was conducted with the children in the experimental group, while the children in the control group were instructed based on the current curriculum. After the application was conducted with the children in the experimental group, the posttest was applied.

Four weeks after the posttest, a retention test was applied to the experimental group to determine retention of knowledge. After the retention test, the curriculum and related material were communicated to the classroom teacher, who instructed the control group. The classroom teacher was counseled to implement the same curriculum with the control group.

Data Analysis

The parametric independent group's t-test was employed for the data with normal distribution, and the non-parametric "Mann Whitney U-Test" was used for the data without normal distribution. The correlation between two quantitative variables with normal distribution was analyzed with the Pearson correlation coefficient. The Spearman-Brown correlation coefficient was used when at least one of the quantitative variables did not exhibit a normal distribution.

The Limitations of the Study

- The study is limited to 5-6 years old first-year kindergarten children with typical development and attending public Aydınlıkevler Primary School in Karabuk province urban center during the 2017-2018 academic year.
- The application of the early literacy skills curriculum was limited by ten weeks in the experimental group.
- The joint impact of various demographic variables such as household literacy, family type, parent-child interaction, education level of the parents and presence of older siblings was not taken into account.

FINDINGS

In this section, the ELSAT and TEMA-3 scale scores of the children in the study sample are included based on the aim of the study.

Table 1. The Results of the Independent Groups t-test and Mann Whitney U-test Conducted on ELSAT Mean Pretest Scores of the Experimental and Control Groups

	Variable (N=38) Pretest Scores	Control group (n=19)		Experimental group (n=19)		Statistical analysis* Probability
		$\underline{X} \pm S.S.$	Median [Min-Max]	$\underline{X} \pm S.S.$	Median [Min-Max]	
Phonological Awareness Skills	**Matching the words that start with the same sound**	1,63±1,46	1,0 [0,0-5,0]	1,63±1,89	1,0 [0,0-5,0]	Z=-0,377 p=0,706
	Matching rhyming words	2,63±2,54	2,0 [0,0-9,0]	1,16±2,19	0,0 [0,0-8,0]	Z=-2,317 **p=0,021**
	Recognizing the initial sound in a word	4,84±6,02	1,0 [0,0-19,0]	4,58±5,59	0,0 [0,0-14,0]	Z=-0,270 p=0,787
	Finding the initial sound of a word	3,84±4,76	0,0 [0,0-10,0]	4,16±5,01	0,0 [0,0-10,0]	Z=-0,167 p=0,868
	Creating a word that starts with a stimulus sound	0,47±1,02	0,0 [0,0-4,0]	0,32±0,75	0,0 [0,0-2,0]	Z=-0,656 p=0,512
	Creating a word that starts with the same sound	0,53±1,26	0,0 [0,0-5,0]	0,11±0,46	0,0 [0,0-2,0]	Z=-1,417 p=0,156
	Dropping syllables and sounds	0,74±1,85	1,0 [0,0-8,0]	0,21±0,91	0,0 [0,0-4,0]	Z=-1,967 **p=0,049**
	Combining sounds	1,16±1,17	1,0 [0,0-4,0]	0,53±0,77	0,0 [0,0-2,0]	Z=-,1873 p=0,061
	Total score	11,00±10,65	8,0 [0,0-43,0]	8,11±8,47	3,0 [0,0-27,0]	Z=-1,054 p=0,292
Alph	**Writing concepts**	3,79±2,07	3,0 [0,0-7,0]	3,79±1,71	4,0 [1,0-7,0]	t=0,000 p=1,000

ab et Aw are ne ss	**Book concepts**	2,74±0,73	3,0 [0,0-3,0]	2,95±0,23	3,0 [2,0-3,0]	Z=-1,069 p=0,285
	Letter and word concepts	0,16±0,37	0,0 [0,0-1,0]	0,11±0,32	0,0 [0,0-1,0]	Z=-0,474 p=0,636
	Totals core	6,68±2,31	7,0 [2,0-10,0]	6,84±1,86	7,0 [3,0-10,0]	t=-0,232 p=0,818
	Story comprehension	5,58±1,77	6,0 [3,0-8,0]	5,47±2,12	6,0 [2,0-9,0]	t=0,166 p=0,869
	Matching visuals	4,74±1,79	5,0 [2,0-8,0]	5,32±1,83	6,0 [3,0-9,0]	t=-0,987 p=0,330
	Pre-Writing Skills	4,84±1,57	5,0 [2,0-8,0]	5,79±1,03	6,0 [4,0-8,0]	t=-2,195 **p=0,035**

It could be observed in Table 1 that there was a statistically significant difference between the pre-test Phonological Awareness Skills sub-test Matching Rhyming Words sub-dimension scores of children in the experimental and control groups (Z = -2,317, p <0.05). The mean pre-test Matching Rhyming Words score ($\bar{X}$ = 2.63) of the children in the control group was statistically significantly higher when compared to the experimental group children ($\bar{X}$ = 1.16). A statistically significant difference was determined between the Phonological Awareness Skills sub-test Syllables and Sounds Sub-dimension pretest scores of the experimental and control groups (Z = -1.967, p <0.05). The Dropping Syllables and Sounds pre-test score ($\bar{X}$ = 0.74) of the children in the control group was statistically significantly higher than those in the experimental group ($\bar{X}$ = 0.21). A statistically significant difference was determined between the Pre-Writing Skills sub-test pre-test scores of the children in the experimental and control groups (t = -2,195, p <0,05). The pre-test Pre-Writing Skills mean score ($\bar{X}$ = 5.79) of the children in the experimental group was statistically significantly higher than those in the control group ($\bar{X}$ = 4.84). There was no statistically significant difference between subtest and sub-dimension scores except the significant difference between the pre-test Phonological Awareness Skills sub-test, Matching Rhyming Words, Syllables and Sounds sub-dimensions and Pre-Writing Skills Sub-test scores of the experimental and control groups (p> 0, 05).

Table 2. The Results of the Independent Groups t-test and Mann Whitney U-test Conducted on ELSAT Mean Posttest Scores of the Experimental and Control Groups

	Variable (N=38) Pretest Scores	**Control group (n=19)**		**Experimental group (n=19)**		**Statistical analysis* Probability**
		$\underline{X} \pm S.S.$	**Median [Min-Max]**	$\underline{X} \pm S.S.$	**Median [Min-Max]**	
Pho nol ogic al Aw are nes s Skil ls	**Matching the words that start with the same sound**	1,79±0,92	2,0 [0,0-3,0]	5,11±1,15	6,0 [2,0-6,0]	Z=-5,128 **p=0,000**
	Matching rhyming words	3,05±1,75	3,0 [1,0-7,0]	8,42±1,07	9,0 [5,0-9,0]	Z=-5,275 **p=0,000**
	Recognizing the initial sound in a word	8,16±5,78	10,0 [0,0-17,0]	16,47±4,44	18,0 [6,0-21,0]	Z=-3,956 **p=0,000**
	Finding the initial sound of a word	6,58±4,36	8,0 [0,0-10,0]	9,37±2,29	10,0 [0,0-10,0]	Z=-2,563 **p=0,010**
	Creating a word that starts with a stimulus sound	0,74±1,05	0,0 [0,0-3,0]	3,95±1,96	5,0 [0,0-6,0]	Z=-4,266 **p=0,000**
	Creating a word that starts with the same sound	0,84±1,21	0,0 [0,0-4,0]	3,16±1,83	4,0 [0,0-5,0]	Z=-3,531 **p=0,000**
	Dropping syllables and sounds	1,58±2,61	0,0 [0,0-9,0]	6,32±3,61	8,0 [0,0-10,0]	Z=-3,708 **p=0,000**
	Combining sounds	1,79±1,18	2,0 [0,0-4,0]	3,47±1,50	4,0 [1,0-6,0]	t=-3,837 **p=0,000**
	Total score	16,37±9,57	16,0 [1,0-34,0]	39,79±9,88	42,0 [14,0-51,0]	Z=-4,631 **p=0,000**
Alp hab et Aw	**Writing concepts**	5,05±1,99	5,0 [2,0-8,0]	8,42±0,90	9,0 [6,0-9,0]	Z=-4,843 **p=0,000**
	Book concepts	2,89±0,46	3,0 [1,0-3,0]	3,00±0,00	3,0 [3,0-3,0]	Z=-1,000 p=0,317

are nes s	**Letter and word concepts**	0,37±0,68	0,0 [0,0-2,0]	2,73±1,56	3,0 [0,0-4,0]	Z=-4,215 **p=0,000**
	Totals core	8,31±2,43	9,0 [3,0-13,0]	14,16±2,17	15,0 [9,0-16,0]	Z=-4,844 **p=0,000**
	Story comprehension		6,0 [3,0-9,0]	7,58±1,30	8,0 [5,0-9,0]	Z=-2,524 **p=0,012**
	Matching visuals		7,0 [4,0-9,0]	7,94±1,17	8,0 [5,0-9,0]	Z=-3,333 **p=0,001**
	Pre-Writing Skills		6,0 [3,0-9,0]	7,63±0,90	8,0 [6,0-9,0]	Z=-3,292 **p=0,001**

As seen in Table 2, there were statistically significant difference between total post-test Phonological Awareness Skills subtest score (Z = -4.631, p <0.05), the Phonological Awareness Skills subtest Matching Words Beginning with the Same Sound (Z = -5.128, p <0.05), Matching Rhyming Words (Z = -5.275, p <0.05), Recognizing the Initial Sound of Word (Z = -3.956, p <0.05), Finding the Initial Sound of a Word (Z = - 2.563, p <0.05), Cerating Words Starting with a Stimulus Sound (Z = -4.266, p <0.05), Making Words Starting with the Same Sound (Z = -3.531, p <0.05), Dropping Syllables and Sounds (Z = -3.708, p <0.05), and Combining Sounds (Z = -3.837, p <0.05) sub-dimension scores of the children in the experimental and control groups. The Phonological Awareness Skills subtest (X̄posttest experiment = 39.79, X̄posttest control = 16.37), Phonological Awareness Skills subtest Matching Words Beginning with the Same Sound (X̄posttest experiment = 5.11, X̄posttest control = 1.79), Matching Rhyming Words (X̄posttest experiment = 8.42, X̄post test control = 3.05), Recognizing the Initial Sound of Words (X̄posttest experiment = 16.47, X̄posttest control = 8.16), Finding the Initial Sound of a Word (X̄posttest experiment = 9.37, X̄posttest control = 6.58), Creating a Word Starting with a Stimulus Sound (X̄posttest experiment = 3.95, X̄posttest control = 0.74), Creating Words that Start with the Same Sound (X̄posttest experiment = 3,16, X̄posttest control = 0,84), Syllables and Sounds (X̄posttest experiment = 6.32, X̄posttest control = 1,58), and Combining Sounds (X̄posttest experiment = 3.47, X̄posttest control = 1.79), sub-dimensions posttest mean scores of the experimental group students were statistically significantly higher when compared to the control group.

There were statistically significant differences between total post-test Alphabet Awareness subtest (Z = -4.844, p <0.05), the Print Awareness subtest, Writing Concepts (Z = -4.843, p <0.05), Letter and Word Concepts (Z = -4.215, p <0.05) subdimension scores of the experimental and control groups. Alphabet Awareness subtest (X̄posttest experiment = 14.16, X̄posttest control = 8.31), Alphabet Awareness subtest Writing Concepts (X̄posttest experiment = 8.42, X̄posttest control = 5.05), and Letter and Word Concepts (X̄posttest experiment = 2.73, X̄posttest control = 0.37) sub-dimension posttest mean scores of the children in the experimental group were statistically significantly higher when compared to the control group. There was no statistically significant difference between the posttest Alphabet Awareness subtest, Book Concepts sub-dimension scores of the children in the experimental and control groups (p> 0.05).

It was determined that there were statistically significant differences between post-test Story Comprehension (Z = -2.524, p <0.05), Matching Images (Z = -3.333, p <0.05) and Pre-Writing Skills (Z = -3.292, p <0.000) subtest scores of the children in the experimental and control groups. Story Comprehension (X̄posttest experiment = 7.58, X̄posttest control = 6.16), Matching Images (X̄posttest experiment = 7.94, X̄posttest control = 6.42) and Pre-Writing Skills (X̄posttest experiment = 7.63, X̄posttest control = 6.05) posttest mean scores of the children in the experimental group were statistically significantly higher when compared to the control group.

Table 3. The Results of the Independent Groups t-test and Mann Whitney U-test Conducted on TEMA-3 Mean Scores of the Experimental and Control Groups

Variable (N=38) TEMA-3	**Control group (n=19)**		**Experimental group (n=19)**		**Statistical analysis* Probability**
	$\underline{X} \pm S.S.$	**Median [Min-Max]**	$\underline{X} \pm S.S.$	**Median [Min-Max]**	
Pretest	84,63±17,56	85,0 [65,0-120,0]	81,37±13,69	79,0 [60,0-108,0]	Z=-0,176 p=0,861
Posttest	89,68±16,27	86,0 [70,0-118,0]	92,58±9,41	94,0 [74,0-108,0]	t=-0,671 p=0,507

As seen in Table 3, there was no statistically significant difference between TEMA-3 pre-test and post-test scores of the children in the experimental and control groups (p> 0.05). Although there was no significant difference, the pretest control group scores were higher when compared to the experimental group, while the same difference favored the experimental group in the post-test.

Table 4. Pearson and Spearmen Coefficients for the Correlation Between Mean ELSAT and TEMA-3 Scores

		Mathematical Competency Score (N=38)	
		Pretest	**Posttest**
PHONOLOGICAL AWARENESS SKILLS	*r*	0,475	0,522
	p	**0,003**	**0,001**
Matching the words that start with the same sound	*r*	0,253	0,334
	p	0,125	**0,040**
Rhyme awareness	*r*	0,302	0,273
	p	0,066	0,097
Recognizing the initial sound in a word	*r*	0,500	0,554
	p	**0,001**	**0,000**
Finding the initial sound of a word	*r*	0,502	0,687
	p	**0,001**	**0,000**
Creating a word that starts with a stimulus sound	*r*	0,292	0,325
	p	0,075	**0,046**
Creating a word that starts with the same sound	*r*	0,361	0,431
	p	**0,026**	**0,007**
Dropping syllables and sounds	*r*	0,319	0,598
	p	0,051	**0,000**
Combining sounds	*r*	0,160	0,174
	p	0,339	0,297
ALPHABET AWARENESS	*r*	0,578	0,397
	p	**0,000**	**0,014**
Writing concepts	*r*	0,592	0,429
	p	**0,000**	**0,007**
Book concepts	*r*	0,327	0,203
	p	0,045	0,222
Letter and word concepts	*r*	-0,053	0,187
	p	0,750	0,261
STORY COMPREHENSION	*r*	0,368	0,334
	p	0,023	**0,041**
MATCHING IMAGES	*r*	0,234	0,297
	p	0,158	0,070
PRE-WRITING SKILLS	*r*	0,228	0,282
	p	0,168	0,087

As seen in Table 4, the correlation between ELSAT and TEMA-3 scores was analyzed based on Pretest and posttest scores. There were weak and statistically significant positive correlations between Pretest and posttest TEMA-3 scores and Phonological Awareness Skills subtest total score, Recognizing Initial Sound of Words, Finding Initial Sound of a Word, Creating a Word Starting with Same Sound, total Alphabet Awareness subtest, and Writing Concepts subtest scores ($p < 0.05$). The TEMA-3 scores will increase with an increase in pretest and posttest total Phonological Awareness Skill subtest score, Recognizing the Initial Sound of Words, Finding the Initial Sound in a Word, Creating Words that Start with the Same Sound, total Alphabet Awareness subtest, and Writing Concepts sub-scale scores. Similarly, the TEMA-3 scores will decrease with a decrease in pretest and posttest total Phonological Awareness Skill subtest score, Recognizing the Initial Sound of Words, Finding the Initial Sound in a Word, Creating Words that Start with the Same Sound, total Alphabet Awareness subtest, and Writing Concepts sub-scale scores.

There was a positive, weak, and statistically significant correlation between the posttest TEMA-3 scores and the Phonological Awareness Skills subtest, Matching Words Starting with the Same Sound, Creating Words, Syllables and Sounds subtest, and Story Comprehension subtest scores ($p < 0.05$). The TEMA-3 scores will increase with an increase in posttest Phonological Awareness Skills subtest Matching Words Beginning with the Same Sound, Creating Words Starting with a Stimulus Sound, Dropping Syllables and Sounds Story Comprehension subtest scores. Similarly, the TEMA-3 scores will decrease with a decrease in posttest Phonological Awareness Skills subtest Matching Words Beginning with the Same Sound, Creating Words Starting with a Stimulus Sound, Dropping Syllables and Sounds and Story Comprehension subtest scores.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

In the study, it was determined that the mean Matching Rhyming Words, and Syllables and Sounds scores of the children in the control group were higher when compared to the experimental group, and the mean Pre-Writing Skills scores of the children in the experimental group were higher when compared to the control group before the application. However, it was observed that the pretest scores of the experimental and control groups were similar in general. Thus, it could be suggested that the early literacy skills of the experimental and control groups were similar before the program. In the study, it was observed that the post-test mean ELSTAT subset scores of experimental group students were significantly higher when compared to the control group. Thus, it could be argued that the early literacy skills program applied with the experimental group had a positive effect on early literacy skills.

Early literacy instruction is conducted with modeling, introduction and practice of various concepts and skills associated with reading, writing, listening and speaking. Active early literacy instruction provides developmentally adequate environments, materials, experiences and social support (Roskos, Christie, & Richgels, 2003). The effectiveness of educators varies in early literacy education (Stuhlman & Pianta, 2009). Only systematic, clear and adequate early literacy skills instruction leads to optimal child development. In a study conducted to determine the long-term effects of early literacy intervention, Suggate (2016) concluded that open literacy intervention and instruction significantly impacted the development of early literacy skills.

Similarly, in a study, Bayraktar and Temel (2014) investigated the impact of the Literacy Preparation Curriculum (LPC) on alphabet awareness, sound awareness, and children's literacy skills. They reported an increase in the literacy skill scores of the children in the experimental group compared to pre-application, and the increase was significantly higher than the one observed in the control group. In a study that investigated the effect of the "Sensory Education Program To Support Literacy Skills" on literacy skills of 61-66 months old kindergarten children, Yazıcı and Kandır (2014) reported that the literacy skill scores of the experimental group children were higher than the control group children. These study findings were consistent with the findings reported in the present study. Other studies reported similar results (Lust & Donica, 2011; Whiting, 2006; Orçan & Kandır, 2011).

Phonological awareness is one of the critical conventional literacy skills that develop during the preschool period. Children's competence in phonological awareness could vary significantly from one day to the next. While some children seem to develop several phonological awareness skills without direct instruction, for most children, the acquisition of phonological awareness largely depends on experience and education. More importantly, proficiency in more complex phonological awareness skills depends on available instruction for almost all children (Pence, 2006). Because phonological awareness tasks are often complex and abstract, acquisition requires an open and systematic education (Phillips, Christopher, & Lonigan, 2008). Munoz, Valenzuela, and Orellana (2018) conducted an in-service training course for kindergarten teachers, which included implementing a program to develop phonological awareness skills of the children. Based on the conducted teacher training, they analyzed the impact of phonological awareness skill interventions. The findings demonstrated that although the general mean score of the children in the control group increased, the children in the experimental group exhibited severe achievements in the acquisition of phonological awareness skills.

Alphabet awareness is an essential part of early literacy skills. Young children perceive writing as a tool to make sense, a communication method that includes spoken and written language. According to McGee and Morrow (2005), the alphabet awareness skills of the children could be developed in collaboration with adults and their peers in planned educational environments. Studies demonstrated that alphabet awareness is observed before three and improves significantly before the first grade (Hiebert, 1981; Huba & Kontos, 1985). Since there is a lot that children do not know about writing during the preschool period, different opportunities should be provided, and new experiences about writing should be offered via these opportunities (Clay, 2000). Thus, it could be suggested that alphabet awareness education is necessary, especially during the preschool period. The study findings that the increase in alphabet awareness skills of the children in the experimental group after the application was consistent with previous reports. Similarly, according to Ehri and Wilce (1985), some form of instruction is necessary to acquire alphabet awareness since preschool children could not analyze the alphabetical system without support.

It was considered normal for literacy education to start in formal education about 25 years ago; however, studies on early literacy revealed that the foundation of literacy skills established, especially in the preschool period, was fundamental (Adams, 1990). It was reported that early literacy skill acquisition of children during this period facilitated the acquisition of formal literacy skills such as reading, comprehension and fluency. However, several children start preschool with limited early literacy skills. Juel (1988) attributed the ongoing lack of literacy skills in children to the inadequacy of educational practices. To tackle this problem, early childhood educators should be trained in literacy education. Several experts stressed that children with limited early literacy

skills should be provided adequate early literacy skills education that emphasizes open, skill-oriented instruction (Neuman, Copple, & Bredekamp, 2000). Interactive instructional activities and environments improve children's motivation, encourage learning, and allow them to experience early literacy skills. After the curriculum was applied to children in the experimental group, a statistically significant difference was observed in early literacy skills when compared to the control group, indicating that the achievements and indicators developed for early literacy skills and the activities conducted for these achievements and indicators included early literacy skill measurements, were suitable for the aim and scope of the thesis and the children. It was demonstrated that it was suitable for the age and developmental attributes of the children, and the time allocated for the implementation of the program was adequate.

There was a weak and statistically significant positive correlation between the children's Phonological Awareness and Alphabet Awareness skills and their TEMA-3 scores. Thus, it could be suggested that specific early literacy skills affected the development of early mathematics skills. Early literacy and early math skills develop incoordination; thus, literacy skill delays are often accompanied by delays in mathematics skills and vice versa (Purpura et al., 2011). Children employ counting strategies to solve math problems (Butterworth, 2005). Counting requires phonological awareness skills to understand number signs. Geary (1993) reported that when children employ counting strategies to solve math problems, they recall phonological codes for number signs from memory and keep working memory problems. There are several reasons to think that early literacy skills may be associated with early math skills. Numbers and letters share joint physical and visual properties such as similar size and shape, straight-line formations, right angles, sharp angles, discontinuous and continuous curves (e.g., A, 4, E, 3, L, 7, B, 8). Their shape could identify both, and it could be difficult for children to distinguish them. Higher experience, the ability to distinguish between letters and numbers, and understanding that they have different communication functions pave the way for comprehending these representation systems. Thus, when the reasons such as the development of c early number and letter identification skills and the similarity of the cognitive skills employed in early learning of numbers and letters are considered, a correlation between alphabet awareness and numbers would be plausible (Munn, 1994; Scanlon & Vellutino, 1996. Betts, Pickart, and Heistad (2009) concluded that early literacy and early math skills were interrelated, and both skill groups predict future academic achievements. Manolitsis, Georgioub, and Tziraki (2013) reported that literacy and reading skills were significantly associated with early math skills. The findings were consistent with the present study's findings and confirmed that early literacy and early mathematics skills were related.

In conclusion, it was determined that the pretest scores of the experimental and control groups were similar before the application. The application of the Early Literacy Skills Curriculum had a significant positive effect on the early literacy skills of the children in the experimental group. There was a correlation between phonological awareness skills, alphabet awareness skills, and early math skills. The following were recommended based on the study findings and literature:

• The early literacy skill acquisitions and indicators included in the Ministry of National Education General Directorate of Preschool Education, Preschool Education Curriculum for 36-72 months old children, could be improved based on the literature.

• In early literacy skills, goals or objectives should be listed, the required material should be determined, manipulative materials should be adopted or developed in advance. Active participation of children should be ensured in activities. Flexibility should be considered very important in the implementation.

• Parents could guide their children's attention to the texts, signs and logos in the environment and talk about them to support the alphabet awareness skills.

• Similar studies could be conducted with larger groups and advanced analysis techniques in the future.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The related study was produced from Asya Çetin's doctoral dissertation. Saniye Bencik Kangal served as the consultant of Asya Çetin in this process and guided the whole work.

Ethics Committee Approval Information

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| Research Article / Araştırma Makalesi |

A Bibliometric Research from Past to Present on the Development of Individual Educational Plan (IEP) Studies in Early Childhood Education

Erken Çocukluk Eğitiminde Bireyselleştirilmiş Eğitim Planı (BEP) Araştırmalarının Geçmişten Günümüze Gelişimi Üzerine Bibliyometrik Bir Araştırma

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Keywords

1. Early childhood education
2.Individualized education programs
3.IEP
4.Bibliometric analysis

Anahtar Kelimeler

1.Erken çocukluk eğitimi
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3.BEP
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Abstract

Purpose: This study aims to examine scientific studies published in the Scopus database on Individualized Education Program (IEP) applications in early childhood education through bibliometric methods. In addition, it aims to provide researchers with in-depth information on the matter, as well as to shed light on publications to be made about it.

Design/Methodology/Approach: This study is a descriptive qualitative study based on a systematic analysis of the articles. The research population is made up of 108 studies in English published about this subject in journals scanned in the Scopus database between 1977 and 2019. In the analysis processes, an open-source code R statistics program was preferred. With the bibliometric analysis, both the research field's descriptive findings and social and intellectual findings were included.

Findings: According to the results obtained from the research, there has been an increase in the studies carried out in this field in the last 10 years. It has been stated that American-based studies come to the fore in collaborative tasks. It was observed that the first three articles with the most citations were studies mainly in the field of health and were included in journals published in the field of medicine. When the journals that publish the highest number of publications on IEP in early childhood are examined, it is seen that the journals "Exceptional Children," "Journal of Early Intervention," and "Topics in Early Childhood Special Education" have the most publications on the subject.

Highlights: In this study, the literature on IEP applications, which are critical for children with special needs in early childhood practices, was reviewed, and the characteristics of the studies were revealed. In this context, this research is essential in providing descriptive, social and intellectual information about the subject to those who want to do new research on this subject. As studies on this subject increase, the quality of the practices related to meeting the needs of children with special needs and families in the early childhood stage will also increase.

Öz

Çalışmanın amacı: Bu çalışmanın amacı, erken çocukluk eğitiminde Bireyselleştirilmiş Eğitim Programı (BEP) uygulamaları konusunda Scopus very tabanında yayınlanmış bilimsel çalışmaları bibliyometrik yöntemlerle incelemektir. Ek olarak, araştırmacılara konu hakkında derinlemesine bilgi sağlamayı amaçlamaktadır; bunun yanı sıra bu konuda yapılacak yayınlara da ışık tutmaktadır.

Materyal ve Yöntem: Bu çalışma nitel sistematik analiz desenli betimsel bir çalışmadır. Araştırmanın evreni, 1977-2019 yılları arasında Scopus veri tabanında taranan dergilerde bu konu ile ilgili olarak yayınlanan 108 adet İngilizce çalışmadan oluşmaktadır. Analiz süreçlerinde açık kaynak kodlu R istatistik programı tercih edilmiştir. Yapılan bibliyometrik analizle hem betimsel bulgulara hem de araştırma alanına ait sosyal ve entelektüel bulgulara yer verilmiştir.

Bulgular: Araştırmadan elde edilen bulgulara göre, son 10 yılda bu alanda yapılan çalışmalarda artış olmuştur. Amerikan merkezli çalışmalar işbirlikçi çalışmalarda ön plana çıkmaktadır. En çok atıf alan ilk üç makalenin daha çok sağlık alanında olduğu ve tıp alanında yayınlanan dergilerde yer aldığı görüldü. Erken çocukluk döneminde BEP ile ilgili en çok yayın yapan dergiler incelendiğinde, "Exceptional Children", "Journal of Early Intervention" ve "Topics in Early Childhood Special Education" dergilerinin en çok yayına sahip olduğu görülmektedir.

Önemli Vurgular: Bu çalışmada, erken çocukluk uygulamalarında özel gereksinimli çocuklar için kritik önem taşıyan BEP uygulamaları ile ilgili literatür gözden geçirilmiş ve çalışmaların özellikleri ortaya çıkarılmıştır. Bu bağlamda bu araştırma, bu konuda yeni araştırmalar yapmak isteyenlere konu hakkında betimleyici, sosyal ve düşünsel bilgiler sağlaması açısından önemlidir. Bu konudaki çalışmalar arttıkça erken çocukluk döneminde özel gereksinimli çocukların ve ailelerin ihtiyaçlarının karşılanmasına yönelik uygulamaların kalitesinin de artacağı düşünülmektedir.

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INTRODUCTION

There are individuals with typical development in societies regarding their individual and developmental characteristics and individuals with special needs who have different developmental features than their peers (Ozsoy, Ozyurek & Eripek 1998). (Sucuoglu, 1993) These individuals, who show developmental differences from their peers for different reasons, have difficulties acquiring skills appropriate for their age. Considering these difficulties experienced by individuals with special needs, the importance of meeting their educational needs by taking into account their individual differences emerges. Based on taking individual differences into consideration in the education process, which is the most essential condition of the right to education, the requirement of preparing BEP in the education of individuals with special needs has been born (Diken & Batu, 2010; Martin, Van Dycke, Christensen-Greene, Gardner & Lovett, 2006). Fiscus and Mandell (2002) also emphasized the importance of preparing BEP to meet their individual needs in children's education with special needs.

The education and opportunities offered in early childhood, which covers the 0-8 age period, when development and learning are the fastest, profoundly affect the child's development and learning speed. In this context, early intervention practices that take individual differences into account are critical in minimizing or eliminating the developmental difference between children with special needs and their peers in early childhood. The purpose of special education services provided in early childhood is to support and accelerate children who differ from their peers or are at risk and reduce the difference between them and their peers (Sucuoglu, 2001). Individuals with special needs with specific developmental differences from their peers also have the right to receive education under equal conditions with their peers based on equal opportunity in education. The setting in which the education of individuals with special needs should be carried out has changed in the historical process. In the past, the teaching of individuals with special needs was carried out in special education schools separate from their typically developing peers, but nowadays, mainstreaming education has been adopted, where they receive education under equal conditions with their peers (Kargın, 2004). Inclusive education enables these individuals to participate in educational environments and social life and ensures that individuals with normal development benefit equally from the opportunities they help from (Batu & Kırcaaali-İftar, 2011).

Considering the necessity of planning education programs in line with the individual characteristics, interests and needs of children with special needs (Çuhadar, 2006; Tuysuz, 2013), it becomes necessary to prepare an individualized education program (IEP) for children who are included in inclusive education in early childhood. Vuran (2004) stated that the primary purpose of the BEP prepared for children with special needs is to provide these children with educational opportunities to benefit at the highest level. In pre-school education institutions where early intervention programs are implemented, an individualized education program (IEP) needs to be prepared for children enrolled in inclusive education. IEP, which is ready for students with special needs and used in their education (Kamens, 2004), is a written document prepared by a team including the family, teacher, relevant experts, and, if appropriate, the child himself, according to their individual differences and needs, foreseeing that children with special needs benefit from the proper educational environments and support services at the highest level (Martin, Van Dycke, Greene, Gardner, Lovett, 2006; Vuran, 2004). Smith, Slattery and Knopp (1993) stated that IEP is a vital tool for providing a suitable learning environment for students with special needs and supporting their development at the highest level.

The necessity of preparing IEP for children who receive inclusive education was brought to the agenda for the first time with the PL.94-142 education law for all disabled children enacted in the USA in 1975 (Keogh, 2007). IEP applications ensure equality of opportunity in education, determining the child's educational needs with special needs and supporting the development of the child by making the necessary adjustments. According to the systematic instruction provided in line with the individual characteristics and requirements of the child with special needs, the learning speed and development course of the child will be supported at the maximum level. IEP is a program formed by the IEP team in the school where the child is educated, and it determines the current performance of the child, long and short-term goals, the type and duration of the exceptional education service to be offered to the child, and the extent to which the child will participate in it (Fiscus & Mandell, 2002; Martin et al., 2006). Studies on IEP applications reveal that IEP applications support children's development and benefit parents and teachers (Boavida, Aguiar, & McWilliam, 2014; Diamond & Carpenter, 2000; Grisham-Brown, & Hemmeter, 1998; Horn, Lieber, Li, Sandall, & Schwartz, 2000, O'connor, & Yasik, 2007; Ozturk & Eratay, 2010; Pretti-Frontczak & Bricker, 2000; Ruble, McGrew, Dalrymple, & Jung, 2010; Ruble, & McGrew, 2013; Tazebas, 2000). Smith and Brownell (1995) pointed out that the IEP prepared for children with special needs ensures that the most appropriate educational decisions are made for these children and that it is a document that enables them to take their existing potentials to a higher level.

To increase the quantity and quality of scientific studies conducted in certain fields or subjects, bibliometric researches are applied in which the publications produced are examined using mathematical and statistical methods. The bibliometric analysis method, which is one of the leading analyzes in the decision-making process related to science (Van Nunen, Li, Reniers, & Ponnet, 2018), is one of the techniques that enable the macroscopic, in other words, panoramic examination of the literature in a specific field or subject. With this analysis method, by revealing information on the characteristics of the scientific publications on the subject dealt with, the status of citation, the areas in which the studied researches have been clustered, what kind of changes they have undergone over the years, the collaborations made in the field (Hall, 2011; Kurutkan & Orhan, 2018), the most influential

authors, publications, prominent journals, countries and institutions can be determined. The bibliometry analysis method is a procedure that is made to evaluate the performance of the most publishing journals, institutions and countries on the subject to be researched and to reveal the latest developments, providing detailed information to researchers, and revealing the science and publication policies of the scientific world and countries (Kurutkan, Orhan, & Kaygisiz, 2017; Van Nunen et al., 2017; Wang, Pan, Ke, Wang, & Wei, 2014). Therefore, the examination of journals and scientific studies related to a certain discipline with the method of bibliometry analysis reveals the development of scientific studies in the relevant field and enables solutions to be found by identifying problems or deficiencies. (Kozak, 2003; Ulu & Akdag, 2015).

When the literature is examined, it is observed that there are studies about how IEP applications are carried out and their effects and results in different countries (Cuhadar, 2006; Fiscus & Mandell, 2002; Hettleman, 2004; Kontu & Pirttimaa, 2008; Menlove, Hudson & Suter, 2001; Santos, 2012). On the other hand, no bibliometric analysis of studies on IEP applications in the early childhood stage was found to reveal details about the social and intellectual structures of the publications. With this study, the bibliometric profile of the studies dealing with IEP in the early childhood stage was determined and examined in depth in parameters such as author, journal, country, institution and reference. In addition, by revealing the basic features of these studies, researchers have been presented with a broad perspective on the subject. Due to the lack of bibliometry studies on IEP in the early childhood stage in the world literature, it is thought that this study will fill an essential shortcoming in the field and will contribute to the literature by shedding light on future assignments.

The study aims to examine in detail the characteristics and tendencies of IEP in the early childhood stage by considering the bibliometric evaluation of the scientific publications made in the historical process. In line with this primary purpose, the following questions were sought.

(1) What are the general descriptive data (number of publications, authors, references and related indexes) of IEP research in early childhood education?

(2) What is the social and intellectual structure of IEP research in early childhood education (collaborations, social networks, concept maps)?

METHOD

Research Model

This research is a qualitative study based on a systematic analysis of mixed methods via the bibliometric analysis using the R programming language. A systematic analysis is a literature review that collects and critically analyzes multiple research studies or papers on a topic or question (Davies, 2004). Purposive sampling method and criterion sampling technique, which is common in qualitative research methods (Palys, 2008), were used, and keywords were sampling criteria. This study, which examines the bibliometric profile of scientific publications on IEP applications in early childhood education literature, is a descriptive one. Bibliometry can be defined as a set of methods that are used in the quantitative analysis of scientific studies published in a particular subject or field with mathematical and statistical tools, revealing information such as author, citation, institution, a country in the relevant topic or area, and offering a panoramic perspective for research (Bellis, 2009; Dogru, Guzeller & Celik, 2019; Rongying, & Limin, 2010).

Research Data

The data of this research consists of 108 scientific publications published between 1977-2019 in journals scanned the Scopus database due to the search made on 07.05.2020. The studies in the literature are available in different databases such as WOS, Scopus, Pubmed, Proquest. It is claimed that articles written in social sciences are found in WOS and Scopus databases, and Scopus offers a broader scanning scope (Martin Martin, Orduna Malea, Thelwall, & Lopez-Cozar, 2018).

Data Collection and Analysis

In the analysis processes, an open-source code R statistics program was preferred. The "bibliometrics" package, one of the packages of the program developed for bibliometric analysis, was used (Aria & Cuccurullo, 2017). The descriptive, social and intellectual structure of the data obtained from the study areas with the bibliometric methods used in the study was examined. To reach studies on IEP applications in the early childhood stage, English studies in which the words "early childhood education" or "preschool" together with the words "individualized education program" or "IEP" are filtered through the Scopus database with the help of the parameters below and downloaded in BibTeX format. While searching on the Scopus database, TITLE-ABS-KEY ("early childhood education" OR "preschool") AND TITLE-ABS-KEY (IEP OR "Individualized Education Program") AND (LIMIT-TO (LANGUAGE, "English") parameter has been determined. Descriptive analyses, conceptual structure map analysis, collaboration network analysis, historical direct citation analysis were applied by uploading the data to the R program via the bibliometric package. Thus, it was possible to reveal the intellectual and social structure related to the subject

dealt with in bibliometric research (Ramos - Rodriguez, & Ruiz - Navarro, 2004; Liu, Yin, Liu, & Dunford, 2015). The data included in the analysis within the scope of the study are general descriptive data and collaborations such as publications, authors, reference numbers and indexes related to these 108 publications, and the social and intellectual structure of magazines such as social networks and concept maps.

FINDINGS

1. General Descriptive Findings

Descriptive bibliometric informations of IEP applications in early childhood are given in Table 1.

Table 1. Descriptive Bibliometric Informations of IEP applications in early childhood education

Explanation	Result
Number of citations per study	18.43
Number of contributing authors	390
Studies with multiple authors	88
Studies with a single author	20
Number of studies per author	0.28
Number of authors per document	3.61
Average number of co-authors in studies	3.82
Collaboration Index (CI)	4.2

According to the information given in Table 1, it is determined that 20 of 108 studies in the Scopus database were carried out with the participation of a single author over 43 years, whereas the average number of co-authors in the studies was 3.82. The number of authors per document is 3.61. While the average number of co-authors expresses the average number of names seen in research in the field, the number of authors per document is a value obtained by dividing the total number of studies by the total number of authors. The difference between these two values is explained by the fact that any author is involved in more than one study. However, the Collaboration Index (CI value) is calculated to avoid the confusion that these two concepts can create (Ajiferuke, Burell, & Tague, 1988). The CI value reveals the number of authors per publication in multi-authors publications, calculated only on the collaboration of studies with multiple authors. The CI value of the studies discussed in this research was found to be 4.2. According to another finding of the study, the average number of citations per 108 studies on IEP in early childhood education is 18.43.

Figure 1 shows the distribution of the studies over the years.

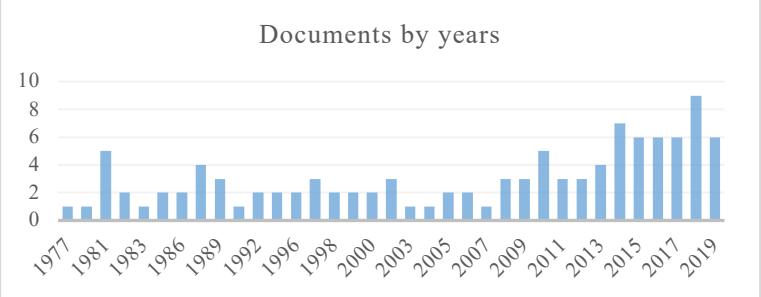

Figure 1. Distribution of studies by years

It was observed that most of the studies in the literature consisted of articles (n = 100). Additionally, there are 3 book chapters, 4 reviews and 1 research note among the studies. It has been determined that the Compound annual growth rate (CAGR) of the studies in the literature in the 43 years was 5.41%. CAGR shows the state of geometric progression that provides a constant rate over the historical process. Despite the relatively low CAGR value, it is understood that the studies tend to increase in the last 10 years (Figure 1).

Table 2 shows the author impacts.

Table 1. Author Impacts

Author	h-index	g-index	m-index	TC	NP	FPY
Horn E.	1	2	0.05	61	2	2000
Ruble L.A.	2	2	0.18	59	2	2010
Hemmeter M.L.	2	2	0.09	50	2	1998
Mcgrew J.H.	2	2	0.25	37	2	2013
Kontos S	2	2	0.09	25	2	1998
Bruder M.B.	2	2	0.33	16	2	2015
Justice L.M.	2	2	0.29	13	2	2014
Schmitt M.B.	2	2	0.29	13	2	2014
Atwater J.	2	2	0.66	4	2	2018
Greenwood C.R.	2	2	0.66	4	2	2018

TC: Total Citation, NP: Number of Publications, FPY: First Publication Years

According to the information given in Table 2, Horn E., Ruble L.A. and Hemmeter M.L. seem to be the researchers with the highest number of citations. All of the researchers in Table 2 have two studies on IEP applications in the early childhood stage. It is understood that Hemmeter M.L. and Kontos S. were included in the literature with their studies in 1998. Almost all researchers have equal h-index and g-index values in the context of studies on IEP applications in early childhood education. However, since the first years of research of Atwater J. and Greenwood C.R. are close, m-index values (0.66) differ positively from other authors.

Table 3 shows the most cited articles.

Table 2. Most Cited Articles

Title	Citation	TC	TCpY
1.Cognitive and Behavioral Outcomes After Early Exposure to Anesthesia and Surgery	Flick et.al., 2011	477	47.70
2.Longitudinal study of children with unilateral hearing loss	Lieu et.al., 2012	104	11.56
3.Positive association between attention-deficit/hyperactivity disorder medication use and academic achievement during elementary school	Sheffler et.al., 2009	92	7.67
4.Educational interventions in learning disabilities	Lerner, 1989	79	2.47
5.Salvage Therapy of Progressive and Recurrent Hodgkin's Disease: Results From a Multicenter Study of the Pediatric DAL/GPOH-HD Study Group	Schellong et.al., 2005	65	4.06
6.Increasing implementation of special education instruction in mainstream preschools: Direct and generalized effects of nondirective consultation	Peck et.al., 1989	65	2.03
7.The Pediatrician's Role in Development and Implementation of an Individual Education Plan (IEP) and/or an Individual Family Service Plan (IFSP)	Committee on Children with Disabilities 1999	62	2.82
8.Supporting young children's IEP goals in inclusive settings through embedded learning opportunities	Horn et.al., 2000	61	2.90
9.Examining the quality of IEPs for young children with autism	Ruble et.al., 2010	54	4.91
10. Team collaborative practices between teachers and occupational therapists	Barnes & Turner, 2001	50	2.50

TC: Total Citation, TCpY: Total Citation per Year

In Table 3, when the 10 most cited publications among the studies on IEP applications in early childhood education are examined, it was found that Flick et al.'s (2011) study received 477 citations, and Lieu, Tye-Murray, Fu's (2012) research received 104 medals, although they were published in relatively recent years. Although the total number of citations of some studies was high, it was observed that the annual average number of sources remained below 3.

Table 4 shows the journal impacts.

Table 4. Journal Impacts

Journal	h-index	g-index	m-index	TC	NP	FPY
Exceptional Children	4	6	0.10	74	6	1981
Journal of Early Intervention	5	6	0.13	72	6	1981
Topics in Early Childhood Special Education	5	6	0.21	131	6	1997
Journal of Autism And Developmental Disorders	3	3	0.27	95	3	2010
Pediatrics	3	3	0.14	631	3	1999
Young Exceptıonal Children	3	3	0.13	36	3	1998
Academic Pediatrics	2	2	0.18	41	2	2010
Federal Register	1	2	0.07	4	2	2007
Journal of Developmental and Behavioral Pediatrics	1	1	0.08	2	2	2008
Pediatric Physical Therapy	2	2	0.13	24	2	2005

TC: Total Citation, NP: Number of Publications, FPY: First Publication Years

When the impact values and publication information of the journals in which the studies on IEP applications in the early childhood stage are analyzed in Table 4, it is seen that the journals "Exceptional Children," "Journal of Early Intervention," and "Topics in Early Childhood Special Education" have the highest number of publications (n = 6) in the field and are the first to include publications. Even though it contains only 3 publications on the subject, it is understood that the most-cited journal in Pediatrics (n = 631). In connection with the closeness of the first publication year (2010) and the number of citations (95), the m-index value of the Journal of Autism and Developmental Disorders (0.27) was found to be higher than that of other journals. It is seen that the g-index and h-index values of the first three journals with the highest number of publications in the field differ from other journals in a positive sense.

2. Social and Intelectual Findings

2.1. Key Words and Factors

It is observed that the authors use a total of 233 different keywords in their studies. However, 813 Key Words Plus (KWP) were detected. The data contained in KWP are words or phrases that often appear in the titles of an article's references, but not in its own title (Garfield & Sher, 1993).

Figure 2 shows the world cloud and Figure 3 shows the Conceptual Structure Map.

Figure 1. Word Cloud

In Figure 2, when the word cloud obtained according to the logarithmic frequencies of the KWP data of the studies obtained within the scope of the study is examined, it is seen that words or phrases such as child, human, education, humans, female, male, adolescent, preschool child come to the fore. Logarithmic frequency-based representation helps the numerical data of words be displayed compactly even if they are in a wide range of values (Dehaene, Izard, Spelke, & Pica, 2008). In word clouds based on linear frequency distribution, the words' visibility level is less frequent because the terms are shown in parallel with the ratio of their numerical values to each other. In this context, the phrase cloud visualized in Figure 2 represents the most frequently used 50 KWP data.

Figure 3. Conceptual Structure Map

The words' approach to the zero points in the two-dimensional representation set out in the conceptual structure map obtained using the MCA method based on the KWP data in the studies discussed in Figure 3 shows that their everyday use in research has increased. The divergence of words from the zero point represents dissociated research. The concepts in the display and characterized by different colors represent clusters of studies with standard KWP data. When the groups formed by the words are examined, it is seen that the red collection represents individuals and management processes, the green cluster represents the variables in the study, the blue set represents education-oriented studies, and the purple group represents legal approaches.

1.1. Network Analysis

Values of the authors' impact factors (Table 2) provide information about the authors who significantly influence the literature. However, it is not possible to say that these data alone are sufficient. Historical Direct Citation analysis, which presents an intellectual flow, was applied to provide additional information to the data in Table 2.

Figure 4 shows the historical direct citation network, and Figure 5 shows the collaboration network.

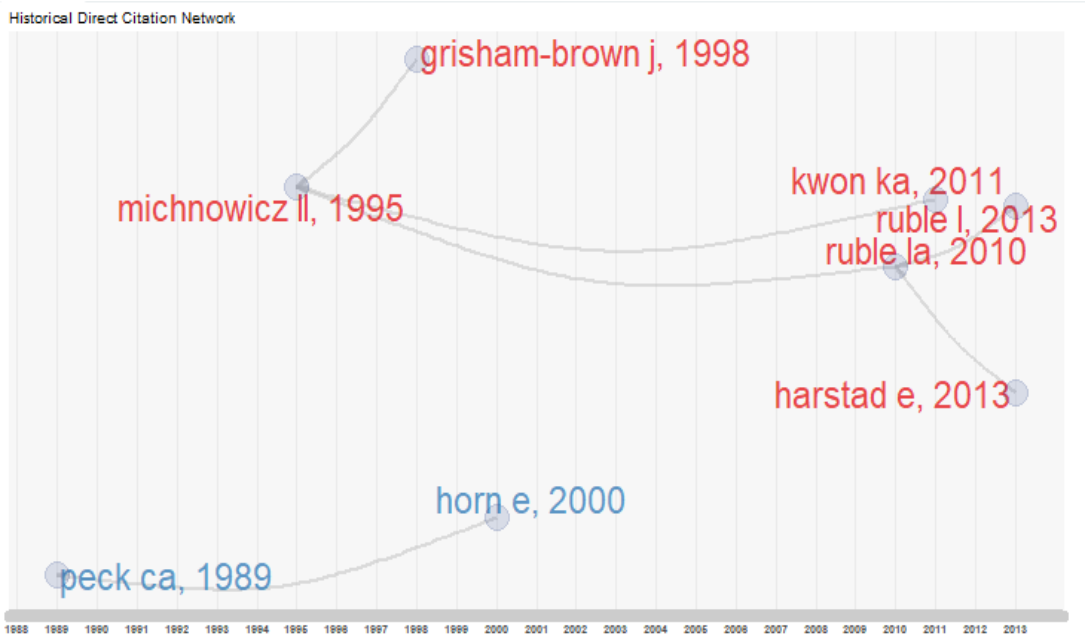

Figure 2. Historical Direct Citation Network

In Figure 4, researchers have examined which researchers have affected the researchers in a historical section to what extent, and it has been observed that the publications of some researchers directly affect other publications even after years. In this context, Peck, Killen, & Baumgart, D (1989) is seen to have affected Horn et al. (2000). Likewise, it is understood that the study of Michnowicz, McConnell, Peterson, & Odom (1995) has directly affected some studies (Grisham-Brown & Hemmeter, 1998; Harstad, Huntington, Bacic, & Barbaresi, 2013; Kwon, Elicker, & Kontos, 2011; Ruble et al., 2010; Ruble et al., 2013) for 18 years.

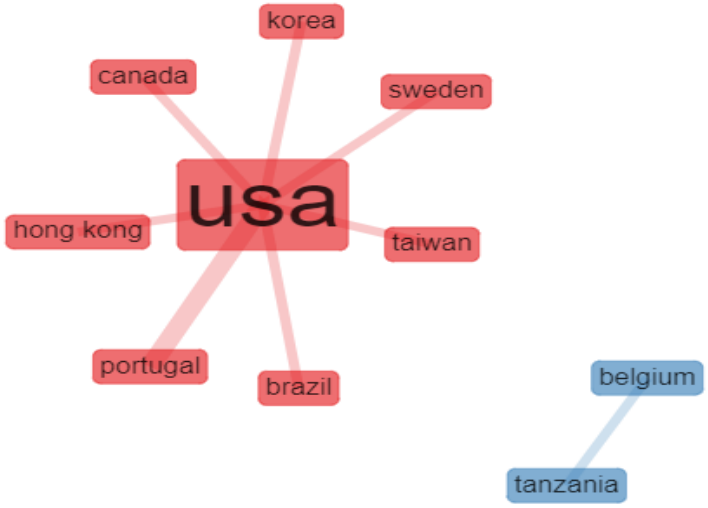

Figure 3. Collaboration Network

The country x country adjacency matrix determined according to the frequency of co-broadcasting is used in the cooperation network in the study. When Figure 5 is analyzed, where publications jointly made by individuals or organizations are presented through a social network, it is understood that a limited number of countries cooperate. The size of the nodes (the area covered by the country names) in the web gives an idea about the broadcast frequencies of the nations. The colors of the nodes indicate the clusters they belong to in the context of their association. The thickness of the edges between the nodes indicates the frequency of the relationship. While visualizing Figure 5, the "Fruchterman-Reingold" power-based order algorithm and the "association" normalization method are applied. In this connection, it is seen that among the countries in the red cluster (USA, Hong Kong, Portugal, Brazil, Taiwan, Sweden, Korea, Canada) and between the countries in the blue set (Belgium, Tanzania) mainly broadcast together.

DISCUSSION

In this study, 108 different English studies about IEP applications in early childhood education, published in journals scanned in the Scopus database from 1977 to 2019, were identified, and their descriptive, social and intellectual structure was examined with the help of bibliometric techniques. When the results obtained in the research findings are evaluated, it is seen that studies with multi-authors are preferred more in studies dealing with IEP in early childhood education in the Scopus database over 43 years. The number of authors per document is 3.61 in studies with multiple authors reveals that these studies are conducted in teams of 3 or 4 people. Having lessons with various authors in scientific research increases the quality of the study by bringing together the knowledge of different authors (Evren & Kozak, 2012). Therefore, the high number of collaborative studies with multiple authors on the relevant subject contributes to world literature. The CI value of 4.2, which is calculated only based on collaborations in studies with various authors and reveals the number of authors per publication, indicates that many people are willing to contribute to the tasks simultaneously. The relatively low number of studies per author in the study (0.28) can be interpreted as a higher number of authors than the number of studies conducted.

Depending on another result of the study, it is seen that the studies conducted mainly consist of articles, and the lessons that were taught have increased in the last 10 years. This finding reveals that interest in IEP in early childhood education has risen rapidly in recent years. This result which based on studies that demonstrate the effect of the content and quality of IEP applications in early childhood education on the development of children with special needs (Boavida, Aguiar, & McWilliam, 2014; Diamond & Carpenter, 2000; Grisham-Brown, & Hemmeter, 1998; Horn et al., 2000, O'Connor, & Yasik, 2007; Ozturk et al., 2010; Pretti-Frontczak & Bricker, 2000; Ruble et al., 2010; Ruble et al., 2013; Tazebas, 2000) suggests that it may have led to increased interest in this subject.

As stated in another finding of the research, it is observed that the most cited authors among the studies discussed within the scope of the survey are Horn (2000), Ruble (2010) and Hemmeter (1998). It was determined that each of these authors conducted

two studies on IEP in the early childhood stage. Horn (2000), with the work named "Supporting young children's IEP goals in inclusive settings through embedded learning opportunities" and Ruble (2010) with the result named "Teacher and child predictors of achieving IEP goals of children with autism" and Hemmeter (1998) with the work titled as "Writing IEP goals and objectives: Reflecting an activity-based approach to instruction for young children with disabilities," they made their first publications in this field. Although the number of authors (n = 390) who contributed to the studies on IEP in the early childhood stage is relatively high, it is an exciting finding that the authors have published at most twice on this subject. It is noteworthy that the h-index and g-index values of the authors working on IEP in the early childhood stage are generally equal to each other, but because their first years of study are close to each other, the m-index values of the authors named Atwater J. and Greenwood C.R. differ from other authors in a positive sense. This result reveals that the h-index or g-index values alone are insufficient in evaluating the studies conducted in a particular field. Based on this result, it can be said that more data are needed to determine which author is more effective in evaluations made in certain areas.

Another finding of the study shows that Flick et al.'s (2011) study titled "Cognitive and Behavioral Outcomes After Early Exposure to Anesthesia and Surgery" was most cited with 477 citations, and Lieu et al. (2012) "Longitudinal study of children with unilateral hearing loss" is the second study with 104 sources. Sheffler et al.'s (2009) study "Positive association between attention-deficit / hyperactivity disorder medication use and academic achievement during elementary school" is the third cited. When the contents of the most cited articles and the journals they were published in were examined, it was seen that all three studies were mainly studies in the field of health and were included in journals published in the field of medicine. Although the concept of IEP is a concept that concerns educational environments, this finding reveals that studies conducted with a multidisciplinary approach in health sciences and educational sciences receive more citations. Thus they are considered as more qualified studies. Even though the number of sources reflects the quality of a publication, Smith (2007) is also highly correlated with the time elapsed since the publication of a study (Qiu & Chen, 2009). Therefore, although it is thought that studies with an older publication date will receive more citations, it is noteworthy that the most cited studies within the scope of the research are more recent compared to other studies. Even if the studies conducted in relatively old dates have contributed significantly to the field, time passed since the research has decreased the average number of citations. This result gives an idea about the dynamic nature of science. Milfont and Page (2013), with their comments supporting this finding, pointed out that the number of citations being related to the published year does not mean that the recently published studies will have a low impact on the field. Despite the total citation numbers being high in some studies (Lerner, 1989; Peck et al., 1989; Committee on Children with Disabilities, 1999; Horn et al., 2000; Barnes & Turner, 2001), the annual average citation numbers remained below three. According to this result, it is seen that the authors mentioned above receive more citations in specific periods, and the distribution of sources by years is at three levels. When the publication dates of these studies are considered, it is seen that the studies are old-dated. In this context, it can be thought that interest in these studies has decreased over the years, and the number of annual citations has decreased accordingly.

When the journals that publish the highest number of publications on IEP in the early childhood stage are examined, it is evident that the journals "Exceptional Children," "Journal of Early Intervention," and "Topics in Early Childhood Special Education" have the most publications on IEP in early childhood stage. Among these journals, "Exceptional Children" and "Journal of Early Intervention" were the first journals to include publications on IEP in early childhood education in 1981. Significantly, the journals within the scope of the research are concentrated in the field of education; nonetheless, the effect of journals in the field of medicine is relatively high. It is a remarkable finding that the Pediatrics journal, in which studies in medicine are published, is the most cited, although only 3 publications have been published on the subject. In this context, it can be said that the pediatrics journal, which includes publications in the field of medicine, contains qualified studies on IEP. Asan (2017) pointed out that citing a study published in a scientific journal in other publications is an essential criterion for the journals in which the publications are included in the scope of international indexes. The fact that the most frequently cited studies on IEP in the early childhood stage are primarily in the field of medicine reveal that in recent years, with the increase of interest in special education and therefore IEP in the early childhood stage, studies in the field of medicine besides the field of education, have increased. Therefore, depending on this finding, it can be mentioned that there are multidisciplinary perspectives in the studies and their positive contribution to the field. Researches made in different disciplines related to the subject may have enabled the studies dealing with IEP in early childhood education to become widespread in recent years. Another remarkable finding of the study is that the Journal of Autism and Developmental Disorders journal has a higher m-index value than other journals. The higher m index value of the relevant journal may be that the Journal of Autism and Developmental Disorders includes relatively more recent publications, and the number of citations to published studies is high due to the high number of qualified studies.

It is seen that the g-index and h-index values of the first three journals (Exceptional Children, Journal of Early Intervention, Topics in Early Childhood Special Education) with the highest number of publications in the field differ positively from other journals. Indexes such as h, g, m are a value that shows how many of the publications used in evaluating scientists, journals, institutions and countries are cited above a particular value (Al, 2008; Arencibia-Jorge, Barrios-Almaguer, Fernández Hernazi and Carvajal–Espino, 2008; Braun, Glänzel, & Schubert, 2006, Czajbók, Berhidi, Vasas, & Schubert, 2007). Therefore, when evaluating the outcomes of scientific research, the h-index is preferred rather than criteria such as the total number of publications used, the total number of citations, the number of citations per publication, the number of important publications, and the total number of

sources to significant publications (Hirsch, 2005). The high number of citations alone does not make the h-index high. Consequently, the h-index value of the studies or journals with a small number of publications with a high number of citations is below. Although Pediatrics journal is the most cited (n = 631) journal, the reason for its lower h index compared to other journals may be that it includes only three publications on the subject.

It was determined that the most famous words or word clouds in the word cloud formed according to the logarithmic frequencies of the KWP data of studies on IEP in early childhood education are children, human, education, humans, females, males, adolescent, preschool child. It can be said that it is an expected result that the keywords selected on the relevant subject focus on children and education. According to the clusters of words and the results of the findings, it is seen that the most common themes revealed in the researches are individuals and management processes, variables dealt with in research, education-based studies and finally, legal approaches. As stated by this finding, it can be said that the least emphasized subject in the studies conducted in the legal context, such as laws and regulations.

As a result of the Historical Direct Citation analysis, which was carried out with the thought that it was not enough to consider the authors' impact factors alone, it was examined which researchers influenced which researchers in the historical process. Horn et al. (2000), who was the most cited author in his studies on IEP in early childhood education, was influenced by the study titled "Increasing implementation of special education instruction in mainstream preschools: Direct and generalized effects of nondirective consultation" published by Peck et al. in 1989 in the Journal of Applied Behavior Analysis. However, it was concluded that the study titled "Social goals and objectives of preschool IEPs: A content analysis" published by Michnowicz et al. in the Journal of Early Intervention in 1995 directly affected the publications of many researchers for 18 years (Grisham-Brown & Hemmeter, 1998; Harstad et al., 2013; Kwon et al., 2011; Ruble, 2010; Ruble et al., 2013).

According to the latest findings obtained from the research, it is understood that cooperation between countries is quite limited in studies dealing with IEP in early childhood education. In the collaborative studies, the studies originating from the United States come to the fore in the cooperation network. It is seen that US-based studies were conducted with (Hong Kong, Portugal, Brazil, Taiwan, Sweden, Korea and Canada). IEP for children who receive inclusive education was first put into practice with the PL.94-142 law enacted in the USA in 1975. Therefore, it can be said that the study done in the USA on this issue is predominant and is at the center of the cooperation network with other countries. Apart from these countries, it has been determined that collaborative studies are conducted between Belgium and Tanzania. By this result of the research, it can be said that countries with geographic proximity, in general, tend to publish studies together.

CONCLUSION AND RECOMMENDATIONS

In conclusion, in this study, the literature on IEP applications, which are critical for children with special needs in early childhood practices, was reviewed, and the characteristics of the studies were revealed. In this context, this research is essential in providing descriptive, social and intellectual information about the subject to those who want to do new research on this subject. As studies on this subject increase, the quality of the practices related to meeting the needs of children with special needs and families in the early childhood stage will also increase.

This study has some limitations. First, the bibliometric analysis used in this study draws a general framework for the field but does not provide a detailed content analysis. Some authors' research may not be accessible in bibliometric research because they do not include possible search terms in titles, keywords, and abstracts on the relevant topic. For this reason, studies that are thought to be effective in the field can be ignored. In this study, only English publications in the Scopus database were considered. Hence, qualified studies published in different databases or in other languages on IEP in the early childhood stage researched within the scope of this study may not have been identified. Therefore, it is recommended to scan the tasks in different languages and include WOS, Google Scholar, Pubmed, Proquest in the studies.

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Statements of publication ethics

I hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

This research was conducted with a single author. I declare that all actions taken during the research process belong to me.

Ethics Committee Approval Information

This research is a qualitative study based on systematic analysis of the articles on mixed methods via the bibliometric analysis. Since human and animal subjects are not used in this study ethics committee approval is not required according to the TR Index Journal Evaluation criteria.

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| Research Article / Araştırma Makalesi |

Turkish Language and Culture Education in Flanders, Belgium: A model proposal[1]

Belçika Flaman Bölgesi'nde Türkçe ve Türk Kültürü Eğitimi: Bir Model Önerisi

Ebru Karataş Acer[2], N. Feyza Altınkamış[3]

Keywords

1. Turkish Language and culture
2. Flanders, Belgium
3. Educational Planning
4. Institutionalism
5. A model

Anahtar Kelimeler

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3. Eğitim Planlaması
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Abstract

Purpose: In this paper, "Turkish language and culture classes (TLCL) " in Belgium are chronologically presented from past to present and based on the challenges and problems faced, a case study was conducted. Furthermore, an integrated model is presented to address the problem of suspended and ill-structured Turkish language education in the Flemish Region

Design/Methodology/Approach: Since 30 June 2016, Turkish language and culture classes have been suspended in the Flemish Region of Belgium, a federal state composed of communities (Flemish, French, and German-language) and regions (Flemish, Walloon, and Brussels Capital), which makes it problematical for the Turkish community to keep its language and culture alive through classes. Since 2016, some local NGOs have been able to organise 'Turkish-language and culture classes' in the Flemish Region through programmes funded by the Presidency for Turks Abroad and Related Communities in Turkey. While this appears to be a short-term solution to the problem of suspended Turkish language classes at schools, a new model should be drafted in order to adopt an institutionalised and longitudinal school-based approach as a long-term solution.

Findings: For an effective Turkish-language and culture teaching and learning process, some important and sustainable measures should be taken into account. A negligence suspension after 2016 has affected Turkish-language and culture teaching and learning processes, heralding a period of regression. Pursuant to a Protocol signed by the Flemish Government and Turkish Government, TLCL were resumed in Flanders in the 2019-2020 academic year, with a model-based approach presented in this study.

Highlights: This educational model came about thanks to a theme-based, multilingual approach, which is integrated successfully in Flemish schools by bilingual, local teachers living in Flanders.

Öz

Çalışmanın amacı: Bu çalışmada, Belçika'da "Türkçe ve Türk Kültürü Dersi (TTK)" olarak ele alınan eğitim sürecinin geçmişten günümüze seyri ele alınmış ve bu süreçte yaşanılan sorunlara kronolojik olarak değinilerek bir durum değerlendirilmesi yapılmıştır. Ayrıca bu makale kapsamında, TTK eğitim sürecinde yaşanılan en önemli sorunların başında olan bu sürecin Flaman Bölgesi'nde devam edememesi sorununu giderebilmek üzere bir model önerisi sunulmuştur.

Materyal ve Yöntem: Kendi içinde üç farklı bölgenin olduğu (Flaman Bölgesi, Brüksel Başkent bölgesi, Valon Bölgesi) ve kendi iç işlerinde özerk olarak yönetilen federal bir ülke olan Belçika'da Flaman Hükümeti'nin kanun ve uygulamaları ile 30 Haziran 2016 tarihinden itibaren tüm Flaman Bölgesi'nde Türkçe'nin öğretimine yönelik Türkçe derslerinin verilmesi durdurulmuş ve böylece Türk kültürünün bu dersler ile öğretilmesinin önü kesilerek bu bölgede yaşayan vatandaşlarımızın kendi kültür ve dilini yaşatabilmesi çok daha zorlaşmıştır. 2016 yılından sonra Flaman Bölgesi'nde Yurtdışı Türkler ve Akraba Topluluklar Başkanlığı (YTB) destekli dernekler tarafından yürütülen projeler ile kısa vadeli süreç ilerliyor gibi görünse de sorun hala devam etmekte ve kurumsal bir yapı ile okula dayalı eğitimi öngören uzun soluklu çözüm önerilerine ihtiyaç duyulmaktadır.

Bulgular Türkçe'nin ve Türk kültürünün sağlıklı bir çerçevede öğrenilmesi ve etkin bir şekilde kullanılmasına yönelik oldukça önemli adımlar atılması gerekmektedir. 2016 yılından beri bir sürüncemede kalan bu eğitim öğretim süreci ciddi bir gerilemeye gitmiştir. Bu sorunları gidermek üzere Flaman Hükûmeti ve Türkiye arasında imzalanan ek protokolde anlaşmaya varılan noktalar dikkate alınarak, Türk makamlarının desteği ile 2019-2020 eğitim öğretim yılında, bu makale kapsamında geliştirilen yeni bir eğitim modeli ile Flaman Bölgesi okullarında Türkçe dersleri yeniden başlamıştır.

Önemli Vurgular: Bu eğitim modeli, Flaman bölgesinde ikamet eden ve istihdam edilecek öğretmenler tarafından ve tema temelli bir eğitim öğretim müfredatına dayalı olarak Flaman Bölgesi okullarına entegre olmuş bir model olarak tasarlanmıştır. Bu makale kapsamında Flaman Bölgesi'nde mevcut olan soruna çözüm önerisi olabilecek kurumsallaşmış bir TTK eğitim modeli geliştirilmeye çalışılmıştır.

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INTRODUCTION

In Belgium, "Turkish-language and culture classes (TLCL)" have been given by the Education Counsellor of the Turkish Embassy in Brussels through teachers appointed by Turkey. In Brussels and in Wallonia, these courses are still being given within the framework of the Openness to Languages and Culture Programme. In Flanders, however, these lessons cannot be given (see Table 1). As a federal state, Belgium is composed of three communities (the Flemish Community, the French-speaking Community, and the German-speaking Community) and three regions (the Flemish Region, the Brussels Capital Region, and the Walloon Region. As a result of the regulations followed and the decisions taken by the Flemish Government, TLCL was suspended on 30 June 2016. This was an obstacle for the children of Turkish origin to continue learning their own culture and language.

At a first glance, the abolition of TLCL stemmed from administrative and legal issues, rather than educational ones. As a result of the 6th state reform (Powers Reform), in Belgium, the power of work permit was transferred to regions. Then, the Flemish Government decided not to give work permits to anyone who does not live in this region and who does not pay social security. This signalled the end of TLCL in 2014. In line with this ruling, teachers appointed by Turkey were no longer granted a special residence permit (diplomatic residence permit) and these teachers were directed to municipalities where they lived to apply for their official residence permit, which was the process of receiving residence permit by all foreigners in Belgium. The first document, however, to be submitted in the application for an official residence permit is the declaration of one's work and pay slips given by an employer in Belgium. As these teachers were appointed by Turkey and as they received their salaries from Turkey, their official pay slips were not considered the proper documents. As a result, they could not complete the process of receiving official residence permits. In the academic year of 2014-2015, a protocol amendment was signed between the Flemish Government and Turkey and the teachers who had already been in Belgium at that time could work till the end of 2015, which was a temporary solution for these teachers. Following this, the second protocol was signed between the Government of Flanders and Turkey, agreeing on a new arrangement. According to this new ruling, the system of TLCL will be changed into a renewed approach in which TLCL will be given by members of the Turkish Community in Flanders. As this article is being prepared, no concrete action has been taken by either party (Altınkamış, 2019).

In the academic year of 2017-2018, TLCL began in different non-governmental organisations in the framework of the Anatolian Weekend Schools/Turkish Time programme of the Presidency for Turks Abroad and Related Communities in Turkey. Today, these programmes are still running. In addition, in the academic year of 2018-2019, two teachers of Turkish origin, who are official residents in Belgium and teaching in Belgian schools, started to TLCL in their schools as extracurricular activity in Ghent and Houthalen, which was again supported by the Presidency for Turks Abroad and Related Communities in Turkey. It seems that the projects supported by the Presidency for Turks Abroad and Related Communities in Turkey offer temporary and short-term solutions. New models, however, should be designed for a holistic and institutional process, because the current position of TLCL should also be analysed in terms of educational aspect besides political, legal, and administrative aspects in order to gain a holistic educational perspective.

Another important point related to TLCL is the curriculum. Today, teaching materials based on the educational programme in Turkey is mainly followed by monolingual Turkish teachers. These materials do not address the current needs of Turkish-Dutch bilingual children. For these reasons, a new educational programme and curriculum are urgently required to provide an effective framework and a better planning and to solve the current problems.

Serious steps should be taken to teach Turkish language and culture in an efficient way. Owing to the problems which cannot be solved, and which block the process, teaching and learning Turkish language and culture have suffered. As an answer to these problems, in this article, an institutionalised TLCL model has been developed and introduced. This model aims to embrace all decisions agreed by both parties in the 2nd protocol, namely teachers who are official residents in Flanders (to be employed by the Flemish Government in the long run), a theme-based curriculum integrated in the official curriculum adopted in Flemish schools. This model was followed by the Institute for Turkish Studies, Integration and Research in the academic year of 2019-2020 as a pilot project. This article aims to present the rationale, planning and the implementation process of this project. In addition, suggestions will be given for the future of TLCL in Flanders.

Table 1. The background of Turkish Language and Culture Education in Belgium

Date	Chronological Phases	Explanation
29 December 1958	The cultural agreement signed between Turkey and Belgium	
16 July 1964	The bilateral labour agreement between Turkey and Belgium	
1977	The programme "Mother Tongue and Culture" was replaced by the programme "Openness to Languages and Cultures", following the EU regulation in 1977 Teachers appointed by Turkey started to give Turkish language classes in different associations working in close collaboration with the Turkish community.	The general objective of Turkish mother tongue classes in that period was based on the fact that immigrants of Turkish origin were guestworkers and they would eventually return to their home country. Therefore, they were not encouraged to to maintain their mother tongue and culture.
1980-1990	Milder actions	For example, the municipality of Ghent employed teachers to give Turkish language classes.
1997	The programme "the openness to languages and cultures" followed in Wallonia and in Brussel continued between the period of 1997-2000, including Greek, Turkish, Moroccan, Portuguese, and Italian children.	
2001	This programme was renewed and used between the period of 2001-2005. It was changed into the format of a bilateral agreement and ran between 2006-2009.	Romania was included in this programme in 2008, Spain in 2009 and China in 2011.
2014-2015 (1st protocol amendment: 23/12/ 2014)	The 1st protocol amendment signed between the Republic of Turkey, Turkish Embassy in Brussels (Ambassador Hakan Olcay) and the Flemish Minister of Education (Hilde Crevits) (the period of validity: 1/9/2014-15/07/2015)[4]	This protocol amendment only affected the academic year of 2014-2015. At that time, there were 8 teachers appointed by Turkey in Flanders.
15 July 2015	The end of the 1st protocol amendment	The end of the appointment of Turkish and Turkish culture teachers by Turkey

[4] Based on an interview with the Republic of Turkey, Turkish Embassy in Brussels (17 June 2019).

continued from Table 1

Date	Chronological Phases	Explanation
17 July 2015	The 2nd protocol amendment signed between the Republic of Turkey, Turkish Embassy in Brussels (Ambassador Hakan Olcay) and the Flemish Minister of Education (Hilde Crevits) (Memorandum of Understanding)	This only covered the period of 17/07/2015-30/6/2016. Teachers appointed by Turkey received their residency permits by following the official procedures in municipalities where they lived.
After the period of 30/6/2016	No Turkish language and Turkish culture classes in Flanders (out-of-school-hours)	
2017-2018	Two projects (Turkish Language and Culture, History, Religion, Arts) were started by two local NGOs in collaboration with the Presidency for Turks Abroad and Related Communities in Turkey under the programme of Anatolian Weekend Schools.	Turkish Language and Culture, history, religion, and arts classes were given as part of the programme of "Anatolian Weekend schools" financed by the Presidency for Turks Abroad and Related Communities in Turkey.
2017-2018	'The project: From Home Language to School Language'	Turkish Language and Culture classes were given within the framework of a scientific project supported by Ghent University and the Ghent municipality and in collaboration with the Education Department of the Turkish Embassy in Brussels. This was a project in which bilingual instruction was provided to children aged 5-12. This project was not allowed in the academic year of 2018-2019 because of political discussions in the Flemish Government.
2018-2019	Turkish Language and Culture classes in progress through projects by NGOs and financed by the Presidency for Turks Abroad and Related Communities in Turkey as part of the programme of "Turkish time".	Turkish Language and Culture classes were given within the framework of "Turkish time" by different NGOs and in collaboration with the Presidency for Turks Abroad and Related Communities in Turkey and two teachers of Turkish origin in Ghent and in Houthalen as an extracurricular activity.
2019-2020	"Teaching Turkish through a thematic approach in Flemish schools" was started in pilot schools out of school hours in Flanders. This project was financed by the Presidency for Turks Abroad and Related Communities in Turkey	Turkish and Turkish Culture classes were given by the Institute of Turkish Studies, Integration and Research within the framework of collaboration with the Presidency for Turks Abroad and Related Communities in Turkey in 6 pilot schools. The classes were given by the teachers who were official inhabitants of Belgium and through a programme prepared in line with the Flemish educational thematic programme. Also, different NGOs organised Turkish Language and Culture classes in collaboration with the Presidency for Turks Abroad and Related Communities in Turkey as part of the programme of "Turkish education".
2020-2021	"Teaching Turkish language through a thematic approach in Flemish schools" funded by the Presidency for Turks Abroad and Related Communities in Turkey is in progress as extracurricular activity.	The project held by the Belgian Institute of Turkish Studies, Integration and Research is in progress in 8 pilot schools. Also, different NGOs organise Turkish-language and culture classes supported by the Presidency for Turks Abroad and Related Communities in Turkey as part of the programme of "Turkish education".

The Rationales Behind the Resuming Over the Turkish-Language and Culture Classes (TLCL)

In the process of two-sided socialisation, Turks living abroad go through integration phases into the host society, while protecting their own identity. This brings different cultures and different identities together. The heterogeneous situation based on these differences presents struggles, problems, and difficulties. Language maintenance is at the top of the struggles that Turks living abroad face. Drastic steps should be taken to maintain the Turkish language. Considering the fact that 4th-generation Turks live in Western Europe today, transmission of mother tongue and culture from one generation to another requires more attention. Following the bilateral labour agreement in the 1960s, the number of Turkish people reached a considerable level, sufficient to make their voices heard in the society where they live. However, as the Turkish community fails to make its demands known in a structured way to the ruling government, this need has become a problem. The current situation of TLCL exemplifies this.

The Suspended Turkish-Language and Culture Classes (TLCL)' in the Flemish Region

Since 30 June 2016, the TLCL have been suspended in the Flemish Region of Belgium, a federal country where this education continues as an extracurricular activity in schools with teachers coming from Turkey. Since the 6th State Reform (Powers Reform), passed in 2012, the power of work permit was transferred to regions. Then, the Flemish Government decided not to give work permits to anyone who does not live in this region and who does not pay social security. This signalled the end of TLCL in 2014 because teachers coming from Turkey have no right to get residence/work permits. This delegation of power turned the state and local authorities into key decision-makers in authorising the power of residence/work permits. Yet, some alternatives have been discussed that TLCL can be organized as an extracurricular activity in schools with local Turkish teachers living in Flanders. As local authorities, like municipalities and school principals, they also play a key role in authorising their schools for this alternative. This local permission is not as easy as it seems, because it requires the approval and support of the TLCL. This local subjective permission for TLCL affects the process and compromises access to education for all. These TLCL should be well structured and planned not through subjective permission but in a scientific-objective manner.

Decreasing Demand for the Turkish Language and Culture Classes (TLCL)

In Western Europe, however, an inconsistent demand for TLCL has been observed among the Turkish community. Regarding the field research of this study and the observations/experiences of the authors, demand by the Turkish society for these classes are inconsistently changing either in a positive or a negative sense. The Turkish community's lack of response, however, amid suspended TLCL in the Flemish Region is remarkable, to say the least. Furthermore, the recent sharp decline in the numbers of students in TLCL given in the Flemish Region draw the attention (Sarıkaya, 2014).

Bilingualism and Academic Success

Language and cognitive development are related to the school success of bilingual children. According to Cummins (1979), it is highly crucial for bilingual children that a basis in their L1 be provided in order for them to experience the positive influence of bilingualism on their cognitive development. In line with Cummins (1979), Yağmur (2014) mentions that this basis functions as a linguistic and cognitive threshold (Yağmur, 2014). According to threshold theory, a bilingual child should attain the first threshold level in both languages in order to derive the maximum benefit from bilingualism. Following this, it can be said that it is crucial for children of Turkish origin to follow a parallel language development both in Turkish and in Dutch.

In studies analysing language skills in Dutch, systematic academic failures of children/students of Turkish background have been repeatedly shown in the studies. Belfi et al. (2014) observed Turkish children's low achievement in spelling and reading skills throughout primary school education in comparison to other ethnic groups in Flanders. Similarly, Vanbuel et al. (2016) concentrated on 6-year-olds of Moroccan and Turkish origin and compared them in terms of novel vocabulary learning. According to their results, children of Turkish origin were worse than their Moroccan peers in acquiring novel object labels and in understanding the story line. A recent study was conducted by D'Haeselaar et al. (2016), where a comparison was drawn between Turkish-Dutch six-year-olds bilingual children and Dutch monolingual peers through CELF-4, a test for early language development. They, too, found that the Turkish-Dutch sequential bilingual children in their study showed lower results when they were compared to their Dutch-speaking monolingual peers and other non-Western immigrants.

There are also studies addressing the Turkish language skills of Turkish-Dutch bilingual children. In particular, a recent study, conducted by Akoğlu and Yağmur (2016), focused on Turkish immigrant children's L1 development. In their study involving 30 bilingual Turkish-Dutch children and 30 monolingual Turkish children around 6 years old in the Netherlands, they found that Turkish immigrant children were not as successful as their monolingual peers in terms of L1 skills. In addition, it has been noted that socio-pragmatic skills of eight-year-old bilingual children of Turkish origin are not at the same level as those of their age-matched monolingual peers (Backus and Yagmur, 2019). They suggested that these lower skills in their L1 may lead to lower skills in their L2. Bezcioglu-Goktolga (2016) carried out a study with 24 Turkish-Dutch bilingual children between 5 and 8 years old in the Netherlands. Focusing on this group of children's home language skills in comparison to Turkish monolinguals, she observed that Turkish-Dutch children performed poorly on several Turkish language tasks such as word definition, word order repetition

and grammaticality judgment. Following these findings, it seems important that children of Turkish origin should develop their Turkish language skills as well as their language skills in Dutch to reach a threshold in both languages, in a manner that sufficiently supports their Dutch school programme. As a result, it can be said that the content of TLCL should be revised to meet Turkish language needs of the children of Turkish origin who are the 4th generation today in Western Europe. The findings of the related research should be taken into consideration to renew the content of TLCL. Well-prepared bilingual education programmes should directly aim at children's language proficiency and indirectly at increasing their school achievement. By doing so, it may be possible for children of an immigrant background to be better achievers at school and not to be guided to vocational high schools (Yağmur, 2014). In this suggested TLCL model in this article, it is also recommended that students' language development should be monitored by means of regular tests and should be supported by future-oriented applications.

According to the linguistic interdependence hypothesis by Cummins (1979), a high attainment in language skills in the first language will support a similar pattern in the second language. Despite the structural differences between languages being acquired, Cummins mentions similar linguistic and cognitive characteristics underlying all languages. Considering Cummins' approach, this model aims to support Turkish-language development of children of Turkish origin, which will also contribute to their language development in Dutch. This transfer between Turkish and Dutch constitutes an important rationale for Turkish language education today. As such, we have achieved a programme with a renewed perspective which matches the conditions agreed on the second protocol signed by the Turkish Government and Flemish Government and which provides a solid scientific and educational base.

Beyond the studies on the language development of Turkish students, many studies and reports show that the academic performance of immigrant Turkish students are below the average of the OECD countries. According to the OECD report (2009), the main problems of Turkish immigrants are a) the low attendance in pre-school education, b) acculturation and communication problems due to not using their mother tongue fluently, c) not having academic expectations and problems in the formal language acquisition of the host country due to the school's segregation, d) language and behavioural problems due the language barrier and high enrolment numbers in special education and programmes, e) high school dropout rate, f) unemployment rate of youths graduated from high school and vocational school, g) self-efficacy and identity problems about cultural differences and discrimination, h) negative altitude of the teachers towards immigrant students, i) negligence on the part of the parents and not having parent involvement in the school environment, j) lack of institutionalised integration and guidance centres in host countries that give immigrants special care.

According to the OECD report on PISA (2015) results on the immigrant academic performance of first-generation immigrant students (foreign-born students whose parents are also both foreign-born) and second-generation immigrant students (students born in the country/economy where they sat the PISA test and whose parents are both foreign-born), in most countries, both first- and second-generation immigrant students tend to perform worse than students without an immigrant background. According to the data on immigrant students' performance in science, by country of origin and destination', PISA (2015) results indicate that the performance of second-generation immigrant students from Turkish-speaking countries living in Sweden and Germany is higher than the first-generation immigrant students. However, there is no significant difference between the second- and first-generation Turkish immigrant students in Belgium. This finding shows that both 1st and 2nd generations of Turkish immigrants in Belgium have some problems in academic performance when there are relatively large immigrant student populations.

PISA results (2018) show that Turkish students in Europe are not successful at reading comprehension, mathematics, and science literacy. PISA results revealed that there is indeed an achievement gap between native speaking (NS) students and language minority (LMi) students for both reading and mathematics. After taking account of students' background characteristics, students' academic profiles and school characteristics, the LMi-NS achievement gap narrows but remains significant. However, the reason for the underachievement of LMi is not their language use. LMi students who speak a minority language more often with their parents do not achieve less. On the contrary, speaking a minority language more often with the father is positively related to mathematics and reading achievement of LMi students [Agirdag, O. (2016); Agirdag, O. & Vanlaar G. (2016)].

To achieve academic development, we need to improve the mother-tongue language skills of Turkish students having problems in reading literacy. Some research (Rauch, Naumann & Jude, 2012; Reich, 2011; Knapp, 1997; Verhoeven, 1994) shows that Turkish language education at schools have a positive effect on students' reading literacy and writing skills (Yıldız & Thomas, 2016). Beyond these studies, it is thought that Turkish language education at schools would contribute towards students' academic performance as well. The content and curriculum of the Turkish language education is ideally integrated into the Flemish school system, culture, and environment. With a theme-based curriculum that is compatible with the school curriculum, TLCL can be used as a tool to reinforce the themes in their mother tongue parallel to the school context and curriculum in order to improve their learning. The key principle of a theme-based curriculum in Turkish mother-tongue language is to choose the themes parallel to the current curriculum of pilot schools in this study and to coordinate each theme interrelatedly for conceptual development. With this two-sided method, students can develop not only their mother-tongue language skills, their vocabulary and grammatical syllabus but also their academic performance at their own schools. Especially at pre-school level, this early-age follow-up and curriculum design would give immigrant students a chance to be schooled like bilinguals with no social and educational setbacks in Western European countries. This can also contribute towards the development of Belgian society.

METHODOLOGY

The first part of this study was designed according to the needs obtained from the field research and the core principles of a phenomenological research design with a view to investigating a phenomenon of "Turkish-language and culture classes (TLCL)". In phenomenological research design, data sources are the groups or individuals who experience this phenomenon and can reflect on this phenomenon to others. The reasons to choose this design is a) to conduct more in-depth research into a phenomenon of TLCL because a phenomenological study explores what people experience and focuses on their experience of phenomena; b) to focus on phenomena of which we do not have a deeper and holistic understanding. In summary, phenomenological research design provides a suitable research ground for studies that aim to investigate phenomena that are not completely unfamiliar to us, and which we do not fully understand (Yıldırım & Şimşek, 2004).

In the second part of the study, a case study design through an educational model was developed as a qualitative research method. A case study is defined as a study of a process that reveals perceptions and events using qualitative data collection methods such as observation, interview, and document analysis in a realistic and holistic manner in the natural environment (Yin, 2017). A model was developed for the Turkish-language and culture education through document analysis. Regarding the theme-based curriculum prepared in line with the developed educational model, a field study was carried out on the basis of interviews with the relevant persons (relevant Embassy, Consulate General, Education Counsellor and Municipal Council Members, General Director of Education, etc.). Also, the case study design, rather than just collecting data, allows us to evaluate TLCL as a case, to examine a situation in-depth, to systematically reveal existing problems and to offer suggestions for solving the problems. In such studies, the main purpose is not to make generalisations about the universe, but to reveal the information about the existing situation in detail and to contribute to the future studies in the light of qualitative data obtained (Yıldırım & Şimşek, 2005).

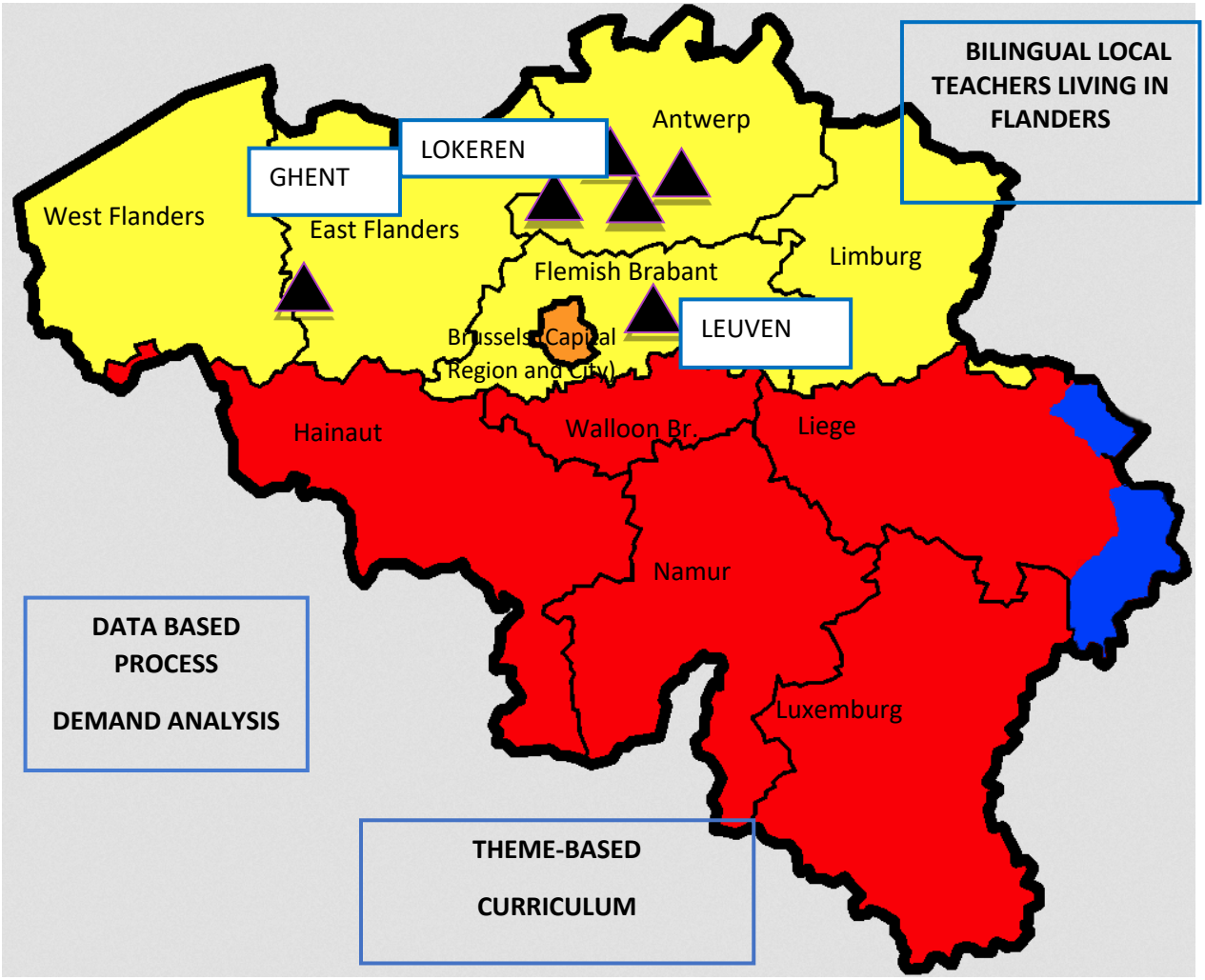
The Education Model

In the 21st century, it has become quite necessary to design an educational environment where different education models are juxtaposed. In today's world where different institutions can survive in societies with different educational institutions and different identities, there should be different models at the same time instead of insisting on a single model. From this point of view, a new model is needed for "Turkish-language and Culture education in Belgium". This process should be planned with a holistic perspective through pilot studies during the implementation phase because the environment and social structures of schools in different regions (such as Flemish, Brussels, Wallonia) should be taken into consideration.

In this study, since the protocol was signed between the Turkish Government and Flemish Government[5], an educational model has come about thanks to a theme-based, multilingual approach, which is integrated successfully in Flemish schools by bilingual, local teachers living in Flanders. This new model was designed in an ecosystem based on key principles, goals, missions and visions and a philosophy. With a data-based system, relevant data were collected, and a data-driven process was launched. This education model has been planned in a holistic manner in order to integrate it into the Flemish education system and eliminate the existing problems. Pilot schemes, however, were determined and implemented on a small scale in the implementation phase. In the Flemish Region, it is planned that as a case study, the education model (See Figure 1) will be carried out with pilot schools before it is disseminated throughout the region in line with the measurement and evaluation process.

The education model has been designed based on data, which enables in-depth analysis of TLCL tailored to the needs determined by the field research. This method a) enables us to make objective evaluations for past decisions and realistic plans, b) includes various data and makes the data relevant in terms of cause-and-effect relationship, c) enables us to evaluate the pilot studies and to measure the process scientifically with a case-study approach. This process allows us to analyse and evaluate the data which have been available in the relevant institutions but could not be processed or not yet be obtained. In addition, the education model will be carried out on the intersection of the 'monitoring and evaluation process' and will progress at a certain level in an interdependent manner. Based on this model, the process is planned according to the academic performance of the students, curriculum design, the needs analysis and the professional development of teachers and students.

[5] Based on interviews with the Republic of Turkey, Turkish Embassy in Brussels (24 September 2018, 7 December 2018; 20 February 2019; 29 May 2019; 17 June 2019; 3 July 2019).



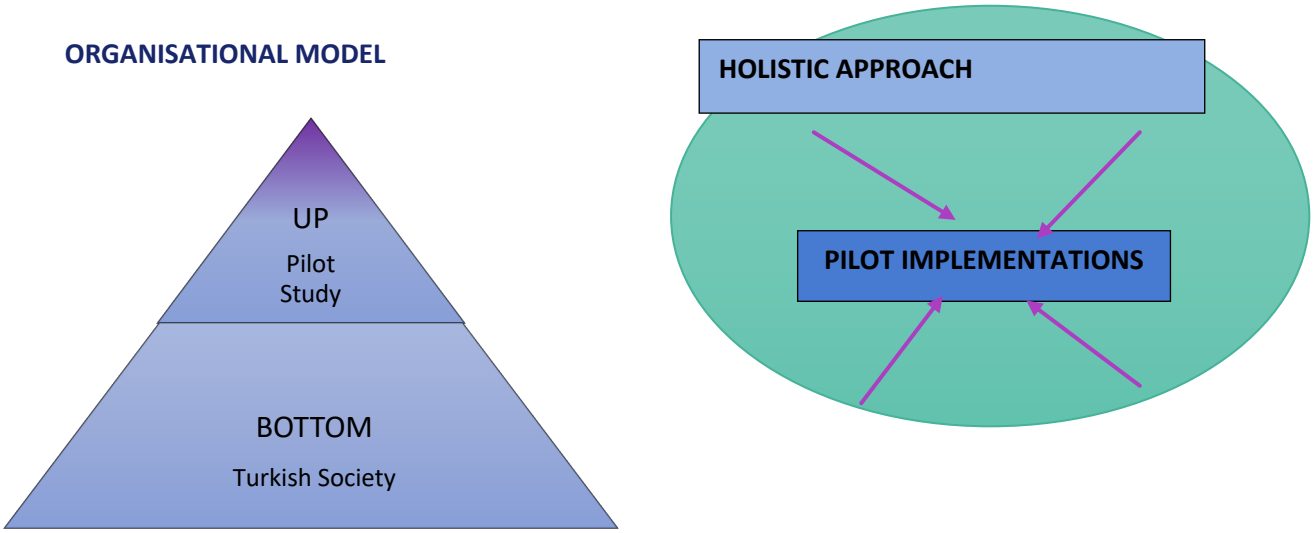


Figure 1. The Education model designed for the Turkish-Language and Culture Education in the Flemish Region

Study Group

The sample of the study was selected by a specific sampling method and includes schools in cities (Lokeren, Ghent, Leuven) where there is a high demand for TLCL, and teachers who can be employed in the Flemish Region of Belgium.
The selection criteria;

- Approval of TLCL by school administration,
- Location in cities or regions with high demand for TLCL
- School culture which is sensitive to issues, such as immigration and bilingualism.

The criteria for teachers include,

- Individuals who have a teaching profession and a residency in Belgium,
- Teachers who had worked in Belgium before through institutions in Turkey,
- Bilingual (Turkish-Dutch) teachers residing in Belgium.

Implementation Process

The education model built on a theme-based curriculum was carried out by 8 teachers in six pilot schools consisting of classes of 10-15 students aged 6-9, 9-12. These schools where teachers work, or can work, were determined according to the approval of the school administration. This education model was planned in a holistic manner so that it can be integrated into the Flemish education system and address the existing problems. The pilot study 1) can be tested, 2) can be micro-inspected, 3) can create a more reliable scientific basis for further assumptions, and 4) its weaknesses can be identified and eliminated.

In this model, six schools were chosen purposefully according to the sample criteria. These pilot schools include schools that authorise these classes and were selected based on the cities (Lokeren, Ghent, Leuven) where there is a high demand[6] for TLCL. This educational model is planned with a theme-based curriculum integrated successfully into Flemish schools by bilingual local teachers living in Flanders. The data-based process includes the determination of the pilot schools, cities and teachers and the analysis of the demand of Turkish society.

In this model, Turkish society is at the bottom of the process and it has been planned with a bottom-up organisational model based on pilot implementations that intend to activate this bottom section. The bottom section of this organisational model is peopled by Turkish parents demanding TLCL. It is expected that families who demand TLCL are placed at the bottom of this organisational model and the combined demand present in the bottom section will affect this pilot study.

TLCL were planned according to the theme-based curriculum in pilot schools. In this education model, the theme-based curriculum is planned according to the weekly themes taught at the pilot school. In order to determine the themes, "Bingel Online Education Platform[7]", which is widely used in the Flemish Region, was taken as a basis. Through this online education platform, weekly themes were selected and analysed according to the level of the students and these themes were taught at the TLCL. For example, if the theme for that week was 'Family', this theme was taught to students in Turkish and in order to create a Turkish-Dutch vocabulary in the family theme, attention was drawn to the similarities and differences between the two cultures on the theme of family. After each theme, a curriculum blended with bilingual activities was planned by means of a list of Dutch and Turkish vocabulary for the relevant themes. The most important advantage of the theme-based curriculum is the support it offers the Turkish students in their conceptual development and the improvement of their Turkish and Dutch language skills in a way that affects their academic performance. Language-level tests are held at the beginning and the end of this pilot implementation, where the levels of the students will be evaluated. During the pilot implementation period, internal controls are in place, with reports written quarterly. To ensure the content validity, a control group consisting of the principals, the teachers teaching the course, the Turkish teachers and the field experts involved in pilot schools. Thus, the process was evaluated in terms of the content.

DISCUSSION AND FURTHER IMPLICATIONS

In Belgium, Turkish Language education is not structurally grounded for political, legal, and policy-related reasons on the part of the Turkish and Belgian authorities and is unable to answer the 21st-century needs. PISA reports and studies reveal the academic failure of Turkish children in Belgium (OECD, 2016). Current policies and practices are unable to solve this problem. Although the process seems to be helped by short-term projects by the Presidency for Turks Abroad and Related Communities in the Flemish Region, the problem still persists, and further measures are called for. In the Walloon Region, it is not known what kind of procedures will be carried out when the cultural agreement signed between the two countries (Belgium-Turkey) expires. For legal and political reasons, the Turkish community is required to find its own solution to this problem. However, the best way of addressing the legal and political problems is to plan this two-sided education effectively and scientifically. By conducting

[6] This demand was measured according to the data collected in 2019 by the Bureau of Education Consultancy at Turkish Embassy in Brussels.
[7] https://www.bingel.be/bingel/

holistic evaluations of this process, national and international reports should be examined, and the education process should be planned with an institutional perspective. In order to solve this problem, setting up an institutional body such as "*the Institute for Turkish Studies, Integration and Research"* is a step in the right direction, but it is very important for both countries to come together in order to build a structural body. It is necessary to raise the awareness among all participants and to plan all the components of the process.

In order to meet the needs of the 21st century, TLCL in Belgium should be integrated into Belgian schools and transformed into a structure that can respond to existing changes. Schools are institutions with institutional environments (relevant stakeholders, municipalities, families, citizens, other schools, universities, NGOs, and local / national / international initiatives, etc.). The institutionalised environment defines the environment of an institution, where the environment and the institution are mutually affected by each other. The environment of an institution is the people or organisation with which they interact, with the institution's input. In order for schools to adopt TLCL, this process should be associated with the institutional environment of the schools. Schooling cut off from its institutional environment cannot survive in the long term.

From an institutionalist perspective, Aypay (2003, p. 111) stated that "environments and organizations are mutually constitutive. Both environments and organizations can give form, legitimize, and constrain". If organizational practices and policies readily become institutionalized; they become widely accepted as legitimate to attain organizational goals (Meyer and Rowan, 1977; Meyer and Scott, 1983; Tolbert, 1985). Organizations adapt their structure and behaviour to be consistent with the institutional environment in order to ensure their legitimacy and, hence, their chances of survival (Meyer and Rowan, 1977; DiMaggio and Powell, 1983). The legitimacy of the organization affects its ability to obtain resources and social support (DiMaggio and Powel, 1983; Tolbert, 1985). The organization refers here to the 'school', and schools and its educational activities include the socially defined rules and regulations required by the institutional environment (Scott, 1991, p. 167). With regard to the claim that schooling cut off from its corporate environment cannot survive in the long term, TLCL in Belgium could not be entirely organized within the NGOs in a closed system within Turkish society, but within the school, which is an open system, a system that can be integrated into society. This is the reason why we need to widen this process through the schools in the Flemish Region.

Regarding the planning and implementation of TLCL in Belgium – both in the past and present - it is also very important to pour this new education model into an institutionalised base, one which aims to solve the existing problems, and which has not been done before in the Flemish Region of Belgium. The key principles, goals, mission and vision and a philosophy of this education model should be shared among all stakeholders (Turkish Government, Flemish Government, municipalities, related NGOs, schools, and universities etc.). The job descriptions and responsibilities of the teachers who will take part in the pilot implementation of this education model should be clearly defined. In order to avoid possible problems in future, an accountable decision-making culture within the educational model is in the making. To create an independent 'school culture' in these pilot schools, a corporate school culture should be fostered with regular meetings, seminars, and social events.

It is also very important that this education model is sustainable. Based on the results of the pilot implementation, it is necessary to increase the number of pilot schools and the qualified teachers and scale up this process. By sharing the results of the pilot implementation with other schools, the number of schools that will approve this education can be increased and the education can proceed as planned. In addition, accountability and transparency benefit this education model greatly from an organizational perspective. The process will be internally supervised and monitored so that the relevant reports can be evaluated to ensure internal control. The evaluation processes of the monitoring and internal control groups will be regularly updated and shared with the relevant stakeholders. Sharing evaluation reports, especially with the Flemish Region authorities and relevant authorities, will enable us to build a transparent and accountable education process. In order to maintain the institutional philosophy and principles, there should be a constant dialogue with the relevant authorities.

One of the main reasons for suspending Turkish language education in recent years is that these courses can be a language barrier for the students' Dutch language skills and teaching only Turkish language after school will create an inequality in education access for other immigrants. Also, some PISA reports have claimed that native-speaking (NS) students outperform language minority (LMi) students. Many policymakers have responded to these PISA reports with a monolingual reflex by increasing political pressure on linguistic minorities to abandon their heritage languages (Agirdag, 2010; Pulinx, Van Avermaet & Agirdag 2016, as cited in Agirdag, O. (2016); Agirdag, O. & Vanlaar G. (2016). In line with these arguments, this educational model is not only planned to teach Turkish language for Turkish students. It is planned so that the Turkish language education model will create a two-way effect with a theme-based curriculum that supports the academic achievements of Turkish students at Flemish schools. The most important advantage of the theme-based curriculum is that Turkish students can gain academic competence by improving their school achievements. The most important part of this education model is that it can measure the academic accomplishments of students with a data-based evaluation process and provide future assumptions. Furthermore, studies do not support the assumptions that TLCL can be a language barrier for the children's Dutch language skills. Contrary to these assumptions, some research (Rauch, Naumann & Jude, 2012; Reich, 2011; Knapp, 1997; Verhoeven, 1994) shows that Turkish language education at schools has a positive impact on students' reading literacy and writing skills (Yıldız & Thomas, 2016). With these, and similar, scientific outputs, widespread political thinking in the Flemish Region of Belgium about Turkish language education should be criticised. At this point, it is necessary to be accountable and to present scientific studies to the relevant authorities. As a result of the meeting with the relevant authorities, the education model for Turkish language education was

explained and met with positive feedback from them[8]. Due to the problems of Turkish students, who constitute the majority of the immigrant population, the Flemish authorities have indicated that they would cooperate with this process. Scientific studies based on the data obtained from pilot studies will be shared among all stakeholders.

Currently, there is a lack of bilingual education materials in Belgium, including books prepared by the Republic of Turkey Ministry of National Education for TLCL in 2018. This being the case, it is important for teachers to support existing materials bilingually. Considering the lack of available resources, it is necessary to set up the required infrastructure in order to have bilingual education in place that is compatible with that of the Flemish Region. Bilingual education should be integrated into the curriculum to promote a life-long learning process that cannot be achieved with a monolingual education programme. A lack of qualified bilingual teachers is another problem. In particular, relevant teachers need to be properly trained to fill the gap for future teachers. Teachers should be trained through the pilot schools and this process should be tailored to the training level of the local bilingual teachers.

The important basis of the bottom-up organisation model is that Turkish society makes its voice heard. For this reason, the latent reluctance and unwillingness of the participants, parents, Turkish citizens, and Turkish diaspora emerges as a major problem. In order to overcome this problem, the target groups, families and relevant stakeholders should be informed through seminars given by experts. It is also necessary to challenge the prejudice of the host country with cultural events (fun fairs, trips, commemorative ceremonies, etc.) and to organise educationally integrated activities to raise awareness. Turkish parents assume that their children know enough Turkish language and may hold the opinion that "If they learn Turkish language at school, this could be a language barrier for their Dutch language skills." In this article, it is necessary to raise awareness among Turkish families, which emphasises the importance of mother-tongue language education. To measure this demand, a data-based approach should be adopted.

In Belgium, it is necessary to put Turkish-language and culture education on a structured and institutionalised footing. An attempt has been made, within the scope of this article, to develop an institutionalised education model, which can offer a solution to the existing problem in the Flemish Region. In Belgium, Turkish-language and culture education should not be organised in a closed system where some local NGOs only target the Turkish ghetto, but in an open system that encompasses the school environment and, indeed, the society that they live in. An education disconnected from its institutional environment cannot survive in the long term. Therefore, due to the nature of education, TLCL should be taught at schools and on a basis that can provide 21st century children skills for life-long learning. TLCL should be blended with programmes such as the Framework for 21st Century Learning, P21 (Partnership for 21st Century Skills, 2006), which define the competence, knowledge and experience of students required to be successful in their future work and lives and should be harmonised with the society and schools in which they live. For this reason, it is very important to expand this process through schools in the Flemish Region and to develop the necessary skills among children with bilingual education programmes. With this, and similar, educational models, TLCL should be more widespread at schools.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Statements of publication ethics

1st author conceived of the presented idea and developed the theory, performed the computations, and verified the analytical methods. 2nd author encouraged to the 1st author to investigate the background of the study and the literature review of the studies on bilingualism. All authors discussed the results and contributed to the final manuscript.

Researchers' contribution rate

The study was conducted and reported with 70% contribution of the first author and 30% contribution of the second author.

Ethics Committee Approval Information

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

[8] Based on an interview with Gonda Verhaert, General Director of Education of the Municipality of Antwerp on 7 February 2019, and with the deputy Mayor of Antwerp, Jinnih Beels, on 1 October 2019.

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