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Teaching English Pronunciation to Prep-Class Students: A Needs Analysis Study

Hazırlık Öğrencileri İçin İngilizce Telaffuz Öğretimi: Bir İhtiyaç Analizi Çalışması

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Abstract

In the 21st century, learning a foreign language and being able to communicate in that language has become a very important competence. Therefore, it becomes very important for an individual who learns a foreign language to acquire the main skills (listening, speaking, reading, and writing) and sub-skills (grammar, vocabulary, and pronunciation) in language education, but it is also clear that not much importance is given to pronunciation skill compared to other skills. Thus, the purpose of the research was to find out the opinions of the prep-class university students regarding their foreign language pronunciation skills, and to analyze their needs related to teaching pronunciation skills, and to use the research as a needs analysis of the curriculum design that will be prepared following the current study. The study was designated according to qualitative research methods, and the case study model was applied. The research data was collected from 213 students through the form consisting of five open-ended questions prepared by the researcher, and the data obtained were analyzed by the content analysis method. As a result of the research, it was determined that the students have some important problems with pronunciation skills and that they find this skill highly important in terms of language learning.

Öz

21. yüzyılda bir yabancı dil öğrenmek ve o dilde iletişim kurabilmek hayatta oldukça önemli bir yetkinlik haline gelmiştir. Bunun için de yabancı dil öğrenen bireyin dil eğitimindeki ana (dinleme, konuşma, okuma ve yazma) ve alt (dilbilgisi, kelime ve telaffuz) becerileri edinebilmesi oldukça önemli hale gelmektedir. Tüm bu beceriler içerisinden telaffuz becerisine diğer beceriler kadar önem verilmediği anlaşılmaktadır. Bu yüzden bu araştırmanın amacı; bir üniversitenin İngilizce hazırlık biriminde öğrenim görmekte olan öğrencilerinin yabancı dil öğretiminde telaffuz becerisiyle ilgili görüşlerini belirleyip onların bu alandaki ihtiyaçlarını incelemek ve araştırmayı daha sonra geliştirilmesi planlanan bir öğretim programı için ihtiyaç analizi olarak kullanmaktır. Araştırma, nitel olarak tasarlanmıştır ve durum çalışması modeli uygulanmıştır. Bu kapsamda araştırmacı tarafından hazırlanmış olan ve açık uçlu sorulardan oluşan form yardımıyla 213 öğrenciden araştırmanın verileri toplanmıştır ve elde edilen veriler içerik analizi yöntemiyle incelenmiştir. Araştırma sonucunda öğrencilerin telaffuz becerisi ile ilgili önemli sorunlarının olduğu ve telaffuz becerisi ile ilgili birtakım ögeleri bilmedikleri ve bu beceriyi dil öğrenme açısından oldukça önemli buldukları ortaya çıkarılmıştır.

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INTRODUCTION

Due to the rapid change in the world, it is an undeniable fact that in order to keep up with the developments in various fields such as technology, medicine, and social issues, individuals must have certain competencies like the ability to communicate in a foreign language, and the need for people all over the world to communicate with each other has increased much more than before. Given the fact that English is the lingua franca nowadays, it becomes much more important to be able to communicate in English with both people whose native language is English and those whose native language is not (Kirkpatrick, 2007).

Today, in foreign language teaching, it is accepted by language educators that there are four basic skills (reading, writing, listening, and speaking) and three sub-skills (grammar, words, and pronunciation), which are also called macro and micro-skills (Aydoğan and Akbarov, 2014). Language teaching programs and methods differ from each other according to the importance or the weight they attach to these skills. These skills in language teaching are highly interconnected and intertwined with each other. Pronunciation is a skill that should be emphasized in this respect. Pronunciation is one of the important cornerstones of language that allows people to communicate in a foreign language (Akıncı, 2015) and is a cognitive and learnable skill (Gilakjani & Ahmadi, 2011). Pronunciation actually plays a vital role in efficient oral communication (Setter & Jenkins, 2005).

Pronunciation, which does not disturb the listeners and does not negatively affect the message to be transmitted but is easily understood, is called 'intelligible pronunciation' (Derwing, Diepenbroek & Foote, 2012). For an individual who can actively engage in English-speaking societies and communicate properly, it must be clearly known that intelligible pronunciation is a vitally important part of communication (Isaacs, 2008). For those who try to learn a foreign language, it seems impossible to have a pronunciation skill as native people do. In this sense, intelligible pronunciation aims to achieve successful communication and attempts to eliminate factors that negatively affect communication, such as accents (Munro & Derwing, 1995). If language learners fall short of intelligible pronunciation, it is clear that they will not be able to communicate with the foreign language they are trying to obtain and will not be able to use the language properly (Hinofotis & Bailey, 1980).

The practice of teaching pronunciation skill has changed significantly in English language teaching (ELT) over time, along with various approaches. While pronunciation has been superior to grammar and vocabulary in certain language teaching methods and approaches throughout history, it has not been given much importance or even excluded in teaching practices. Pronunciation is considered to have nothing to do with language teaching in grammar-translation method, and some other methods based on reading comprehension, while it is considered highly important in the methods in which communication and speech are emphasized (Larsen-Freeman, 2000). However, the communicative approach that emerged in the 1980s has begun to dominate ELT. This approach is based mainly on oral communication, and it aims to bring them to an adequate level of intelligible and achievable pronunciation so that learners can have a proper conversation in a foreign language since pronunciation forms an important part of communicative competence (Goh & Burns, 2012). However, although the comprehension of pronunciation has been determined as an important part of oral communication, pronunciation has not been taken as a separate field (Celce-Murcia, 1983; Pica, 1984). The main purpose is to ensure that learners use the language and are exposed to the language as much as possible during and outside the course. In this method, pronunciation is not fully expressed as a certain dimension, and what is important is to be able to use the language and focus on meaning and comprehension rather than form (Carey, 2002: Derwing & Munro 2005).

Pronunciation skill is also related to the case whether English is being taught in the context of a foreign language or a second language. Second language teaching refers to the contexts in which the language taught in the classroom is already spoken outside the classroom, while foreign language teaching refers to those where the learned language is mostly not spoken outside the classroom (Brown, 2001). In this sense, English is taught as a foreign language in Turkey, and the majority of studies on pronunciation skills come from the contexts of foreign language teaching.

Pronunciation skill is often neglected in foreign language learning and given less importance compared to the other skills in terms of theoretical and practical approaches due to the constant involvement of different variables and the difficulty of doing research on pronunciation (Derwing & Munro, 2005; Gilbert, 2010). It has been thought that focusing on pronunciation is inefficient and that pronunciation teaching cannot be integrated into skills such as reading and writing (MacDonald, 2002). Placement exams, in which students are assigned to different classes, do not usually include questions about pronunciation skills, and practitioners may not have the knowledge or the necessary tools to formally assess and evaluate pronunciation skills as needed (Baker & Burry, 2016; Derwing, Diepenbroek & Foote, 2012; Darcy, Ewert & Lidster, 2012; Levis & Grant, 2003; McDonald, 2002). Therefore, practitioners prefer not to pay attention to pronunciation because they will have trouble teaching a subject they do not know enough. It has also been found that students' motivations and attitudes regarding pronunciation are very important and that there may be learners in the same class whose pronunciation skills are at a very different level (Elliot, 1995; Gilakjani & Ahmadi, 2011). The age at which students begin to learn a foreign language is also effective in learning the pronunciation of words as necessary (Piske, MacKay & Flege, 2001). As a result, it could be said that teaching pronunciation skill has been disrupted in the language learning process for different reasons.

Turkish students who learn English as a foreign language have a lot of difficulty in obtaining pronunciation skills due to their mother tongue and the negative transfer resulting from their native language (Demirezen, 2010). In addition, the absence of some

special sounds in the Turkish language inventory makes it difficult to be effective in target language pronunciation (Çelik, 2008). Teaching pronunciation effectively is also an issue to be dealt with in Turkey, and phonetics is not properly processed in the ELT departments of Turkish universities, and also many teachers prefer not to teach pronunciation and not to integrate it into their courses since they are not content with their own pronunciation skill (Çakır & Baytar, 2014; Steel, 2008; Demirezen, 2010; Hismanoglu, 2012; Saran, Seferoğlu & Cagiltay, 2009). In addition, the fact that the national language exams in Turkey mainly focus on reading and do not include listening and speaking sections also makes teachers think that it is unnecessary to pay attention to pronunciation (Bekleyen, 2007). Nevertheless, pronunciation teaching has started to gain importance, and more studies have been carried out in this field. Numerous studies showed that pronunciation teaching should be part of foreign language education, that teachers should be especially interested in pronunciation throughout the foreign language teaching process, and those language learners should focus on teaching pronunciation skill (Cakir & Baytar, 2014; Darcy, Ewert & Lidster, 2012; Levis & Grant, 2003; Moedjito, 2016). Furthermore, having a sound pronunciation skill, which is needed for effective communication, positively affects the attitudes of learners (Celce-Murcia, Brinton, Goodwin & Griner, 2010; Gilakjani & Ahmadi, 2011; Lee, Jang & Plonsky, 2015; Saito & Lyster, 2012). Therefore, teaching pronunciation skill is as important as the other skills in the language teaching process.

Purpose

The purpose of this research was to find out the opinions of the prep-class university students regarding their foreign language pronunciation skills and to analyze their needs related to teaching pronunciation skill, and to use the research as a needs analysis of the curriculum design that will be prepared following the current study. The present study is important since it will set the basis for the curriculum design for teaching pronunciation skill courses to be prepared later and will determine whether teaching pronunciation as a separate skill is necessary.

METHOD

The study was designated according to qualitative research methods, and the case study model was applied. In qualitative research methods, events and perceptions are examined in a holistic manner in their natural environment as they exist in the real world (Yıldırım & Yıldırım, 2006, p. 39). Case studies are also a unique approach used to answer scientific questions with the aim of "evaluating an event" (Büyüköztürk et al., 2010, p. 273). The most important feature of the case studies is the investigation of situations in depth (Merriam, 2018). Factors related to any case are investigated holistically, and the key point is to focus on how they affect the case in question and how they are affected by it (Yıldırım & Şimşek, 2016, p. 73). Therefore, the students who participated in this study were asked to evaluate the case related to pronunciation skills.

Study group

The study group of this research consisted of the students studying in the preparatory classes of a university. The preparatory program, which consists of 24 class hours a week for one year, is optional, and students who do not want to enroll in the preparatory program start their departments directly. There were 251 students enrolled in this preparatory program during the implementation of the study. However, some students did not participate in the research because they had already given up the program or exceeded the absence limit. Therefore, 213 students were reached on a purely voluntary basis within the scope of the research in the middle of the fall semester. The information of the participants regarding their language levels according to their own perceptions, gender, and faculties are given in Table 1.

Table 1 Characteristics of the study group

Gender	f	Department	f	Language Level	f
Female	82	Business (B)	55	Low	83
Male	131	Politics (P)	28	Middle	127
		Engineering (E)	125	High	3
		Forestry (F)	5		
				Total	213

Data Collection and Analysis

The data of the research were collected through the Pronunciation Skills Questionnaire Form consisting of 5 open-ended questions. The form was prepared by the researcher after the relevant literature was examined, and in accordance with the recommendations of field experts the final form was created. After obtaining the necessary permissions from the institution where the research was carried out, the questionnaire form was applied to the students on a voluntary basis. The responses of the students were grouped on the basis of each question and analyzed using the content analysis method. The main process of content analysis is to collect similar data in the framework of certain concepts or themes and then organize and interpret them in a way that readers can understand (Creswell, 2002). The aim of content analysis is to reach concepts, categories, or relationships that are supposed to clarify the data to be obtained (Yıldırım & Şimşek, 2016, p. 242). In this study, the data collected from the students were analyzed relationally under certain themes. The questions on the questionnaire form are as follows:

1. What are your problems regarding pronunciation?

2. What do you do to learn the pronunciation of a new word?

3. How do you behave when you come across a word that you do not know how to pronounce?

4. Do you think pronunciation skill is important in foreign language learning? Why?

5. Do you think pronunciation skill is important in terms of your profession? Why?

The data of the study were analyzed by three researchers, and the formula developed by Miles and Huberman (1994) was used to calculate the reliability of the researchers (Reliability = Consensus / [Consensus + Disagreement]). According to the calculations, the reliability coefficient of coding was found to be 0.95, which showed that the analysis of the study was very reliable.

FINDINGS

The responses of the students were organized and analyzed using the content analysis method. Additionally, the direct excerpts of the participants were presented after each finding. For practicality, a number, a code for their gender (female: F and male: M), and also a code for their departments (Business: B, Politics: P, Engineering: E, Forestry: F) were assigned to each student respectively. For example, 1FB means the first female student studying at the department of business, and 112MF means the 112th male student studying at the department of forestry.

Difficulties with Pronunciation Skill

The students were asked to explain in general the problems they experienced with pronunciation skills in foreign language learning. It was found out that the responses of the students were gathered under two main themes, and they are shown in Table 2.

Table 2 Students' difficulties with pronunciation skills in foreign language learning

Theme		Problem
Learner - based	Cognitive	My vocabulary memory is poor
		I cannot talk
		Lack of practice
		Previous mislearning
		I do not know stress and intonation rules
	Affective	It does not come into my mind
		I do not have the ability to learn any language
		Not being able to memorize
		I am unable to articulate some words
		I am getting nervous.
Teaching-based & word-based		Spelling/pronunciation of words
		There are very unusual sounds
		It takes time to learn
		The pronunciation of some words are very similar to each other

As shown in Table 2, it was discovered that the difficulties experienced by the students in the study group regarding their pronunciation skills were gathered under two themes: 1) Learner-based difficulties, 2) Teaching/Word-based difficulties. Learner-based difficulties were also examined under two themes: a) cognitive factors and b) affective factors. In terms of cognitive factors in pronunciation, it was found out that the students had poor vocabulary memory, they were afraid of speaking in public because of having inefficient pronunciation knowledge, they did not have enough practice opportunities, they did not have enough information on the stress and intonation of the words, and their previous mislearnings affected their learning process adversely. For example, student 37ME *said, "I cannot articulate the words properly that are difficult to pronounce if I do not use them all the time because I forget how to pronounce them.*" In his statement, he stated that he had a problem with pronunciation because *his vocabulary memory* was poor. The examination of affective factors in pronunciation showed that when the students thought the pronunciation of some words was very difficult and could not memorize how to articulate them, they were getting nervous. Moreover, they felt like losing the ability to learn a foreign language, so they could not remember how to pronounce most words. For example, student 127FB said, *"I am unable to articulate some words."* Teaching/word-based problems were as follows: 1) The spellings of most words are different from their pronunciation, 2) English language has different sounds from those in Turkish language, 3) It takes time to learn the pronunciation of the words, and 4) The pronunciation of some words are similar to each other. It can be said that these problems are related to the pronunciation structure of the English language in general. Student 58FE *said, "The pronunciation of a letter can vary in each word. Sometimes a word has a lot of different pronunciations that may have different meanings. It's a big challenge.*" Therefore, it could be concluded that various pronunciations of a letter or a word also cause difficulty for language learners.

Ways to Learn the Pronunciation of a New Word

When students were asked what they did to learn the pronunciation of a word, it was found out that the responses given by the students were gathered under three themes, and they are given in Table 3.

Table 3 The Ways that students follow to learn the pronunciation of a new word

Theme	Learning Path
Individual Study	by listening
	by asking the teacher in class
	by repeating it continuously
	by asking friends
	by noting down the pronunciation of the word
	by reading aloud
	by using a dictionary
By Using Technology	by using internet/mobile applications (tureng, translate, yandex, etc.)
	by listening to music/watching movies
Reluctance	doing nothing
	unable to learn

As shown in Table 3, it was discovered that the ways or methods used by the students in the study group to learn the pronunciation of a word are gathered under the themes of *individual studies*, *use of technology,* and *reluctance*. Accordingly, it was found out that students mostly tried to learn the pronunciation of a word by doing individual studies. These studies include some efforts such as listening or repeating, learning by asking the teacher or a friend, noting down the pronunciation next to the word, reading it aloud, and using a dictionary. For example, student 3FE said, *"I try to repeat it all the time, or I type the word into a dictionary application on my phone and listen to its pronunciation."* He meant that he tried to learn the pronunciation of the word by repeating and listening to it. It is also understood that students tried to learn the pronunciation by using internet applications and listening to music or watching movies. For example, student 170MB said, *"I listen to the pronunciation of the word aloud from the Internet or ask my teacher or friend."* In other words, he meant that he tried to learn the pronunciation of a word by using the internet. It was also found out that there were students who did nothing about pronunciation and thought they could not improve their pronunciation skills. Instead of expressing a way to learn pronunciation, these students just expressed their problems. For example, student 15ME said, "*Frankly, I do not want to do anything, and I have difficulty pronouncing the words, so I cannot learn them.*" He expressed his reluctance to improve his pronunciation skill.

Students' Reactions When They Encounter a Word They Don't Know How to Pronounce

When students were asked what they did when they encountered a word which they did not know how to pronounce, it was found out that the responses given by the students were gathered under 3 different themes, and they are shown in Table 4.

Table 4 Students' behaviors when they encounter a word they do not know how to pronounce

Theme	Behavior
Making an effort to learn	I guess I start with the spelling
	I pronounce it as it is written
	I note down the pronunciation
	I mimic it
	I try to memorize it by repeating
	I listen to it
Feeling worried or nervous	I just make up the pronunciation
	I do not do anything
	I get stressed
	I cannot articulate
Searching and getting assistance	I ask somebody (teacher, friend)
	I look it up

As shown in Table 4, it was found out that the reactions or behaviors of the participants when they encountered a word whose pronunciation they did not know were collected under the themes of *effort to learn*, *anxiety,* and *research and assistance*. Accordingly, it was seen that they made an effort to pronounce the word correctly in some way. However, it was understood that they did not use any methods or techniques, and they did not consider examining the main pronunciation rules. When students encountered a new word, they made predictions based on the pronunciation of the individual letters, read it as it was written, tried to memorize it by repeating, and only mimicked and listened to it. For example, when student 113FE saw a word she did not know how to pronounce, she said, "I'm starting with the way the letters are pronounced." It was also found out that the students sometimes experienced much anxiety and therefore felt stressed and were unable to pronounce the word or were afraid of articulating it. For example, student 25ME said, "*I make up the pronunciation of the word, and sometimes it becomes correct, and*

sometimes I mispronounce it." when he saw a word whose pronunciation he did not know. It was also found out that there were students who asked their friends or lecturers about the pronunciation of the word or tried to find the correct pronunciation. For example, student 86FE said, "First, I try to understand its meaning from the context. If I still have not found it, I use a dictionary or ask my teacher."

Importance of Pronunciation Skill in Language Learning

When students were asked whether pronunciation skill was important in foreign language learning and why they thought so, the frequencies of their answers were calculated, and they are shown in Table 5. Accordingly, 25 students stated that they found it very important, 157 students thought it was important, 13 students found it partially important, and 12 students expressed they did not find it important. Seven students in the study stated that they did not know the importance of pronunciation skill.

Table 5 Importance of pronunciation skill in foreign language learning

Importance of pronunciation skill	f
Important	157
Very important	25
Partially	13
I do not think it matters anymore	12
I do not know	7

As shown in Table 5, it was understood that the majority of students considered pronunciation instruction important and considered following a pronunciation teaching program as necessary. For example, student 196FP said, *"Yes,* speaking a language and understanding what is spoken are as important as knowing a language. *In other words, I think the biggest factors in face-to-face conversations where you need to communicate instantly are pronunciation and fluency."* Some of the students in the study group said they found the ability to pronounce partly important. For example, student 149FB said, *"It's important, but I don't think it's the most important. Because billions of people speak English, and they do not speak the same English, but they can still communicate with each other*." Some students in the study group stated that pronunciation skill was not important. For example, student 125FE said, *"I do not think pronunciation is important because people from various nations learn and speak English. In today's world, the number of countries learning English as a foreign language is greater than the number of countries whose official language is English. Therefore, it will not be a problem with different pronunciation* patterns."

Importance of Pronunciation Skill in Terms of Students' Professions

Students were asked if they thought pronunciation skill was important for their profession and why they thought so. It was found out that the responses of the students were gathered under 3 different themes, and they are shown in Table 6.

Table 6 Importance of pronunciation skill in terms of students' future professions

Theme	Why?
Important for professional development	developing in my field/making a career/professionalism
	going abroad/improving myself/working abroad
	getting a job
	increasing my income
Important for professional communication	to be able to communicate with foreign people/English speakers
	to be able to learn foreign terms in my profession
	introducing/presenting my profession abroad
	to be able to follow innovations in foreign countries
Not important	it will not do me any good

As shown in Table 6, it was found out that the responses of the students in the study group to the question about the importance of pronunciation skill in terms of their professions were collected under three themes: 1) Important for professional development, 2) Important for professional communication and 3) Not important. Accordingly, it was found out that pronunciation was important in two dimensions in terms of a profession: a) Professional development and b) Professional communication. It was seen that there were reasons such as having a distinguished career, having a profession abroad and improving themselves there, and finding a job with a high salary. For example, student 29ME *said,* "*I want to be a computer engineer. It's important to be understood by others while speaking the foreign language because my profession requires teamwork*." When it comes to professional communication, it was found out that there were reasons such as speaking English with foreign people, learning professional terms in English, making professional presentations using a foreign language and following innovations in foreign countries. For example, student 86FE *said, "It's of great importance. Since my department is universal regardless of my country, it is very important to improve myself and follow the latest developments*." In addition, it was also found out that there were students who stated that pronunciation for their profession was insignificant. For example, student 150MB said, "*I do not think pronunciation skill will be of much use to me in my profession.*"

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

The findings of this study revealed that the students in the study group had problems with their pronunciation skills, which could be examined in two dimensions: learner-based problems and teacher/word-based problems. Students had some problems related to improving their pronunciation skills: They had poor vocabulary memory (according to their own expressions); they did not practice pronunciation of the words; they had mislearnt the pronunciation of some words in advance; and they did not have enough information on stress and intonation. Therefore, students had difficulty in improving their pronunciation skills, and they were unable to learn correct pronunciation patterns. Moreover, they were also unable to utter the pronunciation of some words correctly, so they got nervous. In addition, the students also found it very challenging to articulate some words that had very different spellings and pronunciations since the foreign language they were trying to learn consisted of sounds that did not exist in their native language. A study conducted by Bekleyen (2011) found that irregularities in English word spelling and excessive generalization of students played an important role in the pronunciation problems of the students. In order to learn the pronunciation of a word, students usually tended to listen to that word with the help of technological means, read it aloud and repeat it, ask the teacher or friends and write down its pronunciation or make predictions based on similar words. It was also found out that some students were not willing to learn the correct pronunciation of the words and did nothing related to this; they became stressed when they could not articulate the word; they did not try to learn the correct pronunciation, but they tried to articulate the word impulsively. In addition, it was concluded that the students did not know the general rules and principles related to pronunciation skills, phonetic alphabet, and the use and importance of stress and intonation, and this situation negatively affected their speaking skills in particular and caused negative affective attitudes such as excitement and inability to speak. A study of 230 students by Moedjito (2016) also found that students considered pronunciation skills to be extremely difficult, and they wanted it to be separately included in the program and perceived pronunciation as a very important skill. It can also be said that this can hinder students' motivations to learn foreign languages and lead to undesirable consequences. It was concluded that students used their own methods to articulate a word they did not know how to pronounce correctly and did not apply the rules or methods necessary for proper pronunciation, and did not know what to do. This conclusion was also supported by the study conducted by Bekleyen (2011), which concluded that practitioners did not teach pronunciation-related subjects and the students were not aware of these topics. A study of 100 adult English learners by Derwing & Rossier (2001) also found that students had serious problems with pronunciation and that students were not taught strategies related to pronunciation skills whereas students needed them. This indicates that students want to improve their pronunciation skill, but they do not know how to apply a method and that they do not have enough information on stress, intonation, and the meaning of phonetic symbols. Naturally, these problems negatively affect their foreign language learning process. Furthermore, the studies by Khaghainejad (2015) and Warren, Elgort, and Crabbe (2009) found that teachers did not take time to do pronunciation activities in class, and they considered giving feedback on students' pronunciation problems and correcting them as a waste of time. In some other studies, it was found out that although students had problems with pronunciation skills, teachers did not care about this skill because they did not have serious training regarding teaching pronunciation skills (Breitkreutz, Derwing & Rossiter, 2002; Burgess & Spencer, 2000; Derwing & Munro, 2005; Macdonald, 2002). Therefore, it can be said that the activities related to pronunciation skills in textbooks are not enough, and teachers who do not know enough training about pronunciation skills do not want to teach this skill; thus, they do not give importance to pronunciation.

It was found out that students thought pronunciation skill was very important and necessary in terms of foreign language learning and their profession in the future. They stated that correct pronunciation increased the ability to be understandable, and being understandable was the basis of communication. According to students, having a high-level pronunciation competence is much more necessary in face-to-face conversations, so it should be emphasized as well as vocabulary skills, and it is especially important for speaking exams.

Considering the problems of students about their pronunciation skills and the importance they attribute to their pronunciation skills, it is clear that they need a pronunciation teaching program that will bring them a lot of benefits and contribute positively to their language learning process. It is thought that preparing such a program will also contribute to the related literature. It is also thought that if teachers put a special emphasis on pronunciation skill and care about pronunciation in their lessons as much as other skills, it will be beneficial for students.

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| Research Article / Araştırma Makalesi|

Aspects of Narrative Competence in Language Levels and Narrative Texts in the CEFR[1]

Diller İçin Avrupa Ortak Başvuru Metni'nde Anlatısal Metinler ve Anlatısal Yetinin Dil Düzeylerindeki Görünümü

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Abstract

Purpose: This study aimed to identify the genres that require second/foreign language learners to draw on their narrative competence along with the related level descriptors in the *Common European Framework of Reference for Languages* (CEFR) and the *CEFR Companion Volume with New Descriptors*, which serve to achieve coherence in the structuring of language learning/teaching processes by standardizing the way language ability is described.

Design/Methodology/Approach: In this qualitative research, data were collected from the *Common European Framework of Reference for Languages* (2001) and the *CEFR Companion Volume* (2018) published by the Council of Europe through document review, and a content analysis was conducted. The processes of collecting, categorizing, and preparing the data for description were carried out sequentially.

Findings: In the CEFR, written texts such as novels, personal letters, short stories, short newspaper articles (that describe events), comic strips, photo stories, travelogues, news items, biographies, cartoons, advertisements, postcards, messages, notes, e-mails, blogs and fairy tales, which can be considered as narrative texts, are mentioned. In addition, personal narratives, films, and anecdotes, which are not written genres, are also encountered. It has been found out that the level descriptors that can be functional in drawing inferences about whether the learners developed a narrative competence or not are structured gradually from level A to C in the CEFR. Upon analysis of the level descriptors regarding narrative texts and narrative competence with respect to the four skills, it has been noted that the level descriptors that can be associated with narrative texts and competence at all levels were the fewest in number regarding speaking and listening and the highest regarding reading.

Highlights: Even though other genres are not referred to directly in the CEFR, a general framework about other genres is evident in the text. The categorization of the narrativity-related level descriptors based on proficiency levels and skills is thought to contribute to the designation of the learning objectives that reflect the language-specific features of narrative structures based on the level descriptors in the CEFR, and thus to the enhancement of the quality of curriculum, materials, and activities to be developed.

Öz

Çalışmanın amacı: Yabancı/İkinci dil derslerinin tasarlanıp uygulanmasına rehberlik etmesi amacıyla Avrupa Konseyi tarafından 2001 yılında yayımlanan *Diller İçin Avrupa Ortak Başvuru Metni* (AOBM) ile birlikte 2018 yılında yine Avrupa Konseyi tarafından yayımlanmış olan *AOBM Eki*nin (the CEFR Companion Volume) anlatısal yeti gerektiren metinler ve bu metinlerle ilgili düzey betimleyicileri açısından incelenmesidir.

Materyal ve Yöntem: Nitel olan bu çalışmada veriler, doküman incelemesi yoluyla toplanmış ve içerik analiziyle çözümlenmiştir. Araştırmanın veri kaynağını, Avrupa Konseyi tarafından yayımlanan (2001, 2018) Diller İçin Avrupa Ortak Başvuru Metni oluşturmaktadır. Verilerin toplanması, kategorileştirilmesi ve betimlenmeye hazır hâle getirilmesi süreçleri sırayla yapılmıştır.

Bulgular: AOBM'de yazılı anlatısal metinlere dâhil edilebilecek olan roman, kişisel mektup, öykü/hikâye, (olayları anlatan) kısa gazete makaleleri, çizgi roman, fotoroman (photo story), gezi günlüğü, haber metinleri, biyografi, karikatür, reklam, posta kartları, iletiler, notlar, e-posta, blog, masal türlerinden söz edilmektedir. Ayrıca yazılı olmayan türlerden kişisel hikâye (anlatı), film ve anekdota da yer verilmiştir. Düzeyler açısından incelendiğinde, A, B ve C düzeylerine göre öğrenicilerin anlatısal yetiye sahip olup olmadıklarıyla ilgili çıkarım yapılmasında işlevsel olabilecek düzey betimleyicilerinin aşamalı bir şekilde yapılandırıldığı sonucuna ulaşılmıştır. Anlatısal metinlerle ve anlatısal yetiyle ilişkilendirilebilecek düzey betimleyicileri öğrenme alanlarına göre ele alındığında; anlatısallıkla ilgili düzey betimleyicisi sayısının en fazla okuma becerisinde; en az konuşma ve dinleme becerisinde yer aldığı görülmektedir.

Önemli Vurgular: Doğrudan yer verilmemiş olsa da diğer türlerle ilgili bir çerçeve sunulduğu; A, B ve C düzeylerine göre öğrenicilerin anlatısal yetiye sahip olup olmadıklarıyla ilgili çıkarım yapılmasında işlevsel olabilecek düzey betimleyicilerinin aşamalı bir şekilde yapılandırıldığı sonuçlarına ulaşılmıştır. AOBM'deki farklı ölçeklerde yer alan düzey betimleyicilerinden anlatısallıkla ilişkili görülenler, dil düzeylerine ve öğrenme alanlarına göre sınıflandırıldığı için çalışmanın, alan uzmanlarının hazırlayacağı öğretim programları ve materyallerde AOBM'deki düzey betimleyicilerinin ilgili dile özgü anlatısal yapılanış özelliklerini yansıtacak olan kazanım görünümlerinin belirlenmesine ve programların, daha özelde materyallerin ve planlanan etkinliklerin, niteliklerinin arttırılmasına katkı sağlayacağı düşünülmektedir.

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INTRODUCTION

Increasing cultural, economic, commercial, academic, social, and intellectual interaction between different countries due to globalization reveals the need for learning additional languages more strongly than ever before. In parallel with this, it is observed that studies regarding foreign/second language learning and teaching have gained momentum in the last half-century. These studies draw on many disciplines such as literature, psychology, sociology, anthropology, and especially linguistics and education as they interrelate closely in the field of foreign/second language teaching and learning.

Competency in a language is to be able to understand the content of a perceived message by distinguishing the sounds contained in the message and finding out which combinations of the sounds distinguished are meaningful and what the meaning is, as well as to compose a message that can be understood by the recipients (Özsoy, 2012, p. 3). Given this context, the purpose of foreign/second language teaching includes structuring of teaching processes so as to enable individuals to produce meaning and communicate in a language other than their mother tongue.

The main material in the structuring of the teaching processes is the texts produced in the target language. The texts correspond to parole in Saussure's distinction between langue and parole (Saussure, 1916; trans.: Vardar, 1998), and langue can only be observed through parole, that is, texts. In this context, the importance of texts as basic teaching materials in both first and foreign/second language instruction is obvious. What is more, in the framework of communicative language teaching, texts are considered as constructs that reflect the communicative prototype of the target language.

Linguistic competence of individuals can only be observed through their reactions to the texts they receive and interpret or produce. When the role of interaction of learners with texts in foreign/second language learning and teaching processes is evaluated, it is acknowledged that the learners' familiarity with different text types shaped by various communicative purposes and the culture that surrounds them and also with the linguistic characteristics of the text types and their organizational conventions have a facilitating role in terms of establishing successful communication (Brown & Lee, 2015, p. 397; Harmer, 2007, pp. 30-32; Korkut, 2016, p. 196-197, Şenöz Ayata, 2005, p. 62). To show how and for what purpose various language structures are used in different types of texts is the language teaching itself. For this reason, it is necessary to ensure that learners encounter different types of texts in foreign/second language teaching contexts.

This study focused on narrative texts amongst many different text types. Narratives allow people to make sense of their experiences. "Their functions . . . include presentation of self, organization of autobiographical memory, socialization of children into cultural membership, and mediation of ways of thinking about problems and difficulties" (Pavlenko, 2006, s. 105). Narratives also constitute an important part of daily conversations as relating experiences, reporting events, narrating dreams and future prospects, telling fairy tales and jokes, etc. (Kaya, 2018, p. 92).

The use of narrative texts in foreign/second language classes prepares learners for the oral and written narratives or communicative situations they may encounter in real life. The competencies of the learners in this respect are frequently emphasized by researchers. As a matter of fact, Pavlenko (2006, p. 107) puts forth the concept of L2 (second language) narrative competence. As Pavlenko puts it, the term suggests a native-like interpretation, organization, and narration of personal and fictional narratives by second-language users.

The features of the narrative text type such as being the most long-established and common type of discourse, its distinctiveness among other text types, functionality in preparing the learners for real-life narratives, roles in communication, and in enabling the learners to connect and socialize with the society and culture in which they live reveal its significance in foreign/second language teaching. This study emphasized the importance of the knowledge of genre conventions and narratives and aimed to identify the genres that require second/foreign language learners to draw on their narrative competence along with the related level descriptors. In order to realize this goal, the *Common European Framework of Reference for Languages* (CEFR) (Council of Europe, 2001) and *CEFR Companion Volume with New Descriptors* (Council of Europe, 2018), which serve to achieve coherence in the structuring of language learning/teaching processes amongst and beyond the member states of the Council of Europe by standardizing the way language ability is described, were analyzed. To this end, answers to the following questions were sought:

· What text types mentioned in the CEFR require learners to draw on their narrative competences?

· What are the level descriptors regarding the texts that call for narrative competence across common reference levels (A1, A2, B1, B2, C1, C2) in the CEFR?

· What are the level descriptors in the CEFR regarding the texts that call for narrative competence across four skills?

In order to answer these questions, firstly, a theoretical framework was presented on the concept of text, texts in language teaching, text types, and narrative texts. Then, the CEFR was analyzed to determine how narrative texts and the related level descriptors are presented. Finally, the findings were interpreted in light of the theoretical framework that had been established.

Texts and Language Teaching

Saussure (1916; trans.: Vardar, 1998) discussed two different dimensions of language by pointing to the concepts of *langue* and *parole*. As Kuzu (Culler, 1976, as stated in Kuzu, 2016, s. 240) explained, the former refers to the same value and semantic

field as the predetermined, rigid rules and materials of the language from the perspective of its users. The latter, parole, is brought about by the elements of a language that foresees the same meaning for everyone with the other language elements they relate to when the personal preferences are at stake. Therefore, it creates different layers of meaning and is regarded as a more personal field. Rifat (2013, p. 26) stated that language is social and speech is individual. According to Rifat, parole is the specific and variable realization of the language system. In other words, it can be considered to be the concrete form of the language in use. Drawing on these, it is possible to interpret parole as texts produced in the language, as mentioned in the introduction.

In the definitions of text offered within the scope of linguistics, communication is emphasized as the purpose. Günay (2007) stated that a written or oral document without a specific communication function is not a text. According to Keçik and Uzun (2004, p. 23), text is a unit of communication, and complete communication takes place through well-structured texts. Uçan (2008, p. 37) and Yazıcı (2004, pp. 10-11) also underscored that in order for a piece of writing to be considered a text, it must reveal its communicative purposes and produce meaning. The communicative purposes of a text vary according to the context in which it is used, the form of verbal or written interaction between the sender and the receiver, and the expectations of the receiver specific to the communicative functions of the text.

In the definitions of text provided in the disciplines of Turkish literature and Turkish language education, the elements that make up a text and integrity of these elements are foregrounded. Therefore, a text is considered as a tangible entity that is formed by gradual articulation and interveawing of its elements that have integrity (Adalı, 2003, p. 21; Akbayır, 2013, p. 189; Özdemir, 1983, p. 32). The text describes a meaningful pattern and a whole created through language (Güneş, 2013, p. 2).

Although there is no single definition of text, definitions such as a unit larger than a sentence or a series of sentences are not valid because the communicative function of texts is ignored in such definitions (Dilidizgün, 2017, p. 21). Texts have different functions in communication and consequently in social life and language teaching process. Since different communicative purposes require different text types, teaching text types is essential in language teaching. In the literature, studies showing the relationship between knowledge of text type and reading comprehension and writing (Oktar & Yağcıoğlu, 1993; Çakır, 2001; Temizyürek, 2008; Yıldırım et al. 2010; Lüle-Mert, 2016) provide arguments for teaching them.

Text Types

Different types of texts enable language learners to encounter different structures of the language, forms of expression, and perspectives. The text type that becomes evident in line with the communicative purposes of the text determines the language use specific to the genre. Since a story and an article have different communicative purposes and are in different forms, their reception and production also differ. In other words, the type of text determines how the learner will interact with and approach it. The learner's knowledge of and experience about the genre constitutes an important starting point for the comprehension and interpretation of a text at hand, and that is why it is a necessity for learners to encounter different text types or genres and develop awareness about them and structures related to them (Canlı & Bozkurt, 2019).

In the literature, text type definitions arising from different approaches or disciplines are presented, and different criteria for the classification of text types are encountered. As researchers in linguistics, Keçik & Uzun (2004, p. 18) state that the main distinction that helps identify a genre is its communicative purpose. In addition, the stylistic differences that characterize the genre and the frameworks of expression required by the genre reveal the text's communicative purposes. Genres are shaped according to the schematic structures and the purpose of the authors. Yazıcı (2004, pp. 10-11) also affirms the opinion that the communicative purposes of a text determine its genre.

In linguistics literature, text types are defined by criteria such as the author's intention, the organization of the text, and the purpose of communication. Some of these classifications are as follows: descriptive discourse, narrative discourse, explicative discourse, persuasive and expository discourse (Uzun, 2011b, s. 167)[4]; narrative, argumentative, expository-explicative, and directive texts (Korkut, 2016); descriptive, narrative, explicative and persuasive texts (Kıran & Eziler Kıran, 2007); narrative, conversational, poetic, functional, informative, instructive, professional texts, telecommunication, and press texts, warning texts, boards, banners, posters (Günay, 2007); descriptive, narrative, explicative, persuasive, conative texts (Dilidüzgün, 2017).

In the classifications of text types made in the disciplines of Turkish language and literature education, informative, usable, instructive, and literary or fictional texts are found as the most common types. For example, Aktaş & Gündüz (2004) classified texts as form writings (curriculum vitae, petition, letter, report, announcement, announcement), instructive texts, and literary texts. Adalı (2003) mentioned fictive/fictional, usable/informative texts. Temizkan (2009) discussed a tripartite distinction regarding event-based texts, information-based texts, and poetry. In the curricula that guide the educational practices, genres are presented as follows: In the Turkish Lesson (1-8th Grades) Curriculum (MEB, 2019a, p. 17), they are presented under three categories: narrative texts, informative texts, and poetry. In the Secondary Education Turkish Language and Literature Lesson (9th, 10th, 11th, and 12th grades) Curriculum (MEB, 2018, p. 18), they are grouped under the headings: poetry, narrative literary texts, theater, and informative (instructive) texts. In the internationally recognized PISA, which provides assessment measures for secondary school students, six types were defined: description, narration, exposition, argumentation, instruction, and transaction (MEB, 2019b, pp. 32-33).

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[4] Uzun, 2011b, s. 165-166. can be referred to for further information on the relationship between discourse and genre.

Genres such as memoir, biography, autobiography, diary, travelogue, epistolary writing, social media post, blog, and news are included in the scope of informative texts in Turkish classes (1st-8th Grades) in the Turkish Language and Literature Curriculum. To illustrate, books such as "Bir Bilim Adamının Romanı" (A Scientist's Novel) by Oğuz Atay and "Allahın Süngüleri -Reis Paşa" (The Bayonets of God - Reis Pasha) by Atilla İlhan are biographies. "My Left Foot" by Christy Brown, "Bir Dinozorun Anıları" (Memoirs of a Dinosaur) by Mina Urgan, and "My Childhood" by Maxim Gorky are autobiographies. "Frankfurt Seyahatnamesi" (Travel Notes from Frankfurt City) by Ahmet Haşim is an example of a travelogue. "Bir Sürgünün Anıları" (Memories of an Exile) by Aziz Nesin is a memoir. "Canım Aliyem" (Aliye, My Beloved) by Sabahattin Ali and "On Üç Günün Mektupları" (Letters of Thirteen Days) by Cemal Süreya can be given as examples of epistolary novels. These genres, which indeed have a narrative aspect, were categorized as informative texts based on their reference to reality. In other words, whether they are fictional or not was taken into consideration rather than their linguistic style. In this context, it would be appropriate to refer to the question Bozkurt (2018) asked in her article on the problem of classifying text types in reading and writing education: "Can literariness be a meta conceptual classification term?". She stated that generally, a tripartite classification, which is encountered as narrative/story, informative/instructive, and poetry, is made, and many genres are excluded in the classifications made by criteria such as the medium of publication of the text (such as the genres developed around the newspaper), the form of the text is written in (such as prose or verse), the source of the information presented in the text (reality/fiction), and whether the text is written or spoken, or some genres do not represent the category they are in in such cases. She conceded that the meaning of the concept of text type is narrowed due to such classifications.

Fludernik (2000) presented the most useful framework for the purpose of this study in the literature: In her proposed classification, in which she adopted a functional approach based on spoken discourse, she established a three-level narratological model consisting of *macro-genre*, *genre,* and *discourse mode* categories. The macro-genre level consists of "the functions of communication" (Fludernik, 2000, p. 280). She identified five macro-genres: narrative, argumentative, instructive, conversational, reflective. At the genre level, "traditional genre expectations" (Fludernik, 2000, p. 280) come into play, and novels, plays, films, myths, sermons, letters, poems, manuals, etc. are considered to be at this level. The discourse mode level is related to the surface structure of the texts. "On this level, the function, for instance of an argumentative or descriptive passage, within the schema of the specific genre is at issue" (Fludernik, 2000, p. 280). Reporting, orientational passages, imperatives, dialogue, word plays, expositional sentences, argumentative passages, etc. belong to the category of discourse mode. They form textlinguistic units in a genre-specific scheme and do not have a straightforward relation to genres and macro-genres (Fludernik, 2000, p. 283). Defining the concept of discourse mode separately can be seen as an effort to overcome the difficulty in delineating the macro-genres. Thus, for example, the presence of a descriptive passage in a narrative text can be explained not by the intertwining of genres but by the presence of different modes of discourse within the text (if not post-modern or etc.). Drawing on this idea, all three levels, the discourse mode, the genre, and the macro-genre level, were taken into account while selecting the narrative level descriptors in the CEFR in the present study.

Narrative Texts

Narrative texts include time, setting, characters, a series of events, and a narrator. The defining feature that distinguishes them from other text types is that the narrator is particularly recognizable (Toolan, 1998). In narrative texts, there are two levels in which the series of events or the story are told, and the point of view is given: story and discourse (Koç, 1983). For these two levels, the concepts of *mimesis* and *diegesis*[5] were used during the times of Plato and Aristotle. Russian formalists, on the other hand, used the concepts of *fabula* and *sjuzet* to refer to the same concepts (Chatman, 2008, p. 18). Chatman (2008, p. 17, 21) stated that a narrative includes the content or chain of events and entities (characters, elements of time and space) at the story level and that at the level of discourse, the way the content is conveyed is expressed. The story is the *what* of a narrative, and the discourse is the *how*.

Whether the narratives contain reality or fiction is one of the issues emphasized in the literature. Prince (1982) defined narratives as the recountings of real or fictional events. Bal (1977) drew attention to a similar distinction by asserting that narrative studies are carried out in two separate branches, namely general narratology and literary narratology (Bal, 1977; as stated in Rimmon-Kenan, 2007, p. 44). In line with these views, Bozkurt (2018, p. 94) presented the narrative texts in two categories: fictional and based on real life. The fictional ones are short stories, novels, fairy tales, epics, fables, jokes, myths, movie/tv series scripts, theater plays, comics, etc. The ones based on real-life are memoirs, diaries, personal experience narratives, blogs, biographies/autobiographies, narrative sections of travelogues, narrative sections of letters, game commentaries, narrative sections in historical texts, narrative sections in documentary texts, news items, witness texts, etc. Therefore, it should be noted that narratives that refer to reality are distinct from fictional narratives, that narrative texts do not only consist of literary texts, and that not every narrative has literary content (Bozkurt, 2018, p. 94). As Uzun stated, narrative discourse includes a wide variety of text type denominations ranging from oral narratives produced in daily life to fictional narratives presented in written form (2011a, p. 183).

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[5] The concept of mimesis is mentioned in Plato's *State* (Trans.: Saraçoğlu & Atayman, 2005), and the concept of diegesis is mentioned in Aristotle's *Poetics* (Trans.: Rifat, 2015).

Labov, who revealed the textual structure of the narrative based on oral narratives and created a point of reference for many narrative analyzes, defined narratives as "one method of recapitulating past experience by matching a verbal sequence of clauses to the sequence of events which (it is inferred) actually occurred" (Labov, 1972, pp. 359-360). According to the prototype Labov created by taking the constituent functional parts of the narrative into account, in the rhetorical schema of narrative texts developed in every aspect, elements such as abstract, orientation, complicating action, evaluation, result, and coda can be found. He noted that all these elements are optional, except for the complicating action. He also put that they can be ordered in complex ways or be connected to each other. Intertwining can also be observed. Labov stated that these elements basically constitute an answer to the following questions (Labov, 1972, p. 370):

a. Abstract: what was this about?

b. Orientation: who, when, what, where?

c. Complicating action: then what happened?

d. Evaluation: so what?

e. Result: what finally happened?

This rhetorical schema presented by Labov is shaped by the communicative intentions targeted on the receiver (reader/listener) and the channel of communication (Yazıcı, 2013, p. 98). The schema is important for the present study, as the narrative texts, which are frequently encountered in education and foreign/second language teaching practices, and some of the level descriptors in the CEFR will be included in the scope of narrative level descriptors to be presented as one of the findings of the study based on their association with certain elements in this schema.

Narrative Texts and Narrative Competence in a Foreign/Second Language

As Riessman claimed, telling stories about past events is a universal human action (as stated in Uzun, 2011a, p. 183). In this context, narrative texts are functional both as content and activity, as well as being the types of texts needed in many other ways in foreign/second language learning. Wajnryb (2003) stated that it is possible to provide the three basic conditions for language learning put forward by Willis (1996) through stories (or narrative texts), which are exposure, use, and motivation. With the use of narrative texts in classrooms, learners are exposed to the language, experience using the language, and are motivated by the interest/curiosity that narrative texts cultivate. Cortazzi (1994) stated that narrative texts and narrative analysis could have a wide variety of functions in the context of foreign language teaching in terms of instructor and learner. Instructors can use narrative analysis to identify appropriate points in the text for "prediction, sequencing, gap filling, editing, and story completion tasks" (Cortazzi, 1994, p.165). A narrative model like Labov's can be functional in assessing learners' written and oral narratives and coming up with story-based activity ideas. Such a model can also guide learners in creating their own stories. Additionally, Cortazzi (1994) noted that oral narrative activities are invaluable in language learning classrooms. Classroom interaction often gives learners the chance to briefly respond to conversations initiated by others. However, telling a story or relating an experience will allow learners to have an extended turn without being interrupted. He said that the need for teachers to make extensive use of written narratives such as picture books, traditional stories, contemporary stories, along with oral storytelling, is also advocated in the literature for learners of all age groups.

Access to the conventional narrative texts in the target language is of utmost importance for foreign/second language learners because, as Wajnryb (2003) put it, "we cannot assume that the skill of achieving a recount, an anecdote, a postcard or a joke is easily transportable from one language to another, as the conventions of these narrative types tend to be highly language- and culture-specific" (p.11). Evaluating the studies in the literature, Pavlenko stated that the narratives produced by second language learners comply with the conventions of the narratives in the target language when the conventional narrative structures in the first language and the second language are similar (Berman 1999; Ordóñez 2004; Rintell 1990; Viberg 2001; as stated in Pavlenko, 2006, p. 109). Also, in cases where the narrative structures in the first language and the second language are different, learners can acquire new structures as well (Maeno 1995, as stated in Pavlenko, 2006, p. 109). Therefore, it is necessary to expose learners to as many narrative texts as possible and teach the conventions and structures of narrative texts in the target language. However, as Pavlenko (2006) explained, second language teaching programs rarely focus on the teaching of narrative structures, prioritizing linguistic or pragmatic competence in classroom practices. However, this can be explained by a few different factors, such as the limited time and the false belief that learners who can make correct sentences can put these sentences one after the other and form a narrative. She also stated that it is frequently encountered that learners who are successful at the sentence level fail to come up with narratives that are appropriate for the language and culture because narrative competence does not exactly overlap with linguistic competence and "does not fully correlate with measures of syntactic complexity or vocabulary size" (McCabe & Bliss 2003, as stated in Pavlenko, 2006, p. 105).

As stated in the introduction, narrative competence refers to the second language users' "ability to interpret, construct, and perform personal and fictional narratives similarly to a reference group of native speakers of the target language" (Pavlenko, 2006, p. 107). Pavlenko mentioned three components of this competence: structure, evaluation and elaboration, and cohesion (Pavlenko, 2006, p. 107). Learners who can operationalize these three elements in their narratives in a way that will be accepted by the speakers of the target language can be considered to have narrative competence.

"Text" in the *Common European Framework of Reference for Languages*

The Common European Framework of Reference for Languages published in 2001 and the updated *Companion Volume* published in 2018 are the efforts of the Council of Europe to ensure "quality inclusive education," which is considered a right for all citizens (Council of Europe, 2018, p. 23). This text aims to make curricula, teaching practices, and evaluations transparent and consistent within an institution and across institutions, regions, and countries (Council of Europe, 2018, p. 25). The CEFR was developed as a continuation of the language education studies of the Council of Europe in the 70s and 80s, so it built on the communicative approach presented in the study called The Threshold Level in the mid-70s and adopted the action-oriented approach (Council of Europe, 2018, p. 25). "The CEFR's action-oriented approach represents a shift away from syllabuses based on a linear progression through language structures, or a pre-determined set of notions and functions, towards syllabuses based on needs analysis, oriented towards real-life tasks and constructed around purposefully selected notions and functions" (Council of Europe, 2018, s. 26). It is basically a tool to help plan curricula, courses, and assessment processes by considering what users/learners need to do in the language as a starting point (Council of Europe, 2018, p. 26).

Language use in the CEFR is conceptualized in parallel with communicative language teaching, and according to this conceptualization, language use encompasses the actions of people who develop various general and communicative language competences as individuals or social agents. Language users and language learners engage in a number of linguistic activities, including the processes of producing and receiving text and discourse. These language activities are defined as the use of a person's communicative language competence in a certain domain in receptive or productive processing of texts in order to fulfill a task (Council of Europe, 2001, p. 9). According to this explanation, texts are one of the basic elements in the communication process. In the CEFR, a text is defined as "any sequence or discourse (spoken and/or written) related to a specific domain and which in the course of carrying out a task becomes the occasion of a language activity, whether as a support or as a goal, product or process." (Council of Europe, 2001, p. 10). This definition highlights the multidimensionality of the central role of the text in the communication process and the CEFR.

As clearly stated in the AOBM, communication is not possible without a text. All of the language activities are analyzed in line with the relation of the user/learner and the other persons involved in the communication, and the text is at the center of all kinds of linguistic communication (Council of Europe, 2001, p. 93). When evaluating whether a text can be used for a learner or group of learners, the following factors should be taken into account: "linguistic complexity, text type, discourse structure, physical presentation, length of the text and its relevance for the learner(s)" (Council of Europe, 2001, p. 165). These factors have a direct influence on shaping teaching practices.

Text Types in the *Common European Framework of Reference for Languages*

In the CEFR, recognizing text types and forms is associated with pragmatic competence, which is one of the communicative competences that learners need to develop in order to be considered competent in a given language. Pragmatic competence, together with linguistic and sociolinguistic competences, contributes to the successful completion of communicative tasks. Pragmatic competences are related to "the functional use of linguistic resources," and they also concern "the learner's mastery of discourse, cohesion, and coherence, identification of text types and forms, irony and parody" (Council of Europe, 2001, p. 13). Three sub-categories of pragmatic competence have been identified. These are discourse competence, functional competence, and design competence. One of the important elements of discourse competence is text design. Text design is concerned with the way information is structured when some macro functions like description, narrative, exposition, etc. are being realized, the way stories, jokes, anecdotes, etc. are recounted, the way an argument is made in occasions like debates or courts, as well as the way written texts such as essays, letters etc. are outlined, structured, or etc. (Council of Europe, 2018, pp. 138-139). Macro functions fall within the domain of functional competence.

Macro functions such as description, narration, commentary, exposition, exegesis, explanation, demonstration, instruction, argumentation, and persuasion are presented in the CEFR in relation to the functional use of discourse or written texts (Council of Europe, 2001, p. 126). The macro-genre concept proposed by Fludernik (2000) also acknowledged macro functions. From this point of view, the learners' ability as social agents to communicate successfully in oral or written interaction situations, which are largely shaped by the cultural environment, depends on their ability to produce texts to perform macro functions. In order to achieve this, they need to be able to identify text types and know how they are designed and structured. Uzun (2011b, p. 166) stated that the communicative purposes and functions of a text become evident within the genre, and the communicative purposes determine the genre while the genre determines the discourse schema and language use specific to that text. Therefore, teaching discourse schemas and language use in connection with text types or genres will enable learners to be competent in both productive and receptive language activities. In the CEFR (Council of Europe, 2001, p. 160, 165), it is mentioned that the learners' knowledge of text types would help them to have an idea about the structure and content of a text they encounter and thus understand it. It is also stated that whether a text has a concrete (as in narratives) or abstract nature impacts the learners' comprehension.

The way texts are categorized differs from general trends when it comes to language teaching/learning. Categories such as authentic texts, texts specially designed for instructional purposes, or texts in textbooks and texts produced by learners are some of the many text categories mentioned in this field (Council of Europe, 2001, p.16). According to the CEFR, each act of using language takes place in the context of a specific situation in personal, public, professional, or educational domains. In which domain and in what situations learners may encounter texts can be a valid concern in terms of selection of the texts to be included

in the curriculum (Council of Europe, 2001, p. 45). For this reason, text types are presented in a table with regards to these four domains in the CEFR (Council of Europe, 2001, p. 48-49). According to this table, texts that learners may encounter in the personal domain include teletext, guaranties, recipes, instructional materials, novels, magazines, newspapers, junk mail, brochures, personal letters, broadcast and recorded spoken texts. The texts that may be encountered in the public domain are public announcements and messages, labels and packaging, leaflets, graffiti, tickets, timetables, notices, regulations, programs, contracts, menus, sacred texts, sermons, and hymns. Professional domain includes texts such as business letters, report memorandums, life and safety notices, instructional manuals, regulations, advertising material, job descriptions, signposting, visiting cards. Finally, authentic texts, which can possibly be those texts listed in the other domains, textbooks, readers, reference books, blackboard texts, OP texts, computer screen text, video text, exercise materials, journal articles, abstracts, dictionaries, are in the scope of educational domain. The CEFR also acknowledged a distinction between the text types associated with four different domains explained above into two as oral and written texts.

Although the text type classifications used in linguistics or literature studies have been functional in the background of the CEFR, the texts it foregrounds are those that are functional in daily life rather than literary genres such as novels, autobiographies, etc. because its action-oriented approach prioritizes communicative language activities. For example, while a ticket, as an informative text, is not given much importance in other fields, it becomes a type of text that is emphasized in foreign/second language teaching. While the collocations, "informative texts" and "narrative texts," are not encountered in the text published in 2001, the mere fact that these expressions are mentioned in the Companion Volume published in 2018 indicates that these classifications, which were thought to be functional in the background of the CEFR, are actually important reference points in the text and that they have gained more importance throughout the CEFR's developmental process.

METHOD

The present research is qualitative. Qualitative research refers to the type of research in which qualitative data collection methods such as observation, interview, and document analysis are used (Yıldırım & Şimşek, 2011). Data was collected from the *Common European Framework of Reference for Languages* (2001) published by the Council of Europe and the *Companion Volume* (2018) through document review, and a content analysis was conducted. Since the *Companion Volume* (Council of Europe, 2018) was published as complementary to the previous text (Council of Europe, 2001), both texts were included in the research. Because the updates presented in the *Companion Volume* were considered to be essential, priority was given to the updated version at points where both texts cover. The processes of collecting, categorizing, and preparing the data for description were carried out sequentially. In order for the findings to be meaningful and consistent within themselves, the analysis was carried out by the three researchers.

The first research question calls for determining the text types that require narrative competence. In order to be able to answer it, the theoretical framework established in the previous sections provides a solid basis. Among all the text types mentioned in the CEFR, texts that include the discourse dimension as well as the story as outlined by Chatman (2008), texts that are likely to include the narrative discourse mode or texts that can be included in the narrative macro-genre category due to their communicative function according to Fludernik's (2000) model, texts with a narrative macro function as stated in the CEFR, and finally, texts that overlap with the narrative genres listed under the categories of "fictional" and "based on real-life" in Bozkurt's (2018) article were considered as texts that require narrative competence based on narrative text classifications in the literature (Günay, 2007; Kıran & Eziler Kıran, 2007; Korkut, 2016; Dilidüzgün, 2017). In order to determine what the level descriptors related to the texts requiring narrative competence across levels and skills are, the scales containing descriptors in various categories in the CEFR and self-assessment scales were examined. Although these scales were not explicitly associated with narrative texts, the level descriptors that could be related to narrative texts were identified and selected to be included in the findings by the researchers. In order to identify the relevant descriptors, common reference level scales, DIALANG[6] self-assessment grids, the scales of overall spoken production, sustained monologue, overall reading comprehension, reading correspondence, thematic development, coherence, and cohesion, overall written interaction, correspondence, creative writing, understanding the interaction between native speakers, listening as a member of a live audience, listening to announcements and instructions, overall listening comprehension, reading for information and argument, identifying cues and inferring, and information exchange were analyzed. In addition to these, reading as a leisure activity and telecommunication scales presented for the first time in *the CEFR Companion Volume* published in 2018 were used.

Various criteria were determined for the process of associating level descriptors in the CEFR with narrative texts. Level descriptors meeting at least one of these criteria were considered to be related to narrative texts. In the process of determining criteria and relating them to narratives, first of all, level descriptors that directly refer to a narrative genre such as novel, story, etc. were identified. In addition, descriptors that are thought to have a potential to bear narrative passages or can be associated with the narrative elements in the surface structure of the texts due to the use of narrative discourse mode were identified based

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[6] DIALANG is a project by the European Commission and its descriptors are extended and adapted to self-assessment in the CEFR. The self-assessment statements used in DIALANG were taken from the CEFR. It is an assessment system prepared for language learners who want to obtain diagnostic information and feedback about their linguistic proficiency levels. Moreover, this system gives learners advice on how to improve their language skills and aims to increase their language learning awareness and competence. (Council of Europe, 2001, s. 22, 226-229).

on the distinction made by Fludernik (2000) between genre and discourse mode. In addition, descriptors that mention the term "literary texts" as a super-category were considered appropriate to be considered in this context, as they may include narrative genres in certain situations, as explained earlier. Level descriptors related to cohesion, which is one of the three components of the concept of narrative competence that Pavlenko (2006) discussed, were also added to these. Finally, based on the narrative framework that Labov (1972) presented regarding the elements that make up a narrative, the level descriptors that encompass summarization skills, which are seen to be essential to produce narrative texts, were also selected as they can be associated with the abstract section of a narrative. Furthermore, level descriptors that refer to descriptions of persons, places, times, and situations were selected due to their relation to the orientation section. Level descriptors with an emphasis on storytelling or recounting an experience were also selected as they may be associated with complicating action section. Lastly, level descriptors including skills such as interpretation, evaluation, expressing the importance of an event, etc. were also considered as relevant due to their functionality in the evaluation section. All these descriptors were combined in the table below, in which they were classified on the basis of proficiency levels and language skills.

FINDINGS AND DISCUSSION

In the present study, the texts requiring narrative competence and the level descriptors related to these texts were analyzed and presented within the framework of research questions according to language skills and proficiency levels established in the CEFr. As a result of the analysis, the answer to the first research question (What text types mentioned in the CEFR require learners to draw on their narrative competences?) is as follows:

In the CEFR, written texts such as novels, personal letters, short stories, short newspaper articles (that describe events), comic strips, photo stories, travelogues, news items, biographies, cartoons, advertisements, postcards, messages, notes, e-mails, blogs and fairy tales, which can be considered as narrative texts, are mentioned. Besides, personal narratives, films, and anecdotes, which are not written genres, are also encountered. However, it should be noted that among these, texts such as short newspaper articles, advertisements, news items, postcards, personal letters, messages, notes, e-mails, and blogs can be counted as narrative genres only in cases when they contain narrative sections or use narrative discourse mode proposed by Fludernik (2000). However, in other cases, these genres may also be considered as informative, expository, etc., as they may have other functions.

A proficiency level-based categorization of the text types/genres mentioned in the CEFR can reveal useful information. Stories (short and simple), letters, advertisements, comics, photostories, imaginary biographies (short and simple), and postcards are mentioned in the A-level scales. Short stories, novels, comics, short news items, biographies, and travelogues are encountered in the B-level scales. In the C-level scales, the most frequently mentioned genres are letters and short/stories. It is observed that genres such as epic, fable, myth, movie/tv series scenario, memoirs, game commentaries, etc. are not mentioned in the CEFR; however, as a common framework used for many different languages and in many different contexts, its mission is to provide examples to illustrate its point rather than listing all of the possible genres. It is the responsibility of field experts to identify the genres that are specific to a given language, culture, program, and level along with competences related to them and transform them into specific objectives. As a matter of fact, some examples of use are presented for various domains in Appendix 6 (Council of Europe, 2018, p. 185-221) due to the fact that the concepts of online interaction and mediation are new to the users of the text. They mention genres such as folk/fairy tales, blogs, web talks, which were not mentioned in the previous text, and this supports the idea that genres to be used in the classroom are not limited to those mentioned in the CEFR.

The second and third research questions aimed to find out what the level descriptors regarding the texts that call for narrative competence across common reference levels (A1, A2, B1, B2, C1, C2) and four skills are in the CEFR. The answers to these research questions are presented in Table 1.[7]

Table 1. distribution of the level descriptors regarding the texts that call for narrative competence across common reference levels (A1, A2, B1, B2, C1, C2) and four skills

READING	
A1	* Can understand in outline short texts in illustrated stories, provided that the images help him/her to guess a lot of the content (Council of Europe, 2018, p. 65). * Can understand short, illustrated narratives about everyday activities that are written in simple words (Council of Europe, 2018, p. 65).
A2	* I can read very short, simple texts. I can find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus and timetables and I can understand short simple personal letters (Council of Europe, 2001, p. 26). * Can understand short simple personal letters (Council of Europe, 2018, p. 61).

[7] While determining the distribution of the level descriptors across the four skills, the coherence and cohesion scale in the CEFR was also used; however, the level descriptors in this scale, except for the descriptor ("Can produce clear, smoothly flowing, well-structured speech, showing controlled use of organisational patterns, connectors and cohesive devices." (Council of Europe, 2001, p. 125) were not placed in the table because it is not possible to classify them under the headings of writing or speaking as they apply to both.

* Can understand basic types of standard routine letters and faxes (enquiries, orders, letters of confirmation etc.) on familiar topics (Council of Europe, 2018, p. 61).
* Can identify specific information in simpler written material he/she encounters such as letters, brochures and short newspaper articles describing events (Council of Europe, 2018, p. 63).
* Can understand what is happening in a photo story (e.g. in a lifestyle magazine) and form an impression of what the characters are like (Council of Europe, 2018, p. 65).
* Can understand short narratives and descriptions of someone's life that are written in simple words (Council of Europe, 2018, p. 65).
* Can understand the main point of a short article reporting an event that follows a predictable pattern (e.g. the Oscars), provided it is clearly written in simple language (Council of Europe, 2018, p. 65).
* Can understand much of the information provided in a short description of a person (e.g. a celebrity) (Council of Europe, 2018, p. 65).
* Can understand enough to read short, simple stories and comic strips involving familiar, concrete situations written in high frequency everyday language (Council of Europe, 2018, p. 65).
* Can follow the general outline of a news report on a familiar type of event, provided that the contents are familiar and predictable (Council of Europe, 2018, p. 63).
* Can understand texts describing people, places, everyday life, and culture, etc., provided that they are written in simple language (Council of Europe, 2018, p. 63).

B1	* I can understand texts that consist mainly of high frequency everyday or job-related language (Council of Europe, 2018, p. 167). * I can understand the description of events, feelings and wishes in personal letters (Council of Europe, 2018, p. 167). * Can understand the description of events, feelings, and wishes in personal letters well enough to correspond regularly with a pen friend (Council of Europe, 2018, p. 61). * Can understand a travel diary mainly describing the events of a journey and the experiences and discoveries the person made (Council of Europe, 2018, p. 65). * Can follow the plot of stories, simple novels and comics with a clear linear storyline and high frequency everyday language, given regular use of a dictionary (Council of Europe, 2018, p. 65). * Can understand straightforward personal letters, emails or postings giving a relatively detailed account of events and experiences (Council of Europe, 2018, p. 61). * Can read newspaper / magazine accounts of films, books, concerts etc. written for a wider audience and understand the main points (Council of Europe, 2018, p. 65). * Can follow a line of argument or the sequence of events in a story, by focusing on common logical connectors (e.g. however, because) and temporal connectors (e.g. after that, beforehand) (Council of Europe, 2018, p. 67).
B2	* I can understand contemporary literary prose (Council of Europe, 2018, p. 167). *Can read for pleasure with a large degree of independence, adapting style and speed of reading to different texts (e.g. magazines, more straightforward novels, history books, biographies, travelogues, guides, lyrics, poems), using appropriate reference sources selectively (Council of Europe, 2018, p. 65). *Can read novels that have a strong, narrative plot and that are written in straightforward, unelaborated language, provided that he/she can take his/her time and use a dictionary (Council of Europe, 2018, p. 65).
C1	* I can understand long and complex factual and literary forms of the written language, appreciating distinctions of style (Council of Europe, 2001, p. 27). *Can read and appreciate a variety of literary texts, provided that he/she can reread certain sections and that he/she can access reference tools if he/she wishes (Council of Europe, 2018, p. 65). *Can read contemporary literary texts and non-fiction written in the standard form of the language with little difficulty and with appreciation of implicit meanings and ideas (Council of Europe, 2018, p. 65).
C2	* Can read virtually all forms of the written language including classical or colloquial literary and non-literary writings in different genres, appreciating subtle distinctions of style and implicit as well as explicit meaning (Council of Europe, 2018, p. 65). * I can read with ease virtually all forms of the written language, including abstract, structurally or linguistically complex texts such as manuals, specialised articles and literary works (Council of Europe, 2018, p. 167). *Can read virtually all forms of the written language including classical or colloquial literary and non-literary writings in different genres, appreciating subtle distinctions of style and implicit as well as explicit meaning (Council of Europe, 2018, p. 65).

WRITING

A1	*Can write simple phrases and sentences about themselves and imaginary people, where they live and what they do (Council of Europe, 2018, p. 76). *Can describe in very simple language what a room looks like (Council of Europe, 2018, p. 76).

A2	* Can write short, simple notes, emails and text messages (e.g. to send or reply to an invitation, to confirm or change an arrangement) (Council of Europe, 2018, p. 95). * Can write short, simple imaginary biographies and simple poems about people (Council of Europe, 2018, p. 76). * Can write very simple personal letters expressing thanks and apology (Council of Europe, 2018, p. 94). *Can tell a simple story (e.g. about events on a holiday or about life in the distant future) (Council of Europe, 2018, p. 76). *Can write an introduction to a story or continue a story, provided he/she can consult a dictionary and references (e.g. tables of verb tenses in a course book) (Council of Europe, 2018, p. 76). *Can write diary entries that describe activities (e.g. daily routine, outings, sports, hobbies), people and places, using basic, concrete vocabulary and simple phrases and sentences with simple connectives like 'and,' 'but' and 'because' (Council of Europe, 2018, p. 76).
B1	* I can write simple connected text on topics which are familiar or of personal interest. I can write personal letters describing experiences and impressions (Council of Europe, 2001, p. 26) * Can write a description of an event, a recent trip – real or imagined (Council of Europe, 2018, p. 174, 76). * Can narrate a story (Council of Europe, 2018, p. 174, 76). * Can write accounts of experiences, describing feelings and reactions in simple connected text (Council of Europe, 2018, p. 174, 76). * Can summarise, report and give his/her opinion about accumulated factual information on a familiar routine and nonroutine matters, within his field with some confidence (Council of Europe, 2018, p. 174, 77). *Can clearly signal chronological sequence in narrative text (Council of Europe, 2018, p. 76).
B2	*I can write letters highlighting personal significance of events experiences (Council of Europe, 2001, p. 27). * Can write clear, detailed descriptions of real or imaginary events and experiences marking the relationship between ideas in clear connected text, and following established conventions of the genre concerned (Council of Europe, 2018, p. 173, 76). *Can write letters conveying degrees of emotion and highlighting the personal significance of events and experiences and commenting on the correspondent's news and views (Council of Europe, 2018, p. 94).
C1	* Can write clear, detailed, well-structured and developed descriptions and imaginative texts in a mostly assured, personal, natural style appropriate to the reader in mind (Council of Europe, 2018, p. 176, 73). * I can express myself in clear, well-structured text, expressing points of view at some length (Council of Europe, 2018, p. 169). *Can employ the structure and conventions of a variety of written genres, varying the tone, style and register according to addressee, text type, and theme (Council of Europe, 2018, p. 75).
C2	* I can write clear, smoothly flowing text in an appropriate style. I can write complex letters, reports or articles which present a case with an effective logical structure which helps the recipient to notice and remember significant points. I can write summaries and reviews of professional or literary works (Council of Europe, 2001, p. 27). * Can write clear, smoothly flowing, and engaging stories and descriptions of experience in a style appropriate to the genre adopted (Council of Europe, 2018, p. 173, 76).

SPEAKING

A1	* Can produce simple mainly isolated phrases about people and places (Council of Europe, 2018, p. 69). * Can ask and answer questions about themselves and other people, where they live, people they know, things they have. Can indicate time by such phrases as next week, last Friday, in November, three o'clock (Council of Europe, 2018, p. 90).
A2	* Can tell a story or describe something in a simple list of points (Council of Europe, 2018, p. 70). * Can describe everyday aspects of his/her environment e.g., people, places, a job, or study experience (Council of Europe, 2018, p. 70). * Can describe plans and arrangements, habits and routines, past activities, and personal experiences (Council of Europe, 2018, p. 70). * Can use simple descriptive language to make brief statements about and compare objects and possessions (Council of Europe, 2018, p. 70). * Can explain what he/she likes or dislikes about something (Council of Europe, 2018, p. 70). * Can describe his/her family, living conditions, educational background, present or most recent job (Council of Europe, 2018, p. 70). * Can describe people, places and possessions in simple terms (Council of Europe, 2018, p. 70). *Can ask and answer simple questions about an event, e.g., ask where and when it took place, who was there, and what it was like (Council of Europe, 2018, p. 90).
B1	* I can narrate a story or relate the plot of a book or film and describe my reactions (Council of Europe, 2018, p. 169). * Can give straightforward descriptions on a variety of familiar subjects within his field of interest (Council of Europe, 2018, p. 70). * Can reasonably fluently relate a straightforward narrative or description as a linear sequence of points (Council of Europe, 2018, p. 70). * Can give detailed accounts of experiences, describing feelings and reactions (Council of Europe, 2018, p. 70). * Can relate details of unpredictable occurrences, e.g. an accident (Council of Europe, 2018, p. 70). * Can relate the plot of a book or film and describe his/her reactions (Council of Europe, 2018, p. 70). * Can describe dreams, hopes and ambitions (Council of Europe, 2018, p. 70).

	* Can describe events, real or imagined (Council of Europe, 2018, p. 70).
	* Can narrate a story (Council of Europe, 2018, p. 70).
	*Can clearly express feelings about something experienced and give reasons to explain those feelings (Council of Europe, 2018, p. 70).
	*Can say whether or not he/she approves of what someone has done and give reasons to justify this opinion (Council of Europe, 2018, p. 72).
	*Can give important details over the phone concerning an unexpected incident (e.g. a problem in a hotel, with travel arrangements, with a hire car) (Council of Europe, 2018, p. 92).
B2	*Can describe the personal significance of events and experiences in detail (Council of Europe, 2018, p. 70)
	*Can develop a clear description or narrative, expanding and supporting his/her main points with relevant supporting detail and examples (Council of Europe, 2018, p. 141).
C1	Can give elaborate descriptions and narratives, integrating sub themes, developing particular points and rounding off with an appropriate conclusion (Council of Europe, 2018, p. 70).
	* Can produce clear, smoothly flowing, well-structured speech, showing controlled use of organisational patterns, connectors and cohesive devices (Council of Europe, 2018, p. 142).
C2	* Can produce clear, smoothly flowing well-structured speech with an effective logical structure which helps the recipient to notice and remember significant points (Council of Europe, 2018, p. 69).

LISTENING

A1	*Can recognise concrete information (e.g. places and times) on familiar topics encountered in everyday life, provided it is delivered in slow and clear speech (Council of Europe, 2018, p. 55).
A2	*Can understand the important points of a story and manage to follow the plot, provided the story is told slowly and clearly (Council of Europe, 2018, p. 59).
B1	*Can understand the main points and important details in stories and other narratives (e.g. a description of a holiday), provided the speaker speaks slowly and clearly (Council of Europe, 2018, p. 59).
	*Can listen to a short narrative and predict what will happen next (Council of Europe, 2018, p. 67).
	*Can follow a line of argument or the sequence of events in a story, by focusing on common logical connectors (e.g. however, because) and temporal connectors (e.g. after that, beforehand) (Council of Europe, 2018, p. 67).
B2	*Can follow chronological sequence in extended informal speech, e.g. in a story or anecdote (Council of Europe, 2018, p. 56).
C1	-
C2	-

Pre-A1 level, which was framed as a new reference level in the CEFR Companion Volume published in 2018, was not included in the table above because no narrative texts or level descriptors that could be associated with narratives were encountered at this level. A1 level learners can receive and grasp the general meaning of simple and short (and slowly delivered in the case of spoken texts) texts that are about themselves or their immediate surroundings, concrete or embodying elements concretized through pictures, etc., when the time, setting, and people in the narratives are clear. They can also produce texts of a similar nature. A2 is the level with the highest number of level descriptors. Therefore, it is the level for which the highest number of level descriptors associated with narratives was provided in the table. At this level, narratives (noted as short and simple though) and narrative genres such as story, comic, photo story, short newspaper article, advertisement, and letter are mentioned for the first time. A learner at this level can follow the flow of spoken or written texts in which the events are in chronological order as well as producing very simple narratives that include descriptions of persons or places using simple connectives. An A1 or A2 level learner, who is also described as a "basic user" (Council of Europe, 2001, p. 23), cannot be said to have a narrative competence (Pavlenko, 2006) because she/he has limited resources to structure, evaluate, elaborate, and ensure coherence, and more importantly, and she/he is not proficient enough to produce an example of any genre in the target language.

A B1 or B2 level learner is described as an "independent user" in the CEFR (Council of Europe, 2001, p. 23). It can be claimed that learners at the B1 level are able to cope with more general content outside of their immediate surroundings for the first time. They can produce written or oral descriptions of events and their experiences with important details more fluently than at A levels by making connections between events. Also, at this level, learners show awareness of the conventional structures of genres for the first time (Council of Europe, 2018, p. 141). It is seen that a more independent learner is depicted in the level descriptors at the B2 level. Learners can understand and produce narrative texts at this level without being as dependent on reference sources as before. For example, they can read novels with an uncomplicated plot and only one narrator. They can evaluate the events by emphasizing the importance of the events for themselves in their narratives and can create cohesive texts in which they emphasize the relationships between the events or opinions using conjunctions. They can produce all the components in Labov's rhetorical schema at a minimum. For these reasons, it can be concluded that independent users have a developing narrative competence.

Learners at C1 and C2 levels are termed as "proficient users" (Council of Europe, 2001, p. 23). A C1 level learner can develop an elaborate oral or written narrative from orientation to coda according to Labov's (1972) schema. A learner at the C2 level can even notice the stylistic nuances of discourse, in addition to the competencies developed at the previous levels. It can be claimed that learners at this level are able to cope with complex narrative texts that involve complicated phenomena such as multiple narrators or various point of view devices and adapt them to the situation or to the culture while producing such texts. Therefore, proficient users can be said to have been equipped with the skills required for narrative competence.

When the level descriptors regarding narrative texts are analyzed with respect to the four skills, it is observed that learners can understand descriptions about themselves, people around them, their family, immediate surroundings, and events taking place in daily life in A1 and A2 levels, and the ones about feelings, wishes, experiences and events in B1 level. While there are descriptors regarding understanding short, simple, and plain texts about daily life at A1, A2, and B1 levels, the use of the word "advanced" in descriptors at B2 and C1 levels might indicate an increase in terms of the difficulty as learners can understand and evaluate long and complex literary texts at these levels. At the C2 level, there are level descriptors related to understanding, critical reading, and evaluation of abstract and complex literary texts. There can be multiple narrators in literary narrative texts, which can create unconventional structures in a narrative. The discourse of the text is noticed as much as its story. Sometimes the way the story is told gets more attention than the story itself. Therefore, it can be asserted that a learner at this level has the ability to understand narrative texts in which different literary techniques are used.

Another finding related to reading is that the number of level descriptors related to narrativeness is the highest in reading among four skills. During reading, schemas related to the content of the text in long-term memory, reading processes (decoding, skimming, inferencing, summarizing), and their types (Bayat, 2018) are activated. Therefore, this process requires the learner to perform many operations simultaneously and have relevant competencies. The fact that the number of level descriptors is the highest in reading can be associated with the fact that learners can achieve more in receptive skills than productive skills.

As for the writing skill, there are descriptors about making simple sentences about themselves, the people around them, their families, places where they live, and events at A1 and A2 levels, and descriptors about relating experiences and events are encountered at B1 and B2. In the C1 and C2 level descriptors, the expression "advanced" is used, as in the descriptors for reading, and an emphasis is put on clarity, comprehensibility, and fluency in descriptors referring to writing fictional letters, imaginary texts, stories, etc. It is thought that these point to an increase in the difficulty of descriptions and the fictional quality of the writings. While basic users are expected to produce simple and short texts, proficient users are depicted as users who have the potential to produce literary texts that involve fiction, imaginary elements, or narrative aspects, or who can operationalize different structures and rules according to the style, genre or theme of the text as well as use different styles or even criticize literary works.

Writing is a multidimensional and complex process as it includes many cognitive processes. In the writing process, learners' knowledge of the background and the world interact with many skills (related to styles in the target language; vocabulary, syntax and grammatical structures; cultural specificities, point of view, etc.). Writing, which is one of the productive skills, also requires higher-level thinking. It is observed that the difficulties of level descriptors in writing increase in C1 and C2 since this skill develops later than receptive skills (Keser, 2018, p. 89) and requires more cognitive processing at advanced levels.

A wider variety in terms of descriptions has been found in the scope of speaking at A1 and A2 levels. There are level descriptors regarding describing oneself, the people around, one's family, the place one lives in, daily events, one's living conditions, education, job, possessions, plans, habits, and experiences. Speaking is needed in all domains in life and thus has a wider functionality. The diversity of descriptors related to speaking, especially at the basic level, in the CEFR is compatible with its wider functionality in daily life. It can be said that B1 and B2 level learners have the capacity to be able to tell the theme and plot of a story or movie and express their feelings, dreams, passions, reactions and experiences. At C1 and C2 levels, the difficulty of tasks increases. Speaking, as a productive skill, develops later, like writing, because the coding process is more difficult than decoding for learners (Doğan, 2009; Keser, 2018). Therefore, advanced learners are expected to be able to come up with elaborate and comprehensible descriptions or narratives on complex subjects according to the CEFR.

Regarding listening, descriptors at A1 and A2 levels that are related to being able to recognize concrete issues concerned with daily life and also to being able to follow the theme and plot of a story are presented in more detail as being able to understand the main points, details and the sequence of events in narratives at B1 and B2 levels. In addition, emphasis is placed on short narratives and understanding slow and clear speech at these levels. It is noteworthy that while the competencies of C1 and C2 level learners were possible to identify for other skills, no narrativity-related level descriptors that can be included in the table for the listening skill could be found in the CEFR.

CONCLUSION AND RECOMMENDATIONS

Narrative texts deserve special attention for the role they play in developing the narrative competences of learners, which are crucial in communicating in the target language and within the community speaking that language. However, in the CEFR published in 2001 and the Companion Volume published in 2018, a framework regarding different text types has not been established, and scales specific to text types have not been developed. Therefore, in this study, the scales containing the information and level descriptors in the CEFR were examined, and the information about narrative texts and level descriptors thought to be guiding in the context of foreign/second language teaching were selected and brought together.

In line with these, one conclusion drawn in the study is that the CEFR mentions some genres that can be considered as narrative, such as stories, letters, novels, imaginary texts, and provides level descriptors that can be associated with these genres. What is more, level descriptors mentioning advertisements, comics, photo stories, biographies, postcards, travelogues, news items, personal narratives, films and anecdotes are few. Based on these results, considering their importance in language teaching, it is thought that the level descriptors related to narrative texts are limited. However, although genres such as epic, fable, myth,

movie/tv series script, memoir and game commentary are not directly included in the text, culture-specific genres and other narrative texts can be included in the programs by the users (program developers and language teachers) of the CEFR, taking the requirements of the context and the needs of the learners into account, and can be defined clearly in specific objectives considering that the mentioned genres are given as examples since the CEFR is a general framework.

Another conclusion reached is that presentation of the reading as a leisure activity scale, which is introduced in the CEFR Companion Volume has resulted in an increase in the number of level descriptors that can be related to narrative texts and competence. Although new scales and level descriptors related to narrative texts regarding all of the four skills were added to the CEFR in 2018, the number of the new descriptors that relate to listening and speaking is higher than those relating to reading and writing. This can be interpreted as an adjustment to compensate for the insufficiency of the text published in 2001 regarding oral skills; however, when the two texts in question were evaluated together, it is found out that the level descriptors that can be associated with narrative texts and competence at all levels are the fewest in number regarding speaking and listening, and the highest regarding reading. Considering the abundance of narrative genres based on fiction in literature in which written production is essential, this result regarding reading is not surprising.

It is observed that the level descriptors that can be functional in making inferences about whether or not the learners have narrative competence are structured gradually in the CEFR, in parallel with the A, B, and C levels defined as basic user, independent user, and proficient user levels. Thus, while it is possible to maintain that a learner at A level has very limited narrative competence, a learner at B-level has started to develop this competence and is on the way to perfect it. Not surprisingly, C-level learners are expected to demonstrate a high level of narrative competence.

It is necessary to acknowledge that the CEFR, as a common framework, makes general statements about language teaching/learning theories and practices and points to the diversity of possibilities rather than cover all the possible situations or answer all the questions. Keeping in their minds that the CEFR is just a guide, program developers, textbook writers, and language teachers can benefit from a wider variety of narrative texts in the programs, books, materials, or lessons they prepare in line with the approach of the CEFR and their own teaching context, and they can come up with a number of activities to develop narrative competence. If researchers clarify the narrative competence-related sub-skills in the form of objectives, define them through language-specific features, engage in academic studies researching these in detail, and focusing on different genres, they would contribute significantly to the field.

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

Author contribution statements

The presented idea was conceived by the first author and developed further by the three authors. The second and the third authors reviewed the literature, collected and prepared the data for analysis, and reported the study. In order to assure consistency, analysis of the data was carried out by the three researchers. All authors discussed the results and contributed to the final manuscript. The third author also translated the final manuscript, which was originally written in Turkish.

Researchers' contribution rate

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

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Due to the facts that the study was conducted before 2020 and involved document analysis, approval of an ethics committee was not obtained.

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|Araştırma Makalesi / Research Article|

Methods and Techniques of Speaking Education and Their Problems in Application In Turkish Course

Konuşma Eğitimi Yöntem ve Tekniklerinin Türkçe Dersinde Uygulanma Durumları ve Yaşanan Sorunlar[1]

Bayram Erden[2]

Abstract

The aim of this research was to examine the teachers' views on the 2006 Turkish Lesson Curriculum (TLC) and speaking skill methods/techniques in the literature. The model of the research was a phenomenology pattern, which is one of the qualitative research methods. The data were obtained from 26 Turkish teachers working in the central district of Bolu in the 2013-2014 school year. Criteria sampling method, one of the purposeful sampling types, was used to determine the participant teachers in the study group. In the research, a semi-structured interview form consisting of 8 items was used as a data collection tool. The data obtained were analyzed according to the content analysis method. According to the findings of the research, it was concluded that the teachers did not know the methods/techniques of speaking education sufficiently, that they experienced conceptual confusion about the methods/techniques, they lacked theoretical knowledge in the application of the methods/techniques; however, they could not turn them into practice skills. Teachers attribute their insufficiency in methods/techniques to the deficiencies in undergraduate education, the complexity of programs and guidebooks, and the inadequacy of the literature. In the research, some of the implications and suggestions for education are included within the scope of these findings.

Öz

Bu araştırmanın amacı, 2006 Türkçe Dersi Öğretim Programı (TDÖP) ve literatürde yer alan konuşma becerisi yöntem/ tekniklerine ilişkin öğretmen görüşlerinin incelenmesidir. Araştırmanın modelini nitel araştırma yöntemlerinden olgubilim (fenomenoloji) deseni oluşturmaktadır. Veriler 2013-2014 eğitim öğretim yılında Bolu'nun Merkez ilçesinde görev yapan 26 Türkçe öğretmeninden elde edilmiştir. Çalışma grubunda yer alan öğretmenlerin belirlenmesinde amaçlı örnekleme türlerinden ölçüt örnekleme yöntemine başvurulmuştur. Araştırmada veri toplama aracı olarak 8 maddeden oluşan yarı yapılandırılmış görüşme formu kullanılmıştır. Elde edilen veriler içerik analizi yöntemine göre çözümlenmiştir. Araştırma bulgularına göre öğretmenlerin konuşma eğitimi yöntem/ tekniklerini yeterince tanımadıkları, yöntem/teknikler konusunda kavramsal karmaşa yaşadıkları, yöntem/ tekniklerin uygulanmasında teorik bilgi eksikliği içerisinde oldukları ya da bildikleri halde uygulama becerisine dönüştüremedikleri sonucuna ulaşılmıştır. Öğretmenler yöntem/ tekniklere ilişkin yetersizliklerini, lisans eğitimindeki eksikliğe, program ve kılavuz kitapların karmaşıklığına, literatürün yeterli olmayışına bağlamaktadır. Araştırmada bu bulgular kapsamında eğitime yönelik bazı çıkarımlara ve önerilere yer verilmiştir.

INTRODUCTION

Speaking skill can be claimed to have important effects on a human's cognitive, social and psychological existence. Having successful speaking skills in daily life, people gain advantageous positions in almost every field of life. Dominant communication channel is the speaking skills in all social constructs such as school, work, education, and family. Some regrets and self-criticisms are heard around, such as "All my troubles come from my tongue; nothing is more troublesome than my tongue." The complaint point here is about the obstacles during communication. A dialogue starting with the lack of basic communication approaches such as respect, nice style, emphatic vision, tolerance, and faith can go to unpleasant points, cause communication barriers and undermine socialization which is the greatest potential of the human being. In this context, the most important mediator variable of love, respect, and finally self-realization Maslow (1943) mentioned can be claimed to be speaking skill. Yusuf Has Hacip in Kutadgu Bilig points to the place of speaking in social relationships through his words "Destiny of human changes according to his/her speaking / Either he will be head of the country or will be beheaded." The proverb "Sweet speaking takes the snake out of its hole." emphasizing the importance of speaking skills in human-to-human relationships, indicates the power of speaking skill. Another word indicating this power is expressed among people in this way: "Speaking may make one either vile or the king." In their meta-analysis study (99 articles between 1955 and 1999), Morreale, Osborn, and Pearson (2000) examined the effects of speaking skills in human life under the four titles of personal development, academic development, social development, and professional development. In this context, training can be claimed to be extremely important in speaking skills that greatly affect on the individual's existence, mental processes, thinking world, communication with the society, production of culture, and sense of belonging.

All shareholders particularly formal educational institutions effective in the process, have great responsibilities in the development of speaking skills (Morreale and Pearson, 2008; Hunt, Wright and Simonds, 2014). Although Chomsky (1957) claims that human being is born with the ability to acquire and use the language, it should not be forgotten that this ability becomes operative by means of the environment. It was observed that wolf children (Amala and Kamala) grown in a medium far away from people in the 1920s in India could not speak and behave like humans (Şişman, 2001). Likewise, it was found that the children brought up far from concern, love and communication in "Romanian Orphanages" lacked various humane skills particularly speaking skills. Many similar cases have been observed and discussed so far. These cases have shown that the responsibility of emerging and developing the speaking skill belongs to environmental factors such as family, school and society though it is an innate humane ability.

It can be claimed that training of speaking skill is underestimated despite of its importance in individual and social life (Göğüş, 1978; Aşıcı, 1996; Taşer, 2000; Canbulat, Çelenk and Canbulat, 2004; Hart, 2005; Sargın, 2006; Arhan, 2007; Arslan, 2010; Baş, 2011; Altuntaş, 2012; Yaman, Tulumcu and Demirtaş, 2013; Hunt, Wright and Simonds, 2014; Herbein et all, 2018). The fact that the children can speak when they come to school makes the teachers think that the children know how to speak and that there is no need to spend effort on speaking skills. Moreover, it can be expressed that some educators think adding training of speaking skills to the program is unnecessary (Tompkins, 1988). However, research indicates that speaking activities at school and participation of the children in these activities are beneficial (Dickson and Patterson, 1981; Wilson, 1997; Zaher, 2006; Yıldız, 2015; Kemiksiz, 2016; Herbein et al., 2018; Kartallıoğlu, 2018; Ünsal, 2019). Children learn to speak more or less before starting school. However, that speaking is "Turkish of their own age and environment." Moreover, that speaking generally being casual bears dialect features. The facts that speaking skill acquired in the family contains local features and that regional dialects are dominant in new coming students create barriers in social agreement. Gökalp indicates the national agreement language conceptualized as Istanbul Turkish by saying "Fine language is Turkish to us / Another language is a night to us / Istanbul dialect / purest and finest to us." The institutions which can change speaking language from local structure to the national one are the schools. In Göğüş's (1978) view, local speaking should be absolutely terminated in primary and secondary schools. If the transfer from local to cultural speaking cannot be achieved until the age of fourteen, it will be more difficult after this age.

Speaking training is not a process of loading some memorized knowledge into the brain, but it is a skill lesson during which the individual makes all new learnings parts of his/her own life. It is not possible to develop speaking skills by memorizing the rules or making these rules memorized. Speaking skill is acquired only by speaking. Not speaking, not thinking in a way, and as a result, not participating in class activities mean not learning (Kavcar, Oğuzkan, and Sever; 2005). Therefore, it is necessary to make many and various practices, listen to fine and effective speaking persons and take them as models (Özbay, 2005). Development of speaking skills as in developing all other knowledge, skills, and abilities is possible with rich educational experiences. It cannot be contended that basic language skills particularly speaking and listening skills were given importance in Turkish

language classes before the 2006 Turkish Lesson Program (Özbay, 2006; Güneş, 2014). 2006 Turkish Lesson Program (6-8), unlike previous programs, included methods to implement; therefore, it led the teacher the way in the field of a method using in mother tongue courses (Özbay, 2006).

The program lists ten methods/techniques toward transferring speaking skills goals to students under the title of "Methods and Techniques" and asks for carrying the speaking activities to learning environments employing these methods. For instance, it suggests the method of free speaking in the activity of "Maymun Gözünü Açtı (Monkey Opened its Eyes)" and that of guided speaking in the activity of "Güzel Bir Gün (A Nice Day)." Furtermore, the need for using different methods in other speaking activities is emphasized (Ministry of National Education [MNE], 2006). It is placed an emphasis of "Each speaking activity should be done according to a definite method and technique and each activity should be done by a different method (MNE, 2006, p. 257)." by pointing to the importance of methods/techniques in the process in teaching lesson section of Turkish Course Teaching Program. Once again, in the memorandum of Turkish Teachers Special Competencies MNE (2008) transmitted, it is placed the expression of "Teacher uses different methods and techniques according to students' development levels.". It means that Turkish teachers should know and apply special teaching methods and techniques in Turkish teaching. Binbaşıoğlu (1995, pp. 46-47) concludes that the most important determinant of the teaching profession is his/her dominance over teaching methods. This fact was known in the first foundation phase of teacher-raising schools, and the teaching methods course was the first professional formation course inserted into the teacher schools' programs. In this respect, it can be stated that the method/technique issue in education plays a vital role in achieving program gains.

In the light of all these facts, speaking skill training and methods and techniques used in this training can be said to be important. When literature examined, it can be found a great number of studies related to speaking training (Kurudayıoğlu, 2003; Özbay, 2005; Temizyürek, 2007; Uçgun, 2007 Temizkan, 2009; Doğan, 2009; Altuntaş, 2012; Ayrancı, 2016; Kemiksiz, 2016; Kartallıoğlu, 2018; Ünsal, 2019) but no remarkable studies based on teachers' views about the practices of methods and techniques in speaking training. Considering the importance of speaking training and its problems explained above in detail, it is appreciated that the efforts to enlighten how methods and techniques are perceived and used by teachers are crucial. Within this scope, in this study examining teachers' views about 2006 (6-8) Turkish Lesson Program (TLC) and methods and techniques toward speaking skill existed in literature, answers have been sought for the following questions.

1. What are the methods/techniques teachers use in the development of speaking skills?
2. What are the teachers' views about their competencies related to speaking skill methods/techniques?
3. What are the teachers' views about factors they care about while choosing methods/techniques in speaking skills training?
4. What are the teachers' views about the practice of speaking skill methods/techniques in the learning-teaching process?
5. What are the teachers' solution proposals against the problems they encounter in the practice of speaking skill methods/techniques?

METHOD

In this section, explanations about the design of the study, study group, instruments, and data analysis were done.

Design of the Study

In this study, phenomenology design, one of the qualitative research methods, was used. The main goal in phenomenological studies is to discover the participants' views, perceptions, tendencies, and beliefs related to a phenomenon that exists but is not exactly understood (Creswell, 2013; Yıldırım and Şimşek, 2018).

Study Group

Study group of this research consists of 26 Turkish teachers serving in the Bolu city center. In selecting teachers in the study group, the criterion-referenced sampling method, one of purposive sampling, was used. The criteria were teachers' actively teaching, graduated department, serving time, average student numbers of the classes in which they teach, voluntary participation, and their representation qualities of the population. The interviews with the study group were held in April, May, and June 2014. Demographic information of the teachers in the study group has been depicted in Table 1.

Table 1. Demographic information of the teachers in the study group

Personal Information		*f*	%
Gender	Female	15	57.7
	Male	11	42.3
Graduated department	Turkish Language Teaching	19	73.0
	Turkish Language and Literature Teaching	2	7.6
	Classroom Teaching	2	7.6
	Department of Turkish Language and Literature	2	7.6
	Others (English, French, German)	1	3.8
Student numbers	20 and below	3	11.5
	Between 21 and 30	14	53.8
	30 and above	9	34.6
Service time	0-5 years	7	26.9
	6-15 years	15	65.3
	16 years and above	4	15.4
TOTAL		26	100

Data Collection Tool

Data resources in phenomenological studies are the persons who experience the phenomenon the research focused on and can reflect the phenomenon. The main data collection tool in this study is the interview. In this context, a semi-structured interview form prepared by the researcher was used in this study. The interviewer has great flexibility in a semi-structured interview. The researcher, in this kind of data collection, has the freedom of asking both pre-determined questions and additional questions to take detailed information about the pre-determined questions (Yıldırım and Şimşek, 2018). Within this scope, literature was reviewed, and a series of draft questions were prepared before forming the last version of the interview form. Views of six academicians serving in the departments of Turkish Education and Educational Sciences were taken about draft questions. As a result of these views, the number of questions was increased from six to eight and some corrections about wordings were done. These studies were done to ensure the content validity of the interview form. Before finalizing the interview form, it was submitted to two Turkish teachers serving in the Bolu city center to test the intelligibility of the questions, and these teachers were excluded from the study group.

Data Collection

Taking voluntariness into consideration, all the teachers in the study group were contacted through telephone, and an appropriate time was planned for the interviews. The interviews were held at lunch time, after classes, at free hours, or on free days as pre-planned. Teachers' rooms, libraries, administrative rooms, canteens, or open areas were preferred in accordance with the teachers' requests. The interviews held with a total of 26 Turkish teachers took between a minimum 13.04 minutes and a maximum 45.31 minutes. The total interview time in the study was 11 hours, 44 minutes, and 49 seconds. Mean interview time was 27 minutes and 07 seconds. Recording equipment was used in the interviews by taking the teachers' permissions. Additionally, important points were written down by the researcher. These notes mainly involve a description of teachers' body language reflecting their mood while they answer the questions. The environment was arranged, and necessary breaks were taken in long interviews or unexpected situations in accordance with the teachers' requests. Therefore, validity and reliability of the data were tried to ensure. The names of the schools and the teachers' institutional and personal information were not revealed for ethical considerations, but only random coding (T1, T2, T3, …) was used to facilitate the elaboration of the data.

Data Analysis

Content analysis was used to analyze the interview data. The main aim of content analyses is to find out the concepts and relationships that can explain collected data. Data were processed in detail in content analyses, and the concepts and the themes hard to notice are discovered at the end of these analyses. The main process is to gather similar data around the definite concepts and themes and to explain them in a way reader can understand by organizing (Yıldırım and Şimşek, 2018). Validity and reliability studies are crucial in data analysis. Therefore, data were analyzed synchronically with another researcher (Turkish teacher / expert in educational sciences). In Yıldırım and Şimşek's (2018) view, an additional study to ensure coding reliability is needed in cases when more than one researcher studies on data. Researchers in these cases code the same data sets and compare coding similarities and differences numerically and calculate the coding percentage. It is necessary to reach at least 70 percent level reliability in these cases. In reliability of data in this study, codes of both researchers and the categories related to the codes were compared and calculated an agreement percentage of 91 (Miles and Huberman, 1994). Researchers reached an agreement after discussing disagreed items.

FINDINGS

In this section, there are findings related with teachers' views about 2006 (6-8) Turkish Lesson Program (TLC; MNE, 2006: 64,65) and methods and techniques toward speaking skill existed in literature.

Findings Related to the First Research Question

In the first research question, there are Turkish teachers' views about what methods and techniques they use to develop speaking skills. Obtained findings related to this question have been summarized in Table 2.

Tablo 2. Turkish teachers' views about methods and techniques they use in speaking training (n=26)

Themes and sub-themes	f	Themes and sub-themes	f
Methods and Techniques not placed in TLP		Methods and Techniques not placed in TLP	
Question-Answer	26	Guided Speaking	20
Brainstroming	24	Attended Speaking	15
Dramatization	15	Creative Speaking	14
Deduction	12	Discussion	10
Induction	12	Emphatic Speaking	8
Six Hats Thinking Method	3	Critical Speaking	7
Speaking on Desk	3	Persuation Method	7
Speaking Based on Caricature, Picture, etc.	3	Free Speaking	6
Telling Memory or Story	3	Speaking by Choosing from Word Pool	3
Role Cards	1	Keeping in Mind	-
Speaking Circle	1		
Perform Karagöz or Puppet Show	1		

In examining Table 2, it can be said that techniques mostly used by the participant teachers are question-answer (f=26), brainstorming (f=24), guided speaking (f=20), dramatization (f=15), creative speaking (f=14), deduction (f=12), induction (f=12) and discussion (f=10). It can also be said that emphatic speaking (f=8), critical speaking (f=7), persuasion method (f=7), free speaking (f=6), speaking by choosing from word or concept pool, six thinking hats, speaking on desk, caricature, picture, etc. are used less, and technique of keeping in mind is not used at all by the participant teachers.

Views of majority of the teachers can be gathered under the inclusive statement of "I use the methods and techniques in Turkish course within the development of speaking skill. I make the children do the activities of question-answer and brainstorming and make them do guide speaking or discussion in which I also participate in order to make them speak (T.14)." The teachers emphasized that they do not much use the methods and techniques the program suggests because the question-answer method is at the center of the lessons for the development of speaking skills. They concretize their usage level by expressing, "We try to use a couple of times by considering the intensity of the topics when we have time during the year (T.4)."

T.4: *"I use the methods the program suggests as well, but I use the methods of question-answer, brainstorming and discussion more, which are easier for me."*

T.18: *"We are not open to different methods and techniques. We constantly use the methods which are familiar, known, and easy for us."*

T.20: *"A non-reading child cannot speak. This is an important problem for the children. Therefore, I generally use guided speaking. Everyone can say something with this method. I want the children to enter into the spirit of the subject at the same time by using the question-answer method."*

T.21: *"I do not use a specific method in speaking training. I take the children's views about the subject by means of the question-answer method."*

Findings Related to the Second Research Question

In the second research question, Turkish teachers' views about their competences related to the methods/techniques they use in the development of speaking skills have been examined. Findings related to the second research question have been summarized in Table 3.

Table 3. Teachers' views and reasons about their competencies in using methods/techniques for speaking training (n=26)

Themes and sub-themes	*f*	Themes and sub-themes	*f*
Sufficient	6	**Partly Sufficient-Insufficient**	20
		Insuffucient Domain	
Sufficiency Cases		Conceptual Lackness	5
		Knowledge of Method/Technique	14
Knowledge of Method/Technique	6	Application Skill toward Method and	6
Application Skill toward Method and Technique	6	Technique	
		Reasons	
		Lackness during undergraduate education	15
		Guidebook confusion	15
		Program insufficiency	12
		Literature Lackness	4
		Scarcity of Personal Effort	3

In examining Table 3, it has been determined that majority of the participant teachers (f=20) see themselves as partly competent or incompetent in the fields of misconception (f=5), lack of knowledge (f=14), transferring the knowledge to practice (f=6) and integration of methods and techniques with Turkish lessons. On the other hand, the minority of the teachers (f=6) see themselves as competent related to this topic.

T.2: *"These methods have been explained just with a couple of sentences. They remain so brief. I do not know how to use them."*

T.12: *"There was something called side field during our university time. For instance, our side field was Social Sciences, and we always took the courses of History and Geography. We also learned about grammar, phonetics, morphology, Old Turkish, Middle Turkish; these are all useful, but I do not remember much about language skills at the moment. I mean, there is the effect of the courses that we did not take during university instruction for our incompetency."*

T.10: *"We do not give adequate importance to speaking training as a community or group. I mean, none of us ask the question of 'What have you done for the development of speaking skill?' to each other."*

T.26: *"Children like to jaw, and they withdraw themselves when their views are asked. Children are quarreling in this situation, and so I have to cut the activity. I do not make separate time for speaking in order not to face these kinds of situations. I make them speak by asking them questions."*

Findings Related to the Second Research Question

In the third research question, Turkish teachers' views about methods and techniques they use for developing a speaking skill have been examined. Findings related to the second research question have been summarized in Table 4.

Table 4. Turkish teachers' views about factors when they choose methods and techniques for developing a speaking skill (n=26)

Themes and sub-themes	*f*	Themes and sub-themes	*f*
Student Characteristics		Teacher Characteristics	
Student's Active Participation	11	Teacher's Inclination toward the Method	20
Student's Level	9	Knowledge of Method/Technique	6
Student's Desire	3		
Time and Physical Opportunities		Features Related with Program and Method	
		Features of subject/theme	16
Duration	25	Speaking Skill Goals	6
Student Number	20	Other Learning Domains	4
Classroom Properties	6	Suggestion of Program and Guidebook	3
School Properties	2	Method/ Practicality of the Technique	2

In examining Table 4, the interviewed teachers can be said to consider the factors related to student, teacher, time, physical opportunities, program and method when they choose methods and techniques for developing speaking skills. It can be said that class duration (f=25), student number (f=20), familiarity of the teacher with the method (f=20), features of topic/theme (f=16), students' active participation (f=11) and students' levels (f=9) are particularly taken into consideration by the teachers. It can also be said that speaking skills goals (f=6) and students' desires (f=3) are relatively less considered by the participant teachers in choosing methods and techniques for developing speaking skills. Views of participant teachers are presented below by quoting.

T.4: *"Everyone has a specific teaching style, and practicality is important for me."*

T.6: *"I choose the practical techniques by which all our students can speak, and the class duration will be adequate because speaking is an individual activity."*

T.11: I cannot make much time for speaking activities, but as long as I have time, especially at the end of the class, I use practical methods and techniques. I sometimes ask the students to tell one memory and sometimes use a free speaking method on current issues."

T.14: *"There some methods students like much; but these methods take too much time. Therefore, I cannot make time for other learning skills. As a result, I generally use practical question-answer and brainstorming techniques."*

T.26: *"The best method for me is the method I know, and I am capable of using. Therefore, I do not use the methods I do not know. It cannot be called choosing, but I use the methods on which I specialized. For instance, I use wh question method."*

Findings Related to the Fourth Research Question

In the fourth research question, Turkish teachers' views about the application of the methods and techniques for developing speaking skills. The findings obtained related to the research question have been summarized in Table 5.

Table 5. Frequency values related to the teachers' views about the application of the methods and techniques for developing speaking skills (n=26)

Themes	Positive View *f*	Negative View *f*
Necessity of Method/Technique in Speaking Training	11	15
Practicality of Methods/Techniques with Activities	13	13
Sufficiency of the Methods/Techniques suggested in TLP to Achieve Speaking Skill Goals	10	16
Guidance of Program and Guidebooks	8	18

In examining Table 5, the participant teachers can be said to have both positive and negative views about the application of methods and techniques for developing speaking skills. It has been found that the participant teachers have more negative views (f=15) about the need for methods and techniques in speaking training. Similarly, the majority of the teachers (f=16) think that the methods and techniques suggested in TLC are inadequate for developing speaking skills. Moreover, it can be said that the guidance of the program and guidebook is inadequate (f=18) and teachers' positive and negative views about the practicality of methods and techniques are equal (f=13) according to teachers' views. Views of participant teachers are presented below by being quoted.

T.3: *"Children already speak in Turkish classes. I do not need an extra method. I use these methods from time to time as the program suggests them."*

T.10: *"Methods and techniques take place without planning. Speaking with a specific method limit the students."*

T.9: *"These techniques are introduced at the beginning of guidebooks. They also state which methods and how they should be used. Sometimes, I even think that these limit teachers."*

T.14: *"Guidebook and program should guide the teachers more because teachers have deficiencies in knowledge and skills related with this field and they should present the activities for this process more concretely."*

T.19: *"I look into the guidebook when I plan to make speaking activity. It only tells us to use a specific method but does not explain how to practice exactly. I can understand how to practice by means of activities; I can practice them only in this way."*

T.5: *"The program is just interested in what students speak. But for me, how students speak is also important. Methods do not foster this though the program has goals about it."*

Findings Related to the Fifth Research Question

In the fifth research question, teachers' views about (a) problems and (b) solutions encountered in the application of the methods and techniques of speaking skills have been examined. Findings obtained related to the research question have been summarized in Table 6.

Table 6. Teachers' views about solutions of the problems encountered in the application of the methods and techniques of speaking skills (N=26)

Suggestions	ƒ
In-service training should be given to teachers on speaking training and the methods.	21
A separate lesson having a program for speaking training will make the practice of methods and techniques more effective.	20
The program and the guidebooks, by being updated, should provide guidance in the application of the methods and techniques.	18
Didactic activities should be included in undergraduate education.	16
The duration of speaking training in Turkish lessons should be increased.	14
Student numbers in classes should be decreased.	14
A separate classroom having necessary equipment is needed for speaking training.	9
Lesson intensity should be decreased in the unitized yearly plan.	6
Nice speaking samples prepared as auditory should be included in listening activities.	4
Importance of speaking training should be recognized in educational mediums.	4
Students should have books including nice speaking samples.	3
Methods and techniques should be arranged according to class grades.	2
Speaking skills should be developed from very young ages.	2
Activities in which methods and techniques are practiced should be interesting.	2

Table 6 shows that participant teachers suggest in-service training (f=21), a separate lesson for speaking skills (f=20), development of the program and guidebooks (f=18), quality undergraduate education (f=16), increasing the duration for speaking in the lessons (f=14), decreasing the student numbers (f=14), designing classrooms appropriate for speaking training and development of course materials toward speaking skills as solutions for the problems encountered in the application of the methods and techniques for speaking skills.

Views of participant teachers are presented below by being quoted.

T.18: *"Speaking should be a separate lesson. Children should come to these classes without books because they feel themselves more comfortable. This will be quite effective. Speaking methods can be practiced more comfortably in this way. It can be a selective lesson. Curriculum can be lightened more."*

T.1: *"Undergraduate education is inadequate in this context. We weren't given information and skills in the field of Turkish skills. Therefore, speaking training should be valued more."*

T.12: *"Practical activities should be done with the studies of speech stand, practical oratory and dramatization."*

T.6: *"Number of lesson hours should be increased. It should be a selective lesson if needed. Guidebooks should be more toward practices. Proposed activities should be in accordance with the methods. Guidebook perplexes me instead of helping. It should be a guide for us more."*

DISCUSSION

It can be stated that the participant teachers use the methods and techniques of question-answer (f=26), brainstorming (f=24), guided speaking (f=20), dramatization (f=15), and attended speaking (f=15) as a result of examining the findings obtained in this study goal of which is to determine the views of the teachers related with Turkish Lesson Program (TLP, 2006) and methods and techniques existing in literature for developing speaking skills. On the other hand, it has been found that teachers use guided and attended speaking methods and techniques more often, but they less or never use the techniques of speaking by choosing from the word or concept pool (f=3) and keeping in mind. Moreover, it can be stated that teachers use general teaching methods and techniques (question-answer and brainstorming) more than the methods and techniques the program suggests for developing speaking skills. It can be stated that the most suggested methods and techniques are the guided and creative speaking; the least suggested ones are free and critical speaking in teacher guidebooks. It is seen that the technique of keeping in mind is not suggested in any activity. In the light of these findings, it can be stated that guided and creative speaking techniques which are among the most used techniques by the teachers are also the most suggested techniques by teacher guidebooks. Another finding obtained in this study is that teachers who make separate time for speaking training use the methods and techniques suggested in the program; teachers who do not make separate time for speaking training and mostly teach reading, writing and grammar do not use the methods and techniques suggested in the program.

The great majority of the teachers (f=20) have views that can be summarized as "I use the method and techniques I use in Turkish lesson also for the development of speaking skills. I use the techniques of question-answer, brainstorming, guided speaking and discussions (T.14)." Teachers expressed that they base the question-answer technique on developing speaking skills (f=26), and they emphasized that they do not much use the methods and techniques the program suggests. They concretized their usage levels by stating, "We try to use them for a couple of times during the year when we have time within the frame of subject intensity (T.4)." The findings obtained within this scope are in line with the findings of previous studies (Kutluata, 2008; Altuntaş, 2012). On the other hand, the question-answer method most used according to findings is seen as important by domain experts in terms of speaking training. Alperen (1994), Özbay (2005), Temizyürek (2007) and Kurudayıoğlu (2003) emphasized the importance of the question-answer method and make suggestions about how to use this method. It is seen that the second most used method is brainstorming following the question-answer method (f=24). The brainstorming method, just like the question-answer method, is also seen as important by experts in terms of speaking training. Kurudayıoğlu (2003) claimed that brainstorming is used not only in Turkish lessons but also in all lessons and it is important for the mental development dimension of speaking skills.

It can be stated that more than half of the teachers (57%, f=15) use the dramatization technique which is not included in the program. Öz (2001) claimed that dramatization which is important to activate the students in primary schools, can also be used in the development of verbal performance. It can be stated that it is important to use the methods and techniques (question-answer, brainstorming, dramatization) that take place in literature but are not included in the program and which the teachers state that they use intensively in the activities for the development of speaking training. It can be evaluated as a deficiency that emphatic and free speaking methods which the program requires to be practiced particularly at definite moments of Turkish lessons are used by a small number of teachers (30%, f=8).

In examining the findings related to the Turkish teachers' competences in speaking skill methods and techniques, the great majority of the teachers are seen to state that they do not make much time for speaking

training and do not often use the methods and techniques for developing speaking skills. Among the reasons for not using, the view that they do not know the methods and techniques well and they are not so competent to use them takes place on the top. On the other hand, some teachers stated that they know the methods and techniques, but they cannot transform this knowledge into skill.

Six of the teachers (T3, T4, T5, T10, T18) stated that they do some studies in the classroom for speaking goals, but they do not name the methods and techniques, and they do not know the names of these methods well. In this sense, similar results were found, and teachers emphasized conceptual confusion in Yaman, Tulumcu and Demirtaş's (2013, p.415) study. Similarly, a conceptual confusion toward the applying the methods and techniques was expressed according to the results of Kutluata's (2008) study conducted in relation to the methods and techniques in Turkish lessons.

An important part of the participant teachers (f=14) expressed that they do not have the knowledge of methods and techniques and do not need them to develop of speaking skills. Arhan (2007, p.135) reported that 70% of the teachers have a view that methods are formed on their own in speaking training in time, and 12,3% of the teachers have a view that there is no need for any method. These findings support the findings of this study. It can be stated that knowledge about methods and techniques is needed before anything else in order to use any method and technique healthily. This result of the study may have challenging consequences for the teachers who are designers and practitioners of educational mediums. Öztürk and Altunta (2012) also stated that many methods and techniques suggested in the program are not used for speaking skills and they claimed that knowledge deficiency is among the reasons for this case. Although speaking skill is accepted as an innate ability, it can be developed through education like all skills. Therefore, it can be stated that knowing and practicing the methods and techniques included in the program is the most important responsibility of a teacher. Akdeniz and Küçük (2011) call this responsibility a legal-social responsibility.

Nearly one third of the participant teachers (f=8) stated that they know the methods TLP suggests in terms of both conceptual and content and practice, but they could not bring them to the classroom medium. The prominent reason, according to the teachers' views related to inadequacy is the deficiency in undergraduate education. Constructivist language approach entering rapidly into education after 2005 bases on the learning-teaching process teachers are not so familiar. It is predictable that teachers who were graduated from university before 2007 when undergraduate programs were updated according to constructivism may have difficulties in teaching the language skills, particularly speaking training. Moreover, teachers added other reasons for the guidebook and literature deficiencies related to inadequacy about methods and techniques they experience.

It can be expressed that the program and the guidebooks explain the related methods and techniques in a limited way (MNE; 2006, pp. 64, 65). Activities that reflect the basic understanding of the program have been highlighted. Highlighting the activities is the desired situation, but methods and techniques have been named as a suggestion (MNE, 2006, pp. 87, 103). The point of how methods and techniques are used has not been fully clarified in the program. Although much time passed after the introduction of the program, it can be stated that intensive effort and time are still needed for the introduction and the absorption of the methods and techniques. It particularly seems not so possible that teachers will learn these methods and techniques through their own efforts. Moreover, the great majority of publications in this field explain these methods and techniques in a limited way to the extent that the program introduces them. Özbay (2006), Ünalan (2006), Temizyürek and et al. (2011), Şahin and Kana (2013) and Kurudayıoğlu (2013) included these methods in their books but they did not refer to the detailed specifications other than the program mentioned. On the other hand, Demirel and Şahinel (2006), Yıldız (2008), Tazebay and Çelenk (2008), Kırkkılıç and Akyol (2007) and Akyol (2010) did not include these methods at all in their books. As a result, the case the teachers do not know the methods and techniques TLP suggests is closely related to the reasons they expressed.

In examining the findings related to the first and second research questions, it can be stated that teachers do not see themselves as competent particularly in the techniques of keeping in mind, six hats, speaking by choosing from word and concept pool. In the study of Öztürk and Altuntaş (2012, p. 352), it was found that the techniques of keeping in mind and six hats were not used by the teachers. Similarly, in Yaman, Tulumcu and Demirtaş's (2013, p. 419) study, it was found that the technique of keeping in mind was never used. Teaching technique is the practicing way of teaching method depending on the individual, place, time, physical conditions, tools and materials (Oğuzkan, 1989; Calp, 2010; Demirel, 2010). If handled in this term, teaching techniques can be seen important factors in developing speaking skills. Speaking skills consist of many complex factors integrating each

other. These can mainly be expressed as mental and physical factors (Özbay, 2006; Kurudayıoğlu, 2013; Temizyürek, Erdem ve Temizkan, 2007). Memory education is at the center of mental factors. Knowledge existing in the memory lies in the background of good speaking. The techniques of keeping in mind and speaking by choosing from the word and concept pool are important practices in the development of memory in this term. It should be stated that techniques like the six hats thinking technique can develop speaking skills considering that speaking exists with a thought or the best evidence of the thought is speaking.

In examining the points that the participant teachers consider in choosing the methods and techniques for developing speaking skills, it is seen that they value the practice time most. The other points they value other than this are their familiarity with any method and technique, features of the topic, active participation of the students, learners' levels and desires, student numbers, easiness and practicality for the method and technique. Küçükahmet (2011) claimed that the most important factor is the time in determining method selection. Therefore, it is an expectation that teachers take the time into consideration while choosing the method. However, it is well known that many teachers explain their dependencies to classical methods with inadequacy of lesson time. Another point valued by the teacher is student numbers. When asked about the maximum student number for the contemporary teaching methods to be used, the answer is often "as few as possible". This point is more important in terms of speaking training. Speaking skill is only acquired by speaking and students need the opportunities to acquire communication skills in life. Another finding is that very few teachers consider student desires and program goals in choosing a method.

Lesson goals may give clues about what methods that lesson will be taught. For instance, the statement "using voice and body language" of the second goal related to speaking skills in the program is directive for method determination. Choosing a method and technique focusing on physical properties of speaking (diaphragm, vocal cords, articulation, intonation, etc.) instead of mental skills may be more functional in order to achieve this kind of goal. Onan (2010) emphasized the importance of considering the effect fields of methods and techniques in order to achieve the goals with reference to the relation between brain, language and speaking.

Ergin and Birol claimed that speaking ability consists of four elements of visual behavior, voice, language and mental activity. There are intensive mental activities at the back of audio-visual elements of speaking, which also make these elements meaningful. Güleryüz (2002) and Calp (2004) emphasized that speaking has the dimensions of cognitive, affective, and psychomotor and the skills depending on these dimensions can be developed. Not taking these acquirable skills and program goals into consideration makes the instruction questionable. It means arbitrariness because teachers' first task is making the students acquire the program goals. Another important point with reference to the findings is that teachers consider "student characteristics" less than "time, physical properties and teacher characteristics". This situation can be accepted as the natural result of teacher-centered approaches they were exposed to and accustomed to during their own learning lives.

Contemporary understanding in education has a viewpoint taking the students into the center and making them responsible for their own learning. The role of the teacher has changed in educational mediums and the teacher has a new role of leading the students as a guide instead of the role of transferring the knowledge (Yaşar, 1998; Arslan, 2007). This new viewpoint has not decreased the teacher's responsibility and also has created new responsibilities. The basic responsibility for the teacher is to know the individual's interests and needs and bring the methods and techniques into educational mediums to make the student active in the learning process. Therefore, speaking methods and techniques should be practiced with a holistic approach considering the students' learning styles. Güneş (2014) claims that multiplicity and diversity have been aimed toward speaking goals instead of one concept, one principle, one method, one technique in the Turkish Teaching Program developed after 2005. Various kinds of methods and techniques have taken place in the program. Teachers should take many variables into consideration, travel among the methods and techniques masterfully, and bring the diversity of methods into educational mediums.

It is seen from the findings related to the application of the methods and techniques that teachers have positive and negative views. Great majority of the teachers have negative views about the need and practicality of the methods and techniques in the development of speaking skills. TLP emphasizes the need for the methods and techniques to achieve the goals related to speaking skills (MNE, 2006: 21). The understanding of achieving the language goals through the activities the program bases on is largely accepted also by the domain experts (Sever et al., 2011; Özbay, 2006; Ünalan, 2006; Akyol, 2010). It can be referred to as an important problem that teachers have negative views about using a definite method and technique in speaking training. The way to

achieve the speaking goals cannot be making the students memorize some speaking formulas or using one- or two-minute superficial activities at the end of a lesson (Göğüş, 1978). Speaking skill, the basic accelerator of human relationships and democratic life, seems impossible to reach the desired level without any efforts (Morreale and Pearson, 2008; Hunt, Wright, and Simonds, 2014).

Speaking activity is not only a tool for sharing our feelings and ideas but also an important factor in the formation of democratic culture. Being aware of self-expression rights and respectful of the exercise of this right is the requirement of the current age. Social consensus and common understanding are only possible in this way. The development of civilization and democratization does not seem so possible without speaking training. Therefore, there are speaking classes in primary and secondary schools in the West. These classrooms contain tape deck, video player, microphone, and lectern to use in speaking training (Yalçın, 2002, p. 164). However, it brings failure to construct speaking training independent of any method and technique. Moreover, the results of the recent experimental studies investigating the development of speaking skills point to the importance of method, technique, tactics, and activity practices (Yıldız, 2015; Kemiksiz, 2016; Herbein et al., 2018; Kartallıoğlu, 2018; Ünsal, 2019).

Findings related to the problems encountered in the application of speaking methods and techniques and the solution proposals indicate that the participant teachers need in-service training. The teachers suggested that there should be a separate lesson for speaking training, the program should be updated considering the speaking training more, didactic studies on special teaching methods should take place in undergraduate education, the duration for speaking skills in Turkish lesson should be increased, student numbers should be decreased, and special classrooms should be designed.

Great majority of the teachers suggested that there should be a separate lesson or hour for speaking training. Literature has studies supporting this suggestion (Arslan, 2010; Dedeoğlu Orhun, 2009; Sağlam, 2010). However, the emphasis of the program related to this point is "Turkish learning consists of listening/watching, speaking, reading, writing and grammar toward the development of comprehension, interpretation. The mentioned learning fields should be handled holistically as they interact with each other (MNE, 2006, p. 2)".

MNE has issued view letters and circulars on the development of the mother tongue holistically at various times so far. It is mentioned in these issues that behaviors related to comprehension (listening-reading), production (speaking-writing) and grammar should be taught to students and the teachers should switch from one activity to another masterfully (Altuntaş, 2012). In this context, the fact that speaking cannot be separated from other language skills should be taken into consideration, and the development of speaking skills should be valued even if speaking training does not have separate lessons. It can be stated that teachers have the greatest responsibilities at this point. Turkish teachers should be able to switch among learning fields masterfully and use methods and techniques proper to students' levels and lesson goals (Özbay, 2005; Kurudayıoğlu, 2003). Moreover, there are different views other than the view that speaking training cannot have a separate lesson. According to this view, speaking skills cannot be taught to children by superficial activities in the limited time during lessons. Therefore, a separate lesson is needed for the speaking training (Göğüş, 1978; Kılıç, 2000; Dedeoğlu Orhun, 2009). Er (2011) claimed that speaking training should take place as a mandatory lesson in the curriculum of primary schools. Similarly, Sağlam (2010) claimed that a lesson named "Diction and Oratory" should take place in the -7th- grade classes. In this context, placing the lessons of 'drama' for the -5th- and -6th - grade classes and 'communication and presentation skills for the -7th - and -8th - grade classes in secondary schools in the 2011-2012 school year can be evaluated as pleasing.

CONCLUSION AND SUGGESTIONS

It has been concluded that the participant teachers in this study are not aware of their own competences related to the methods and techniques for speaking training suggested in the Turkish Lesson Program. It can be expressed that the participant teachers do not know the methods and techniques well. They experience conceptual confusion, and have theoretical knowledge deficiencies in applying the methods and techniques or cannot practice them even if they have theoretical knowledge. The teachers explained their incompetencies depending on the deficiencies in undergraduate education, the complexity of the program and the guidebook, inadequacy of literature, and the fact that they do not spend much individual effort. The most used methods and techniques for developing speaking skills are question-answer, brainstorming and guided speaking. It has been

concluded that the methods other than guided speaking the Turkish Lesson Program suggests are used in a limited way and the technique of keeping in mind is not used at all. Teachers mainly view that methods and techniques are not needed in speaking training or methods and techniques arouse automatically.

It can be expressed within the scope of this study that there are many problems in the practice of methods and techniques, but the value given to and the need felt for speaking skills in mother tongue by the teachers are not at an adequate level. It can be useful to give the teachers in-service training on introducing the methods and techniques to the teachers and how they can be practiced. It has been seen that the teachers substantially attribute their deficiencies in knowledge and skills to undergraduate education. Therefore, detailed instruction should be done for speaking training methods and techniques and how they can be practiced in the undergraduate Turkish education program. Speaking training should be conducted by contemporary methods and techniques considering the quality of speaking and developing the skills in a holistic way both physically and mentally, not by general teaching methods and techniques used in Turkish lessons. A thematic speaking activity should be arranged after each text or listening/watching material, and the activities should be conducted by means of a definite method and diverse methods as much as possible should be used during the school year.

Statements of publication ethics

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

Note for Ethical Committee Approval

The document 10th April 2014 dated and 2014/34 numbered document by Bolu Abant İzzet Baysal University, Ethical Committee of Human Research in Social Sciences.

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| Research Article / Araştırma Makalesi|

Compassion Value in Fifth Grade Turkish Textbook

5. Sınıf Türkçe Ders Kitabında Merhamet Değeri

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Abstract

Purpose: In this study, it was aimed to examine compassion and love, respect, tenderness, sacrifice, fidelity, help, tolerance, altruism, sympathy, responsibility, which are related to compassion, in a fifth grade Turkish textbook taught by the Ministry of National Education in 2019-2020 academic year.

Methodology: In this research, it was investigated how often the value of "compassion," which is decreasing day by day, was used in secondary school fifth grade Turkish textbooks. Document analysis method, one of the qualitative research methods, was used for the study. Textbooks can be used as a data source when document analysis is performed in educational research. In this study, the value of compassion in the fifth grade Turkish book and the values considered to be related to the value of compassion were examined one by one in the themes.

Findings: There was no balance in the distribution of values in the fifth grade Turkish textbook. Among the values, the value of love was at the forefront, and the value of compassion was less mentioned in the book. In addition, while conveying the values, the values that evoke the opposite of the values were also included in the book.

Highlights: While conveying the values, the values that evoke the opposite of the values were also included in the book. That was not beneficial for values education.

Öz

Çalışmanın amacı: Bu çalışma 2019-2020 öğretim yılında Millî Eğitim Bakanlığı tarafından okutulan 5. Sınıf Türkçe ders kitabını merhamet değeri ve merhamet değeriyle ilişkili kabul edilen sevgi, saygı, şefkat, fedakârlık, vefa, yardımlaşma, hoşgörü, diğerkâmlık, duygudaşlık, sorumluluk değerlerini incelemeyi amaçlamaktadır.

Materyal ve Yöntem: Bu araştırmada değer olarak günümüzde giderek azalan "merhamet" değerinin ortaokul 5. Sınıf Türkçe ders kitaplarında hangi sıklıkta kullanıldığı araştırılmıştır. Çalışma için nitel araştırma yöntemlerinden doküman analizi yöntemi kullanılmıştır. Eğitimle ilgili araştırmalarda doküman analizi yapıldığında ders kitapları veri kaynağı olarak kullanılabilir. Bu çalışmada 5. sınıf Türkçe kitabındaki merhamet değeri ve merhamet değeriyle ilişkili kabul edilen değerler temalarda tek tek incelenmiştir.

Bulgular: 5. Sınıf Türkçe ders kitabı değerleri iletme açısından dengesizlik göstermiştir. Değerler arasından en çok sevgi değeri ön plandadır ve merhamet değeri kitapta az geçmiştir. Değerler iletilirken kitapta değerlerin zıddını çağrıştıran değerlere de yer verilmiştir.

Önemli Vurgular: Değerler iletilirken kitapta değerlerin zıddını çağrıştıran değerlere de yer verilmiştir. Bu değerler eğitimi için faydalı değildir.

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INTRODUCTION

Values are criteria used to classify an action as good or bad, and they are mental beliefs that prevent people from doing wrong (Uysal, 2008; Bolay, 2007). Every human behavior is associated with a value. However, although values are objective as a concept, people's perception of values in their minds and the reflection of this mental perception on behavior are subjective (Uysal, 2008). Value is not independent of culture (Akbaba Altun, 2003), and values have a social aspect (Gökdere, 2003). The social environment determines the perceptions of individuals towards an action. For this reason, people who grow up in different social environments have different cultural and socioeconomic societies, so their evaluation of good or bad behavior will be different from each other (Monaghan & Just, 2013; Özensel, 2003).

Education is a remarkably effective social environment in creating a common value in society and the perception and experience of values. Thus, individuals who receive the same education are close in terms of their outlook on life, anxiety, sensitivity, value judgments, and moral understanding (Uysal, 2008). In addition, education transfers the values existing in society to new generations. However, rapid social changes that occur in societies with technology, press, and news, and the internet cause the existing values in different layers of society to differentiate (Özensel, 2003; Seyyar and Köleoğlu, 2014) and sometimes to lose them (Seyyar and Köleoğlu, 2014).

Compassion, one of the feelings and values that have begun to be lost in today's society, is the feeling of another's pain and wanting to relieve their pain (Sayar, 2019; Akın, 2018). Compassion is love/love of people, altruism, taking responsibility for the well-being of another, and sometimes sacrificing for the good of another. At the same time, compassion is to feel the pain of another; in other words, it is empathy. Compassion is an effort to relieve the pain of others and helping each other, and respecting the other person's rights and not marginalizing him because of his characteristics is to be tolerant (Sayar, 2019; Akın, 2018; Dalgalı and Gürses, 2018). Compassion is an important value in the healing of society and the treatment of individual and social suffering. However, recently, it is seen that social compassion is not the same as before, both in the individual and in the society (Sayar, 2019; Akın, 2018; Dalgalı and Gürses, 2018).

It is seen that people sometimes do not feel compassion, and sometimes they want to stay away from compassion knowingly and willingly (Gilbert, McEwan, Gibbons, Chotai, Duarte, and Matos, 2012). In addition to this distant stance, it is also known that people lack a sense of compassion and skill (Gilbert, McEwan, Gibbons, Chotai, Duarte, and Matos, 2012; Whetsel, 2017). However, compassion is an important social value in the formation of social and individual conscience, and compassion and altruism are closely related to feeling responsible for other people (Sayar, 2019). In societies where compassion is gradually decreasing, it is seen that feelings such as love, respect, helping, sacrifice, and digamy decrease or disappear (Gilbert, McEwan, Gibbons, Chotai, Duarte, and Matos, 2012; Harris, 2017; Gilbert, McEvan, Matos, and Rivis, 2010). Instead, health problems such as depression, anxiety, eating disorders, as well as many other social problems such as cruelty, insensitivity, and personal attachment problems, increase (Sayar, 2019).

Education has a great role in solving social problems and reviving the value of compassion in the eyes of the individual and society; because the best way to build societies is through education. So many values, which have begun to be lost in today's world, are tried to be gained to students through curricula and textbooks in schools (Yılar, 2016; Eriş, 2003; Çinpolat, 2018).

Importance and Purpose of the Study

Values education is a subject that has been emphasized in our country as well as all over the world in recent years. Today, while preparing educational programs, creating the content of textbooks, and determining goals, more references are made to universal values. At the beginning of the main objectives of education, the individual, which is equipped with knowledge and skills, is also introduced to human and ethical values. For this reason, it is among the foremost duties and responsibilities of educators to create sensitivity in our students towards universal, humane, and ethical values and to make efforts to embody these values in behaviors at every education level.

Schools have the mission of raising individuals who have adopted basic human values. Gaining basic values is among the objectives of the Turkish National Education Basic Law and curricula. At the beginning of the basic law, among the aims of national education are to raise individuals who adopt moral and spiritual values, have a balanced and healthy personality and character in terms of body, mind, morals, spirit, and emotions. It is seen that this general purpose is implemented with the curriculum (Ekşi, 2003). Textbooks form the basic structure of learning activity, and in this respect, textbooks are an important variable in the development process of students. Turkish textbooks also have a leading role in shaping the educational process (Çinpolat, 2018). Since the Turkish lesson is a versatile lesson, each selected text should have a deep impact on the child. In order to ensure the child's self-development in various aspects, the texts in the textbook should closely address the child's personality, values, imagination, and social life (Yılar, 2016).

Books are an effective stimulus in the formation of personality structure from the pre-school period. While meeting the needs of children for learning, having fun, playing, getting to know life and people, books fulfill many functions such as providing children with a culture of reading and contributing to their school-type learning (Yılar, 2016). Hence, textbooks are an important tool in value transfer.

In value education, textbooks are used as an important resource to introduce students to universal and ethical values and embody them in behavior. Especially Turkish textbooks consist of texts containing messages about values. While students are

introduced to the texts in the Turkish textbooks and the heroes in the texts, they also encounter the values that are the subject of these books. So, it is important to examine the values in Turkish textbooks in the context of values education.

The Turkish textbook, which has an intense literary aspect and textual weight, is especially important in terms of conveying the value of compassion. There are many studies on values in the literature, and among these, there are also studies examining the values in the Turkish textbook (Yılar, 2016; Ekşi, 2003; Çinpolat, 2018). However, as of the 2019-2020 academic year, the Fifth Grade Turkish Textbook has been renewed. Consequently, it is important to examine this renewed book in terms of values, especially the concept of compassion, which is an important value for both the individual and the society, and the values of compassion, sacrifice, fidelity, love, respect, helping, tolerance, altruism, sympathy, and responsibility, which are closely related to the concept of compassion. Therefore, this study was carried out to examine the current Fifth Grade Turkish Textbook within the framework of these values.

METHOD

In this study, it was investigated how often the value of "compassion," which is gradually decreasing today, was used in secondary school fifth grade Turkish textbooks. Document analysis method, one of the qualitative research methods, was used for the study. A researcher using document analysis can obtain the data he needs without observation or interview. Textbooks can be used as a data source when document analysis is performed in educational research (Yıldırım and Şimşek, 2008). In this study, the value of compassion in the fifth grade Turkish book and the values considered to be related to the value of compassion were examined one by one in the themes.

Scope and Sample

The scope of the study consisted of fifth grade Turkish textbooks. As a sample, the fifth grade Turkish textbook, which was renewed by the Ministry of National Education in the 2019-2020 academic year, was chosen.

Data Collection and Analysis

The data of this research were collected by document analysis, which is one of the qualitative research methods. Document analysis is the examination of written materials containing information about the investigated case or cases (Yıldırım and Şimşek, 2008). In this study, first of all, a literature review on the value of compassion was made. Then the values that are the indicator of the value of compassion, such as love, respect, tenderness, compassion, sacrifice, fidelity, helping, tolerance, altruism, sympathy, and responsibility, were determined by taking the opinions of 4 different experts. After the expert opinion, the researchers created a form to examine the fifth grade Turkish textbook in line with the themes and sub-headings of the themes. A descriptive index of values has been added to this form. In addition, the values specified in the book were filled in by the researchers with colorful explanation forms. Turkish textbooks used in the secondary school fifth grades were renewed in the 2019-2020 academic year. It was examined how often the value of compassion in the renewed book was used in 4 sections, which were preparatory studies, reading texts, activities, and evaluation questions, and in eight themes, which were "Individual and Society," "National Struggle and Atatürk," "Nature and Universe," "Our National Culture," "Citizenship," "Health and Sports," "Virtues" and "Science and Technology." The researchers concurred on the suitability of the data with four field experts.

FINDINGS

In this section, the findings of the study will be presented. Findings are summarized and explained in tables. Information on the number of repetitions and the total value in the preparatory studies, reading texts, activities, and theme evaluation questions of the values of compassion and compassion in the themes of the Turkish textbook are shown in the tables.

Table 1. The value of compassion in the first theme and other values related to the value of compassion

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Preparatory Studies					2	4		1				**7**
Text Readings	3	4	1		3	1	2	1	3	1	1	**20**
Activities	9	8		1	11	4	4	1		1		**39**

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Theme Evaluation Questions	1	1			21	2						**25**
Total	**13**	**13**	**1**	**1**	**37**	**11**	**6**	**3**	**3**	**2**	**1**	**91**

According to Table 1, in the First Theme of the Fifth Grade Turkish Textbook titled *"Individual and Society,"* *Compassion* and other values related to *Compassion* were mentioned 91 times in the preparatory work, text readings, activities, and theme evaluation questions. Values were used the most in the activities (39) and the least (7 times) in the preparatory studies. They were mentioned 25 times in theme evaluation questions and 20 times in text readings. Compassion value, which was accepted as the roof value for the study, was directly mentioned only 13 times in the first theme and 9 times in the activities section, 3 times in the text readings, and once in the theme evaluation questions. Among the other values associated with Compassion, the value of *Love* (37 times) was given the most. The values of *Sacrifice, Fidelity, Empathy, and Responsibility* were included at least (1 each).

Love (37 times), the most mentioned value in the first theme, was mentioned in all of the preparatory studies, text readings, activities, and theme evaluation questions. The value of *Love* was mentioned 21 times in the theme evaluation questions, 11 times in the activities, 3 times in the text readings, and 2 times in the preparatory studies.

In the first theme, the value used the most after *Love* was *Tenderness*. The value of *Tenderness* was mentioned 8 times in activities, 4 times in text readings, and once in theme evaluation questions, 13 times in total. Then, *Respect* was mentioned 11 times in total, including 4 times in the preparatory studies and activities, 2 times in the theme evaluation questions, and once in the text readings. After the value of *Respect*, the value of *Helping* was mentioned 4 times in the activities and twice in the text readings, 6 times in total. The value of *Helping* was mentioned 4 times in activities and twice in text readings, 6 times in total. *Tolerance* was mentioned 3 times in total, once in the preparatory studies, text readings, and activities. *Altruism* was mentioned 3 times in text readings. *Sympathy* occurred twice in total, once in text readings and activities.

In the first theme, there was an imbalance in the distribution of values and values to preparatory studies, text readings, activities, and theme evaluation questions. While the value of *Love* came to the fore in this theme, it was remarkable that the values of *Responsibility, Fidelity,* and *Sacrifice* were mentioned only once in this theme. However, responsibility and other values should have been emphasized in this theme, which deals with the individual and society. Especially when it comes to the individual and society, the responsibility of the individual to the society and the compassion and compassion of each individual in the society in this direction are also particularly important in terms of social order. It is important that these values appear more in this theme.

Table 2. The value of compassion in the second theme and other values related to the value of compassion

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Preparatory Studies												**0**
Text Readings	3	2	6		13	1	6		1	1	8	**41**
Activities	4	3	10	1	22	1	13				23	**77**
Theme Evaluation Questions					3							**3**
Total	**7**	**5**	**16**	**1**	**38**	**2**	**19**	**0**	**1**	**1**	**31**	**121**

According to Table 2, in the Second Theme titled *"National Struggle and Atatürk"* in the Fifth Grade Turkish Textbook, *Compassion* and other values related to *Compassion* were mentioned 121 times in text readings, activities, and theme evaluation questions. While values were mentioned most in the activities (77 times), they were never mentioned in the preparatory studies. They were mentioned 41 times in text readings. The value of *Compassion*, which was accepted as the roof value for the study, was directly used in the second theme 4 times in the activities and 3 times in the text readings, 7 times in total. Among the other values associated with *Compassion*, the value of *Love* (38 times) was given the most. *Tolerance* values were never found in the second theme.

Love (38 times), the value most frequently mentioned in the second theme, was mentioned in text readings, activities, and theme evaluation questions. The value of *Love* was mentioned 22 times in activities, 13 times in text readings, and 3 times in theme evaluation questions.

In the second theme, the most used value after *Love* was *Responsibility. Responsibility* was mentioned 23 times in activities and 8 in text readings, 31 times in total. After the value of *Responsibility*, the value of *Helping* was mentioned 13 times in activities and 6 times in text readings, 19 times in total. *Sacrifice* was mentioned 10 times in activities and 6 times in text readings, 16 times in total. *Tenderness* was mentioned 3 times in activities and twice in text readings, 5 times in total. *Respect* was mentioned twice in total, once in text readings and once in activities. *Fidelity* is mentioned once in activities. *Altruism* and *Sympathy* were mentioned once in text readings, but Tolerance is not mentioned in the second theme.

In the second theme, as in the first theme, it was seen that there was no balance in the distribution of values. In a theme titled "*National Struggle and Atatürk*", mentioning the value of *Fidelity* only once was not sufficient due to the theme of the theme. This value should have been mentioned as much as the value of *Love* and *Responsibility.*

Table 3. The value of compassion in the third theme and other values associated with the value of compassion

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Preparatory Studies												**0**
Text Readings	**3**	**1**	1		4		8				6	**23**
Activities	**1**	**2**		2			3	1	1		5	**15**
Theme Evaluation Questions												**0**
Total	**4**	**3**	1	2	4	0	11	1	1	0	11	**38**

According to Table 3, in the Third Theme of the Fifth Grade Turkish Textbook titled *"Nature and the Universe,"* *Compassion* and other values related to *Compassion* were mentioned 38 times in text readings, activities, and theme evaluation questions. While values were mentioned the most in the text readings (23 times), they were never mentioned in the preparatory studies and the theme evaluation questions. Values were mentioned 15 times in activities. *Compassion* value, which was accepted as the roof value for the study, was mentioned 3 times in text readings and once in activities. Among the other values associated with *Compassion*, the values of *Helping* (11 times) and *Responsibility* (11 times) were mostly included.

Being one of the values most frequently mentioned in the third theme, the value of *Helping* was mentioned 8 times in text readings and 11 times in total in activities. *Responsibility* value was mentioned 6 times in text readings and 5 times in activities, and 11 times in total.

After the values of *Helping* and *Responsibility,* the value of *Love* was mentioned 4 times in text readings. The value of *Tenderness* was mentioned twice in activities and once in text readings, 3 times in total. The value of *Fidelity* was mentioned twice in activities. *Respect* and *Sympathy* were not included in the third theme.

In this theme, as in the previous themes, there was an imbalance in terms of the distribution of values. In addition, this theme, which deals with nature, should have included more love for nature.

Table 4. The value of compassion in the fourth theme and other values associated with the value of compassion

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Preparatory Studies			1		5						2	**8**
Text Readings	**1**	1	8		33	5	4		2	2	1	**57**
Activities			1		15							**16**
Theme Evaluation Questions		1		2	5	2						**10**
Total	**1**	**2**	**10**	**2**	**58**	**7**	**4**	**0**	**2**	**2**	**3**	**91**

According to Table 4, in the Fourth Theme of the Fifth Grade Turkish Textbook titled *"Our National Culture,"* *Compassion* and other values related to *Compassion* were mentioned 91 times in the preparatory studies, text readings, activities, and theme evaluation questions. Values were used most frequently in text readings (57 times) and least in preparatory studies (8 times). They were mentioned 16 times in the activities and 10 times in the theme evaluation questions. *Compassion* value, which was accepted as the roof value for the study, was explicitly mentioned once in the fourth theme. Among the other values associated with *Compassion*, the value of *Love* was given the most place (58 times).

Love (58 times), which was the most mentioned value in the fourth theme, was mentioned in the preparatory studies, text readings, activities, and all of the theme evaluation problems. The value of *Love* was mentioned 33 times in text readings, 15 times in activities, 5 times in theme evaluation questions, and 5 times in preparatory studies, 58 times in total.

In the fourth theme, after the *Love* value, the most common value was *Sacrifice*. The value of *Sacrifice* was mentioned 8 times in the text readings, once in the activities and once in the preparatory studies, 10 times in total. After the *Sacrifice* value, the value of *Respect* was mentioned 5 times in the text readings and 2 times in the theme evaluation questions, and 7 times in total. The value of *Helping* was mentioned 4 times in text readings. The value of *Tenderness* was mentioned twice in total, once in text readings and once in theme evaluation questions. The value of *Fidelity* was mentioned twice in the theme evaluation questions. While *Altruism* and *Sympathy* values passed twice in text readings, *Tolerance* value did not occur in the fourth theme.

Similarly, the distribution of values was uneven in this theme. In this theme of culture, the value of *Tolerance* should have been as much as the value of *Love.* Loving the National Culture was as important as being tolerant of the cultural differences in the National Culture. For this reason, while the love of culture was given, the concepts of tolerance towards different cultures should also be given.

Table 5. The value of compassion in the fifth theme and other values associated with the value of compassion

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Preparatory Studies	1					1	1		1	1	3	**8**
Text Readings	1	2		1	7	4	2		2	2	3	**24**
Activities		1			3	3	2				3	**12**

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Theme Evaluation Questions	1		1		3		2					**7**
Total	**3**	**3**	**1**	**1**	**13**	**8**	**7**	**0**	**3**	**3**	**9**	**51**

According to Table 5, in the *"Citizenship"* theme, the fifth theme of the Fifth Grade Turkish Book, the concepts of *Compassion* and *Compassion* were used 51 times in total in the preparatory studies, text readings, activities, and theme evaluation questions. While the values were mostly mentioned (24 times) in the text readings, they were mentioned at least (7 times) in the theme evaluation questions. They were used 8 times in preparatory studies and 12 times in activities. The value of compassion, which formed the basis of our study, was used once in the preparatory studies, in the reading texts, and the theme evaluation questions, and it was used 3 times in total. The most used value among the values associated with compassion was *Love* (13 times).

The value of *Love*, which was mostly mentioned in the fifth theme, was never used in preparatory studies. However, it was used 7 times in text readings and three times in activities and theme evaluation questions. Thus, *Love*, the most used value in the fifth theme, was used 13 times in total.

In the fifth theme, the most used value (9 times) after *Love* was *Responsibility.* The value of *Responsibility* was mentioned 3 times in the preparatory studies, 3 times in the text reading, and 3 times in the activities, 9 times in total. The *Respect* value was used 8 times after the responsibility value; It is used once in preparatory studies, 4 times in text readings, and 3 times in activities. The value of *Helping* was used once in the preparatory studies and twice in text readings, activities, and theme evaluation studies, and is used 7 times in the fifth theme. Throughout the theme, the values of *Altruism* and *Sympathy* were used three times, once in the preparatory studies and twice in the text readings. *Compassion* and *Tenderness* values were mentioned three times in total. While *Fidelity* value was used once in text readings, *Tolerance* value did not pass in the fifth theme.

The values also showed an imbalance in terms of distribution in this theme. *Responsibility* value was the second-highest value after *Love* value. From the point of view of the theme, although the *Responsibility* value was the second most frequently repeated value, it is important to include this value more.

Table 6. The value of compassion in the sixth theme and other values associated with the value of compassion

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Preparatory Studies					2							**2**
Text Readings	1	3	3	4	16	2	4		1	2		**36**
Activities			1		2		1			1		**5**
Theme Evaluation Questions				1	3		1		1		1	**7**
Total	**1**	**3**	**4**	**5**	**23**	**2**	**6**	**0**	**2**	**3**	**1**	**50**

According to Table 6, in the Sixth Theme of the Fifth Grade Turkish Textbook titled *"Health and Sports,"* *Compassion* and other values related to *Compassion* were mentioned 44 times in text readings, activities, and theme evaluation questions. The values

were used the most (31 times) in the text readings and at least (2 times) in the preparatory study. They were mentioned 7 times in theme evaluation studies and 8 times in activities. The *Compassion* value, which was accepted as the roof value for the study, was used once in the text readings in the sixth theme. Among the other values associated with compassion, the value of *Love* (20 times) was given the most.

Love (20 times), which was the most frequently mentioned value in the sixth theme, was mentioned 13 times in the text readings, 3 times in the theme evaluation questions, and twice in the activities and preparatory studies, a total of 20 times.

In the sixth theme, the value used most after the value of *Love* was *Helping*. The value of *Helping* was mentioned 4 times in text readings and once in activities and theme evaluation questions, a total of 6 times. After the value of helping, the value of *Fidelity* was mentioned 4 times in text readings and once in theme evaluation questions, a total of 5 times. *Sacrifice* was mentioned 3 times in text readings and once in activities, 4 times in total. *Tenderness* was mentioned 3 times in text readings. *Altruism* was mentioned once in text readings and once in theme evaluation questions, a total of 2 times. Although the *Responsibility* value was used once in the theme evaluation questions, *Tolerance* and *Sympathy* values were not used in the sixth theme.

In this theme, the values were not the same in terms of distribution, and values were not given many places in this theme.

Table 7. The value of compassion in the seventh theme and other values associated with the value of compassion

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Preparatory Studies					3	1	4					**8**
Text Readings	5	4	3	9	11	6	7	2	6	1	1	**55**
Activities			3		8	7	8		3	1	3	**33**
Theme Evaluation Questions					1		2					**3**
Total	**5**	**4**	**6**	**9**	**23**	**14**	**21**	**2**	**9**	**2**	**4**	**99**

According to Table 7, in the seventh theme of the Fifth Grade Turkish Textbook titled *"Virtues,"* *Compassion* and other values related to *Compassion* were mentioned 88 times in the preparatory work, text readings, activities, and theme evaluation questions. Values were mentioned the most in the text readings (46 times) and the least in the theme evaluation questions (3 times). They appeared 31 times in activities and 8 times in preparatory studies. Compassion value, which was accepted as the roof value for the study, was mentioned 3 times in the seventh theme directly in the text readings. Among the other values associated with compassion, the value of *Love* was given the most (22 times).

Love (22 times), the most frequently mentioned value in the seventh theme, was mentioned in the preparatory studies, text readings, activities, and all of the theme evaluation questions. The value of *Love* was mentioned 10 times in the text readings, 8 times in the activities, 3 times in the preparatory studies, once in the theme evaluation questions, and 22 times in total. The value of *Helping*, like the value of love, was the second most repeated value, used in all areas (20 times), using theme evaluation questions (2 times), preparatory studies (4 times), text readings, and 7 times each in activities.

In the seventh theme, the most common value after the value of helping was *Respect*. *Respect* was mentioned 7 times in activities, 5 times in text readings, and once in preparatory studies, a total of 13 times. After the *Respect* value, the *Altruism* value was mentioned 5 times in the text readings and 2 times in the activities, and 7 times in total. *Sacrifice* was used 3 times in text readings, 3 times in activities, 6 times in total, and *Fidelity* value was used 6 times in text readings. *Responsibility* value was mentioned once in text readings and 3 times in activities, a total of 4 times. *Tenderness* value was used 3 times only in text readings.

The least used values in the seventh theme were *Tolerance* and *Sympathy*. *Sympathy* was used once in text readings and activities, and the *Tolerance* value was used twice in text readings.

Values showed an imbalance in this theme as well. When the Secondary School Fifth Grade Turkish Textbook was examined, having a theme titled *"Virtues"* can be considered as an important step towards gaining virtuous behaviors to students. Compassion, love, respect, altruism, sympathy, etc. concepts were not included in the reading texts. In the activities section, the

values of sacrifice, responsibility, love, and respect were used once. It would have been more appropriate to have chosen a text including all values (tenderness, tolerance, compassion, sympathy, etc.) as the first reading text in the theme of virtues.

Table 8. The value of compassion in the eighth theme and other values associated with the value of compassion

	Compassion	Tenderness	Sacrifice	Fidelity	Love	Respect	Helping	Tolerance	Altruism	Sympathy	Responsibility	Total
Preparatory Studies												
Text Readings					1						3	**4**
Activities					3							**3**
Theme Evaluation Questions					4	1					1	**6**
Total					**8**	**1**					**4**	**13**

According to Table 8, in the Eighth Theme titled *"Science and Technology"* in the Fifth Grade Turkish Textbook, *Compassion* and other values related to *Compassion* were mentioned 13 times in text readings, activities, and theme evaluation questions. Values were mentioned the most (6 times) in the theme evaluation questions and at least (0 times) in the preparatory studies. Values were mentioned 4 times in text readings and 3 times in activities. The *Compassion* value, which was accepted as the roof value for the study, was not used directly in the sixth theme. Among the other values associated with *Compassion*, the value of *Love* (8 times) was given the most. In *the Science and Technology* theme, the values of compassion, sacrifice, fidelity, helping, tolerance, altruism, and empathy were not used in preparatory studies, text readings, activities, and theme evaluation questions. *Responsibility* value was mentioned 4 times, and *Respect* value was mentioned once.

The value of *Love*, which was the most used value in the eighth theme, was mentioned in the theme evaluation questions (4 times), activities (3 times), and text readings (once). *Responsibility* value, the most used value after love value, was used in text readings (3 times) and theme evaluation questions (once). The value of *Respect* was used in the theme evaluation questions (once).

When we examined the secondary school fifth grade Turkish textbook in terms of compassion and values related to compassion, values were used the most in the second theme, *"National Struggle and Atatürk"* (121 times); they were mentioned at least in the eighth theme, *"Science and Technology"* (13 times). Values were included in the seventh theme, *the Virtues* Theme (99 times), *the National Culture* theme (91 times), *the Individual and Society* theme (91 times), *the Citizenship* theme (51 times), *the Health and Sports* Theme (50 times), and *the Nature and the Universe* Theme (38 times). When all themes were examined, it was seen that the most used value was *Love*, except for the third theme.

DISCUSSION AND CONCLUSION

Secondary School Turkish Fifth Grade Textbook published by the Ministry of National Education has been examined in terms of Compassion, Tenderness, Sacrifice, Fidelity, Love, Respect, Helping, Tolerance, Altruism, Sympathy, and Responsibility which the four field experts and researchers who expressed their opinions in this study accepted as compassion value and values related to compassion value ("MEB Board of Education and Discipline Press Statement," 2017, p. 24). These values were examined separately in each of the 8 themes in the Preparatory Studies, Text Readings, Activities, and Theme Evaluation Questions in the Fifth Grade Turkish Textbook. Compassion value and other values related to compassion were mentioned 554 times in 8 themes. These values were mostly seen in text readings, and the most recurring value in the texts among these values was the Love value, 204 times in total. This finding is similar to previous studies (Deniz and Karagöl, 2018; Yılar, 2016).

There was an imbalance between the distribution of compassion and other values that were considered to be related to compassion in the themes. This finding is similar to previous studies (Deniz and Karagöl, 2018; Gül, 2017; Yılar, 2016). It was seen that compassion and other concepts related to compassion were mostly used in text readings. This finding differs from previous studies on the subject. According to previous studies, values are mostly used in activity studies (Deniz and Karagöl, 2018). It is

important that the values are given in the reading texts, but it is also important to be in activities for values in order to gain compassion and other concepts. Because values are earned as they are applied. After each theme, adding activities that students can apply the values in the text to the books will facilitate the acquisition of values (Ay, 2013; Whitson, 2014; Kohler-Evans, and Barnes, 2015).

According to the result of this study, which examined compassion and other values related to compassion, the value of compassion was only mentioned 34 times in the book. For the acquisition of compassion value, it may be useful to put more emphasis on this value. Previous studies examining the fifth grade Turkish textbook in terms of values have also concluded that the value of Love was the most mentioned value (Yılar, 2017; Deniz and Karagöl, 2018), similar results obtained in this study. It is positive that the value of love is included in so many books, but compassion is an important value in keeping people together and revitalizing the social conscience at the desired level. For this reason, although the value of love is often considered in the book in terms of compassion, it is not enough on its own.

In previous studies on values, it is concluded that not every value is included in the textbooks and some values are highlighted (Doğan and Gülüşen, 2011; Yılar, 2017; Deniz and Karagöl, 2018). A similar finding is obtained in this study as well. It may not be possible to give every value throughout the book. However, the value that should come to the fore according to the themes of the themes can be included in more texts and activities. For example, compassion was mentioned 13 times in the first theme called "Society and Individual." However, the value of Compassion could have been brought to the fore more in this theme title because compassion is an important value in the well-being of individuals and societies. In the Eighth theme named "Science and Technology," compassion and values related to compassion were the least included. These values were mentioned only 13 times in total in the theme. The value of love has not exceeded 8 times, the value of responsibility 4 times, and the value of respect 1 time, while other values have never exceeded.

Books and the texts in the books are important in terms of value education (Yılar, 2017; Çinpolat, 2018). However, when transferring values, it is not enough to just mention the values that are desired to be gained in the texts. The texts should also be free of concepts that would evoke the opposite of the value to be gained. For example, in the text "The Child and the Ballooner" in the first Theme of the Secondary School Turkish Fifth Grade Textbook, the sentence *"The excitement he felt as he approached his goal step by step did not even make you feel the thorns of the acacia tree that stings and hurts his legs" (p. 35),* based on mutual interest rather than compassion. It has a meaning that evokes shopping. According to this sentence, the child will save the balloons and will receive a balloon in return. Compassion and tenderness values include helping someone without any expectation.

Similarly, in the reading text titled "Who Knows the Value of Goodness" in the seventh theme titled Virtues, it is explained that today's people do not know the value of goodness, but those who do not know the value of goodness will be punished in some way. While giving this message, the concept of ingratitude is more prominent in the story. Because in the story, the wolf wants to eat the person who helps him. Even though the horse and dog had done well to their owners for years, they were thrown out when they got old. The messages given here overshadow the virtue of goodness and help. Primary and secondary school students identify with the heroes in the stories in Turkish textbooks. For this reason, the character traits of the people in the stories in Turkish textbooks are important (Çinpolat, 2018). In addition, it is not enough to just give messages about that value in the texts prepared to gain values. Both the value to be gained should be given in the text, and the texts should be away from concepts that would evoke opposite concepts.

As a result, in the fifth grade Turkish textbook taught in schools affiliated to the Ministry of National Education, love and respect, which are values related to compassion, are repeated more quantitatively than other concepts; however, it is necessary to improve the transfer of these values and other values related to compassion in the text and in other parts. In addition, the number of times the compassion value mentioned in the texts (34 times) is not sufficient in terms of quantity. It is thought that the greater involvement of the value of compassion in the themes will benefit the development of social and individual conscience.

RECOMMENDATIONS

It has been observed that the values were unevenly distributed in the themes in the book. Besides, values were given more place in text reading passages. The absence of an activity that includes any application about values may be a deficiency in terms of gaining values. The absence of an activity that includes any application about values may be a deficiency in terms of values education. It may be beneficial to enable the students to apply the values in the text reading passages through the activities.

It is important that the story characters in the themes are chosen well because children identify with the characters in the stories. Thus, it is necessary to include qualified characters that children will take as an example in text reading passages.

While the values in the themes are given in the texts and other sections, it is necessary to pay attention not to give the concepts that will evoke the opposite of those values.

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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

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Ethics Committee Approval Information

In this study, the 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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|Araştırma Makalesi / Research Article|

Lifelong Learning Tendency and Self-Efficacy Perception as a Predictor of Employment Hope of Preservice Teachers[1]

Yaşam Boyu Öğrenme Eğilimi ve Öz-yeterlik Algısının Öğretmen Adaylarında İş Umudunu Yordama Durumu

Ebru Ocakcı[2], Osman Samancı[3]

Abstract

The innovations brought by the world of information and technology make social and individual change obligatory and cause changes in the education system. For this reason, teachers and preservice teachers need to adapt to social change and refresh themselves. This need for renaissance emphasizes concepts such as lifelong learning and professional competence in the professional lives of individuals. The purpose of this study was to examine whether lifelong learning tendency and teacher self-efficacy are significant predictors of employment hopes of preservice teachers. The study was conducted as a relational research method, one of the quantitative research methods. Cluster sampling method was used to determine the sample. The sample of the study consisted of 347 fourth-grade students studying in the faculty of education. Pearson Moments Product Correlation analysis and multiple linear regression analysis were conducted in order to examine whether lifelong learning tendency and teacher self-efficacy predict employment hopes in preservice teachers.

As a result of the regression analysis, the sub-dimension of perseverance of Lifelong Learning Tendency Scale and the sub-dimension of classroom management of the Teachers' Sense of Efficacy Scale were evaluated as significant and strong predictors of employment hope in preservice teachers.

Öz

Bilgi ve teknoloji dünyasının getirdiği yenilikler toplumsal ve bireysel değişimi zorunlu hale getirdiği gibi eğitim sisteminde de değişikliklere neden olmaktadır. Bu nedenle öğretmen ve öğretmen adaylarının toplumsal değişime ayak uydurmaları ve kendilerini yenilemeleri gerekmektedir. Bu yenilenme ihtiyacı yaşam boyu öğrenme ve mesleki yeterlik gibi kavramları bireylerin meslek yaşamlarında ön plana çıkarmaktadır. Bu araştırmanın amacı yaşam boyu öğrenme eğilimi ve öğretmenlik öz-yeterliğinin öğretmen adaylarında iş umudunun anlamlı yordayıcıları olup olmadığının incelenmesidir. Araştırmanın modelini nicel araştırma yöntemlerinden biri olan ilişkisel araştırma modeli oluşturmaktadır. Örneklemin belirlenmesinde küme örnekleme yöntemi kullanılmıştır. Araştırmanın örneklemini eğitim fakültesi 4. sınıfta öğrenim gören 347 öğrenci oluşturmaktadır. Yaşam boyu öğrenme eğiliminin ve öğretmenlik öz-yeterliğinin öğretmen adaylarında iş umudunu yordama durumunu incelemek amacıyla sırasıyla Pearson Momentler Çarpımı korelasyon analizi ve çoklu doğrusal regresyon analizi yapılmıştır. Regresyon analizi sonucunda Yaşam Boyu Öğrenme Eğilimlerini Belirleme Ölçeğinin alt boyutlarından sebat boyutunun ve Öğretmen Özyeterlik Ölçeği'nin alt boyutlarından sınıf yönetimi boyutunun öğretmen adaylarında iş umudunun anlamlı ve güçlü yordayıcıları olduğu değerlendirilmiştir.

INTRODUCTION

Lifelong Learning Tendency

The concept of lifelong learning, which was first emphasized by Paul Lengrand at the UNESCO conference as a term, is an understanding that has significantly influenced the education policies of countries for many years and continues to gain importance in the international arena with each passing day (Aspin & Chapman, 2000; Lengrand, 1970). Samancı and Ocakcı (2017) defined lifelong learning as a process that continues from the beginning to the end of human life and considered it as an inclusive framework for all kinds of knowledge skills, attitudes, and behaviors, regardless of age and place limits brought by formal education. Brooks (2006) drew attention to the fact that young graduates participated in lifelong learning more than other age groups and emphasized that the motivating factors behind this should be investigated.

Chapman and Aspin (1997) based the nature of lifelong learning on three basic reasons. These three main reasons are as follows: economic progress and development; personal development and satisfaction; social inclusion, democratic understanding, and activity. The variable of employment hope, which is the focal point of the study, is thought to be closely related to the reasons for "economic progress and development." Expectations and economic reasons for being employed in business life can be considered as factors that direct individuals to lifelong learning. In this case, the assumption arises that individuals with high lifelong learning tendencies can have a positive perception of being employed in business life.

When the rationale for economic development and progress is handled in the context of preservice teachers, first, it is necessary to evaluate the employment conditions of the relevant mass in the perspective of our country. The prerequisites for the employment of education faculty graduates in institutions affiliated with the Ministry of National Education are getting more difficult every year (Dinç, 2020). Changing conditions make it a necessity for preservice teachers to develop themselves by acquiring new knowledge (Evin-Gencel, 2013). At this point, it is not possible to consider the reasons that direct preservice teachers to lifelong learning independently from their expectations at the point of economic progress and development. The first assumption of the study is that there may be a significant relationship between individuals' lifelong learning tendencies and employment hope. In this relationship, lifelong learning tendency is considered to be a predictor of individuals' employment hope.

Self-Efficacy

According to Bandura's Social Cognitive Learning Theory, self-efficacy is expressed as "individuals' perceptions about their ability to organize and implement the action plans required to achieve specified performance types" (Bandura 1986, 391). Self-efficacy is a very important variable for individuals to set goals for the future, make decisions towards these goals, and stand on their own feet by implementing these decisions (Herr & Wagner, 2003).

Teacher self-efficacy is a concept that takes its basis from Bandura's self-efficacy theory and represents an individual's perception of competence towards the teaching profession. This concept expresses teachers' perceptions of competence in planning, organizing, and managing skills necessary to achieve educational goals (Skaalvik & Skaalvik, 2010). Tschannen-Moran and Woolfolk Hoy (2001) described teacher self-efficacy in three areas: teaching strategies, classroom management, and student participation. Teachers' ability to prepare a learning environment suitable for developing student abilities is considered as self-efficacy towards teaching strategies. Teacher skills on establishing and maintaining discipline in the classroom are considered as self-efficacy for classroom management. Teacher skills on ensuring active participation of students in the learning environment are expressed as self-efficacy towards student participation.

Studies pointed out that teacher self-efficacy positively affects job satisfaction, draw attention to the literature. These studies showed that teachers with professional self-efficacy have higher satisfaction in their profession (Kengatharan, 2020; Zakariya, 2020). The results of the relevant research are valid for individuals who have started their professional life and are working as teachers. In this case, it is assumed that teacher self-efficacy can positively affect the employment hope of preservice teachers who have not yet started their profession in a positive way. In this context, the second assumption of the study is that there may be a significant relationship between teacher self-efficacy and employment hope. In this relationship, teacher self-efficacy is considered as a predictor variable for an individual's employment hope.

Employment Hope

Employment hope is a concept that has been introduced to the literature by Hong et al. (2012) and determines the personal perceptions of individuals towards employment. Employment hope is a variable that includes skills such as making a career plan, evaluating individual abilities correctly, and coping with problems encountered in this process. Employment hope includes the positive thoughts of individuals towards achieving their goals for professional life, as well as their readiness for the responsibilities they will take (Gerçek, 2020).

Umutlu and Bayar (2018) determined that the employment hope of university students gradually decreased according to their grade levels. It has been observed that students about to graduate have lower employment hope compared to students who have just started their undergraduate studies. This can be evaluated as young people's employment hope has decreased during undergraduate studies, and students gradually develop a desperate perspective towards this issue in our country. In this context, it is important to examine the variables that predict preservice teachers' employment hope. When the variables predicting the employment hope of preservice teachers are determined, it will be possible to take measures that will develop preservice teachers in this direction and prepare them for professional life.

Rationale

The scope of some studies on lifelong learning tendency, teacher self-efficacy, and employment hope variables are presented in Table 1 by examining the related literature.

Table 1. Studies in the literature regarding the relevant variables

	The Scope of Studies	Resource
Lifelong Learning Tendency	• Turkey's current position on lifelong learning and policies are evaluated. • Lifelong learning tendencies of students, preservice teachers, and teachers were examined in terms of various variables. • Individuals' lifelong learning tendencies were examined in relation to educational technology self-efficacy, knowledge self-efficacy, and scientific self-efficacy.	Bağcı (2011), Berberoğlu (2010), Beycioğlu and Konan, (2008), Diker et al. (2012), Evin-Gencel (2013), Gözübüyük Tamer, (2013), Gutwill (2018), Gündoğan (2003), İzci and Koç (2012), Kan and Murat (2020), Karakuş (2013), Kaya (2014), Kazu and Erten (2016), Mi and Riley-Doucet (2016), Şahin and Arcagök (2014), Yaman and Yazar (2015)
Teacher Self-Efficacy	• Predictors of teacher self-efficacy were tried to be determined. • Self-efficacy perceptions of teachers were examined in relation to lifelong learning tendency, job stress, job satisfaction, life satisfaction, and burnout. • The role of teacher self-efficacy on different variables in the teaching process was examined.	Akyol (2016), Ayra and Kösterelioğlu (2015), Clark and Andreasen (2020), Çoban et al. (2020), Fackler et al. (2020), Kunemund et al. (2020), Kengatharan (2020), Kurbanoğlu (2003), Schwarzer and Hallum (2008), Severino et al. (2011), Skaalvik and Skaalvik (2010), Telef (2011),
Employment Hope	• Employment hope of students and preservice teachers were examined in terms of various variables. • The effect of employment hope as a predictor variable on self-sufficiency, burnout, and depression was examined. • It has been evaluated that employment hope can reduce burnout in individuals, while employment hope and self-efficacy can reduce depression together. • Scale development studies have been carried out to determine the employment hope of individuals.	Gerçek (2020), Hong et al. (2012), Hong and Choi (2013), Hong et al. (2014a), Hong et al. (2014b), Hong et al. (2020a), Hong et al. (2020b), Küpana (2017), Seçer and Yazıcı (2018), Welles et al. (2017).

As Table 1, some studies on lifelong learning tendency, teacher self-efficacy, and employment hope variables are descriptive studies aiming to reveal the current situation. When the correlational studies on the relevant variables are examined, the following points draw attention:

- It is seen that lifelong learning tendency is examined in relation to the self-efficacy perceptions of individuals in many different areas. Research results revealed that there was a positive and significant relationship between teacher self-efficacy and lifelong learning tendency.
- It is seen that teacher self-efficacy is examined in relation to individuals' work-related variables such as job stress, job satisfaction, and burnout.
- In studies on employment hope, it is seen that self-efficacy is examined as a parallel variable with employment hope.
- In the current studies, there is no research examining lifelong learning tendency and employment hope from a correlational aspect.

Changing economic living conditions make lifelong learning compulsory for individuals to be employed. Therefore, it is thought that lifelong learning tendency may be a variable that will positively affect the employment hope of individuals. However, the relationship of teacher self-efficacy with lifelong learning tendency and employment hope is remarkable. The third and last assumption of this study is that lifelong learning tendency and teacher self-efficacy can be two variables that together predict employment hope. Based on these assumptions, answers to the following questions have been sought during the research process:

1. Do preservice teachers' lifelong learning tendencies predict their employment hope?
2. Do preservice teachers' teaching self-efficacy predict their employment hope?
3. Do preservice teachers' lifelong learning tendencies and teaching self-efficacy together predict employment hope?

METHOD

Research Model

Research model is a correlational research model, which is one of the quantitative research methods. In correlational studies, it is tried to determine the relationship between two measurable variables and the degree of the relationship (Gay et al., 2012; McMillan & Schumacher, 2010). In predictive studies within the correlational pattern, knowing the scores of one of the two variables known to be related to each other helps to estimate the other's scores (Fraenkel et al., 2012). In this study, in which the preservice teachers' lifelong tendencies and teaching self-efficacy were analyzed in a correlational way with their employment hope, it was examined whether lifelong learning tendency and teaching self-efficacy are significant predictors of employment hope in preservice teachers. In this respect, it is possible to state that the study is a predictive study.

Various measures were taken to increase internal and external validity. One of these measures is to use the probability sampling method to determine the sample of the study. In addition, during the data collection phase, the subjects included in the sample group have explained the subject of the study, its importance, how to complete the scales and to fill the scales in an objective manner. After these explanations, data were collected only from students who participated voluntarily. In the first evaluation, the scales that were left unfinished and the scales in which the same answer was marked for all questions were excluded from the scope of the study. These measures were evaluated to increase the internal validity of the study. The results of the study were tried to be presented in such a way as to allow comparison with similar studies, thus ensuring external validity.

Data Collection Tools

The first case, which is intended to be examined in the study, is the lifelong learning tendencies of preservice teachers. "Lifelong Learning Tendency Scale," developed by Diker-Coşkun and Demirel (2012), was used to examine preservice teachers' lifelong learning tendencies. The scale was prepared as a 6-point Likert rating scale. The scale consisted of 27 items and 4 sub-dimensions. These dimensions were "motivation," "perseverance," "lack of regulating learning," and "lack of curiosity." The internal consistency coefficient of the scale was .89. In this study, the psychometric properties of the lifelong learning tendency scale were reviewed, and it was found that the four-factor structure gave a good fit as a result of the confirmatory factor analysis of the scale (CFI: 95, GFI: .90, RMSEA: .078). The reliability values were determined to be .71. The obtained values were considered to be sufficient for the reliability and validity of the scale.

Another dimension of the study was teacher self-efficacy. Teachers' Sense of Efficacy Scale developed by Tschannen-Moran and Woolfolk Hoy (2001) and adapted to Turkish by Çapa et al. (2005) was used to examine the preservice teachers' perceptions of self-efficacy. The scale was prepared as a 5-point Likert rating scale. The scale consisted of three sub-dimensions as "classroom management," "student engagement," and "instructional strategies," and a total of 24 items. The internal consistency coefficients of the Teachers' Sense of Efficacy Scale related to the "student engagement," "classroom management," and "instructional strategies" sub-dimensions were .82, .84, .86, respectively. In this study, the psychometric properties of the teachers' sense of efficacy scale were reviewed, and it was found that the structure of the scale consisting of three factors gave a good fit as a result of the confirmatory factor analysis (CFI: 96, GFI: .90, RMSEA: .073). The reliability values were determined to be .77. The obtained values were considered sufficient for the reliability and validity of the scale.

The third dimension of the research was employment hope. In the study, it was examined whether lifelong learning tendency and self-efficacy perception were significant predictors of employment hope in preservice teachers. For this reason, the employment hope scale developed by Hong et al. (2012) and adapted to Turkish by Akın et al. (2013) was used in order to examine the employment hope of preservice teachers. The scale is prepared as a 6-point Likert rating scale. The Employment Hope Scale consists of 14 items and two sub-dimensions. The sub-dimensions of the scale are "psychological empowerment" and "goal-oriented pathways." The internal consistency coefficient of the scale was .93 for the whole scale, .85 for the "psychological empowerment" subscale, and .90 for the "goal-oriented pathways" subscale. In this study, the psychometric properties of the employment hope scale were reviewed, and it was determined that the structure of the scale consisting of two factors gave a good fit as a result of the confirmatory factor analysis (CFI: 95, GFI: .91, RMSEA: .066). The reliability values were found to be .82. The obtained values were considered sufficient for the reliability and validity of the scale.

Population and Sample

The population of this study consisted of the fourth-grade students who studied at Kazım Karabekir Faculty of Education, Atatürk University. The reason why fourth-grade students for the population of the study was selected was that employment hope was taken into consideration as more determinant for the students in this grade than the other grades. In the population of the study, there are 26 divisions within 9 departments. For the 2017-2018 academic year, the total number of fourth-grade students studying in these departments was 1448. It was aimed to reach 304 students with a 95% confidence interval in determining the sample from the population. Nine divisions were selected from each department within the population with the cluster sampling method. The proportional sampling method was used in the selection of students from the determining divisions. Based on this, efforts were made to represent each department equally. Finally, data were obtained from 347 individuals who were available at the data collection stage with appropriate sampling method and who volunteered to participate in the study. The sample size was estimated to be sufficient because it provided a 95% confidence interval. The distribution of the participants according to divisions and departments is presented in Table 2.

Table 2. The distribution of the participants according to divisions and departments

Department	Division	N	%
Department of Foreign Language Education	English Language Teaching	20	5.8
Department of Mathematics and Science Education	Science Teaching	60	17.3
Department of Basic Education	Classroom Teaching	61	17.6
Department of Educational Sciences	Psychological Counseling and Guidance	38	11
Department of Fine Arts Education	Music Teaching	31	8.9
Department of Turkish and Social Studies Education	Social Sciences Teaching	69	19.9
Department of Physical Education and Sports	Physical Education and Sports Teaching	13	3.7
Department of Computer and Instructional Technology	Computer and Instructional Technologies Teaching	32	9.2
Department of Special Education	Mentally Handicapped Teaching	23	6.6
Total		**347**	**100**

Data Analysis

In this study, it was examined whether lifelong learning tendencies and teaching self-efficacy of preservice teachers have a predictive effect on their employment hope. Before the analysis of the data, data collection tools were reviewed, and it was determined that there was no more than 2% loss data. Therefore, up to 2% of the lost data was filled according to the arithmetic mean.

In the analysis phase, first, the total scores obtained from the Employment Hope Scale were calculated. As the focal point of the study was whether the employment hope of preservice teachers was predicted, points related to the sub-dimensions of the Employment Hope Scale were not calculated; only the total employment hope score was included in the analysis. Then, total scores were calculated for "motivation," "perseverance," "lack of regulating learning," and "lack of curiosity" sub-dimensions of the Lifelong Learning Tendency Scale. Finally, the normality analysis was started after calculating the total scores of the Teachers' Sense of Efficacy Scale for "student engagement," "instructional strategies," and "classroom management" sub-dimensions.

As a prerequisite for the multivariate normal distribution, Mahalanobis Distance Coefficient was calculated, and the scale forms of 14 participants, whose distance coefficient was determined to be above the criteria, were excluded from the analysis. Following the extraction of the scale forms, the Mahalanobis Distance Coefficient was found to be in compliance with the relevant criteria.

In order to examine the relationship between the sub-dimensions of the Job Satisfaction Scale and the Lifelong Learning Tendency Scale, and the Teachers' Sense of Efficacy Scale, it was investigated whether each sub-dimension showed normal distribution. Skewness and Kurtosis values, histogram graphs, and Q-Q plot graphs of the distributions were examined, and the scale forms of 3 participants, who were determined to threaten the normality of the distribution, were excluded from the analysis. After the extraction of scale forms, the distribution was evaluated as normal, and the scale forms of 330 participants were analyzed.

FINDINGS

Findings related to whether Preservice Teachers' Lifelong Learning Tendencies Predict Their Employment Hope

To examine whether preservice teachers' lifelong learning tendencies were a significant predictor of their employment hope, Pearson Product-Moment Correlation Analysis was done between the "motivation," "perseverance," "lack of regulating learning," and "lack of curiosity" sub-dimensions of Lifelong Learning Tendency Scale and Employment Hope.

Table 3. Results of correlation analysis between sub-dimensions of lifelong learning tendencies and employment hope

	Employment Hope	Motivation	Perseverance	Lack of Regulating Learning	Lack of Curiosity
Employment Hope	1	.391**	.421**	.050	.090
Motivation	.391**	1	.674**	.197**	.361**
Perseverance	.421**	.674**	1	.192**	.374**
Lack of Regulating Learning	.050	.197**	.192**	1	.639**
Lack of Curiosity	.090	.361**	.374**	.639**	1

As a result of the analysis, it was determined that there was a significant relationship between the preservice teachers' Employment Hope scores and motivation sub-dimension (R=.391, p<.05) and perseverance sub-dimension (R=.421, p<.05). Based on the findings, it was decided to perform multiple linear regression analysis between the motivation and perseverance sub-dimensions of the Lifelong Learning Tendency Scale and the Employment Hope Scale.

Before the regression analysis, it was examined whether the model established before fulfilled the prerequisites of analysis. First, the Durbin-Watson value was examined in order to check that the errors were independent, the corresponding value was

found to be 1.938, and it was determined to be in accordance with the analysis conditions. Second, Tolerance (.546) and VIF (1.831) values of the model were examined, and it was determined that both values fulfilled the multiple linear correlation condition. Based on the examinations, it was evaluated that the model provided the prerequisites and regression analysis could be performed. In order to determine whether motivation and perseverance sub-dimensions were significant predictors of employment hope in preservice teachers, the analysis was done with the Forward technique among multiple linear regression analysis techniques, and the obtained results are indicated in Table 4.

Table 4. Results of multiple linear regression analysis between motivation and perseverance and employment hope

Model	Predictors	B	Standard Error	β	t	p
1	Constant	87.833	3.947		22.253	.000
	Perseverance	1.170	.139	.421	8.401	.000
2	Constant	75.142	5.835		12.878	.000
	Perseverance	.803	.186	.289	4.310	.000
	Motivation	.736	.252	.196	2.926	.004

When the data of multiple linear regression analysis were examined, it was determined that the perseverance sub-dimension of the Lifelong Learning Tendency Scale had a significant relationship with the employment hope (R=.421, R^2=.177). Accordingly, in the first model, perseverance explained 17.7% of the variance in the employment hope. In the second model established in the regression analysis, when the fact of whether perseverance and motivation sub-dimensions predicted the employment hope was analyzed, it was seen that the explained variance increased from 17.7% to 19.8% (R=.445, R^2=.198). In other words, it was determined that the motivation sub-dimension contributed only 2.1% to the explained variance. Based on the findings, it was determined that the perseverance sub-dimension of the Lifelong Learning Tendency was a strong predictor of employment hope in preservice teachers.

Findings related to the Preservice Teachers' Self-Efficacy as a Predictor of Their Employment Hope

To examine whether preservice teachers' self-efficacy perceptions were a significant predictor of their employment hope, Pearson Product-Moment Correlation Analysis was done between "student engagement," "instructional strategies," and "classroom management" sub-dimensions of Teachers' Sense of Efficacy scale and Employment Hope. The results obtained from the correlation analysis are presented in Table 5.

Table 5. Results of correlation analysis between sub-dimensions of teaching self-efficacy and employment hope

	Employment Hope	Student Engagement	Instructional Strategies	Classroom Management
Employment Hope	1	.390**	.369**	.377**
Student Engagement	.390**	1	.719**	.711**
Instructional Strategies	.369**	.719**	1	.763**
Classroom Management	.377**	.711**	.763**	1

As a result of Pearson Product-Moment Correlation Analysis, it was determined that there was a significant relationship between employment hope and the sub-dimensions of student engagement (R=.390, p<.05), instructional strategies (R=.369, p<.05), and classroom management (R=.377, p<.05).

Based on the findings, it was decided to perform multiple linear regression analysis between the student engagement, instructional strategies, and classroom management sub-dimensions of the Teachers' Sense of Efficacy Scale and the Employment Hope Scale.

It was evaluated whether the model established before multiple linear regression analysis provided the preconditions for analysis. The Durbin-Watson value was checked to determine if the errors were independent, and the relevant value was found to be 1.922, and it was found to be in accordance with the analysis conditions. Secondly, theTolerance (.494) and VIF (2.023) values of the model were examined, and it was determined that both values fulfilled the multiple linear correlation condition. Based on the data obtained, it was concluded that the model provided the prerequisites, and regression analysis could be performed. To determine whether student engagement, instructional strategies and classroom management sub-dimensions were significant predictors of employment hope in preservice teachers, the analysis was done with the Forward technique among multiple linear regression analysis techniques. The obtained data are presented in Table 6.

Table 6. Results of multiple linear regression analysis between student engagement, classroom management and employment hope

Model	Predictors	B	Standard Error	β	t	p
1	Constant	72.372	6.300		11.487	.000
	Classroom Management	1.483	.193	.390	7.679	.000
2	Constant	67.010	6.517		10.282	.000
	Classroom Management	.937	.272	.247	3.448	.001
	Student Engagement	.704	.249	.202	2.823	.005

When the data of multiple linear regression analysis were examined, it was determined that the classroom management sub-dimension of the Teachers' Sense of Efficacy Scale had a significant relationship with the employment hope (R=.390, R^2=.152). Accordingly, in the first model, classroom management explained 15.2% of the variance in the employment hope. In the second model established in the regression analysis, when the fact of whether classroom management and student engagement sub-dimensions predicted the employment hope was analyzed, it was seen that the explained variance increased from 15.2% to 17.3% (R=.415, R^2=.173). It was evaluated that the student engagement sub-dimension had a lower contribution, like 2.1% on the explained variance. The instructional strategies sub-dimension was not included in the model as it was found that it was not a significant predictor of employment hope. Based on the findings, it was determined that the classroom management sub-dimension of Teachers' Sense of Efficacy Scale was a strong predictor of employment hope in preservice teachers.

Findings related to the Preservice Teachers' Lifelong Learning Tendencies and Self-Efficacy as a Predictor of Their Employment Hope

Multiple linear regression analysis was done to examine whether preservice teachers' lifelong learning tendencies and teaching self-efficacy significantly predicted their employment hope. The variables were examined in terms of the multicolorinity problem before the regression analysis. In the correlation analysis, it was determined that there was a significant positive correlation between the total score of lifelong learning tendency and the total score of teaching self-efficacy (R = .30, p <.05). Furthermore, when the relationship between the sub-dimensions was examined, the highest relationship between the sub-dimensions of lifelong learning tendency and the sub-dimensions of teaching self-efficacy was found to be between the perseverance dimension and the instructional strategies (R = .35, p <.05). Considering both correlation analysis, it was evaluated that there was no multicolorinity problem between lifelong learning tendency and teaching self-efficacy variables. Based on this result, it was decided that the variables could be subjected to regression analysis together, and accordingly, the analysis phase was started.

Based on the results of the analysis in Table 4 and Table 6, multiple linear regression analysis was carried out in the perseverance and motivation sub-dimensions of Lifelong Learning Tendency Scale and classroom management and student engagement sub-dimensions of Teachers' Sense of Efficacy Scale with employment hope. The sub-dimensions that were found not to be a predictor of employment hope were not included in the analysis.

It was examined whether the model established before multiple linear regression analysis provided the preconditions for analysis. First, the Durbin-Watson value was examined in order to check that the errors were independent, and the relevant value was found to be 1.959, and it was found to be in accordance with the analysis conditions. Tolerance and VIF values, another prerequisite of the model, were evaluated and presented in Table 7.

Table 7.Tolerence and VIF values related to multiple linear regression model

Model	Predictors	Tolerance	VIF
1	Perseverance	1.00	1.00
2	Perseverance	.945	1.058
	Classroom Management	.945	1.058
3	Perseverance	.541	1.849
	Classroom Management	.932	1.072
	Motivation	.539	1.856
4	Perseverance	.530	1.885
	Classroom Management	.493	2.028
	Motivation	.538	1.860
	Student Engagement	.469	2.134

As shown in Table 7, it was seen that Tolerance and VIF values of the model fulfilled the multiple linear correlation condition. Based on the analysis of the prerequisites for analysis, it was determined that the model provided the prerequisites, and as a result, multiple linear regression analysis could be performed. The analysis was done with the Forward technique to determine whether motivation, perseverance, classroom management, and student engagement sub-dimensions were significant predictors of employment hope in preservice teachers. The obtained data are presented in Table 8.

Table 8. Multiple linear regression analysis results between sub-variables and employment hope

Model	Predictors	B	Standard error	β	t	p
1	Constant	87.833	3.947		22.253	.000
	Perseverance	1.170	.139	.421	8.401	.000
2	Constant	59.517	6.010		9.904	.000
	Perseverance	.978	.136	.352	7.187	.000
	Classroom Management	1.029	.171	.295	6.030	.000
3	Constant	50.913	6.980		7.294	.000
	Perseverance	.700	.179	.252	3.920	.000
	Classroom Management	.982	.171	.282	5.755	.000
	Motivation	.574	.242	.153	2.376	.018
4	Constant	46.629	7.270		6.414	.000
	Perseverance	.651	.180	.234	3.622	.000
	Classroom Management	.661	.234	.190	2.829	.005
	Motivation	.550	.241	.146	2.283	.023
	Student Engagement	.523	.261	.138	2.003	.046

When the data of multiple linear regression analysis were examined, it was seen that the perseverance sub-dimension had a significant relationship with the employment hope (R=.421, R^2=.177). Accordingly, in the first model, the perseverance sub-dimension explained 17.7% of the variance in the employment hope. When the second model established in the regression analysis to examine whether perseverance and classroom management sub-dimensions predicted employment hope was analyzed, it was seen that the explained variance increased from 17.7% to 25.9% (R=.509, R^2=.259). In other words, the classroom management sub-dimension contributed 8.2% on the explained variance, which was a considerable amount.

When the third model established in the regression analysis to examine whether perseverance, classroom management, and motivation sub-dimensions predict employment hope was analyzed, it was seen that the explained variance increased from 25.9% to 27.2% (R=.522, R^2=.272). Based on this finding, it can be said that the motivation sub-dimension has a lower contribution, like 1.3% to the explained variance. When the fourth model established in the regression analysis to examine whether perseverance, classroom management, motivation, and student engagement sub-dimensions predict employment hope was analyzed, it was seen that the explained variance increased from 27.2% to 28.1% (R=.530, R^2=.281). Based on this finding, it can be concluded that the student engagement sub-dimension had a lower contribution, like 0.9%, to the explained variance. In the light of the obtained findings, it was determined that the perseverance sub-dimension of the Lifelong Learning Tendency Scale and classroom management sub-dimension of Teachers' Sense of Efficacy scale were significant predictors of employment hope in preservice teachers.

RESULTS AND DISCUSSION

This study examined whether the lifelong learning tendency and teaching self-efficacy were significant predictors of employment hope in preservice teachers with Pearson product-moment correlation analysis and multiple linear regression analysis.

In the study, firstly, it was examined whether the lifelong learning tendency had a predictive effect on employment hope. For this purpose, the relationship between lifelong learning tendency and employment hope of preservice teachers was evaluated with correlation analysis. As a result of the correlation analysis, it was seen that the perseverance and motivation sub-dimensions of the Lifelong Learning Tendency Scale had a positive relationship with employment hope. Based on the results obtained, multiple linear regression analysis was performed to examine whether the perseverance and motivation sub-dimensions predicted the employment hope in preservice teachers. In the regression analysis, it was determined that the perseverance sub-dimension in the first model explained 17% of the variance in employment hope. In the second model, it was found that perseverance and motivation sub-dimensions explained 19.8% of the variance in employment hope. It is concluded that the contribution of motivation sub-dimension to the explained variance was quite low, and it is concluded that perseverance sub-dimension was the strong predictor of employment hope.

Secondly, it was examined whether teaching self-efficacy was a significant predictor of employment hope in preservice teachers in the study. The relationship between preservice teachers' self-efficacy and employment hope was analyzed with correlation analysis, and the student engagement, instructional strategies, and classroom management sub-dimensions of the Teachers' Sense of Efficacy Scale were found to have a significant and positive relationship with employment hope. Based on the results obtained from the correlation analysis, multiple linear regression analysis was performed between student engagement, instructional strategies and classroom management sub-dimensions, and employment hope. As a result of the regression analysis, it was determined that the classroom management sub-dimension explained the 15.2% of the variance in employment hope. In the second model established in the analysis, it was observed that the classroom management and student engagement sub-

dimensions explained 17.3% of the variance in employment hope. Based on this data, the contribution of the student engagement sub-dimension to the model was considered to be quite low. Therefore, it was concluded that the classroom management sub-dimension was the strong predictor of employment hope. In the study conducted by Skaalvik and Skaalvik (2010), it was seen that there was a positive relationship between teachers' self-efficacy and job satisfaction. In the study conducted by Telef (2011), there was a positive relationship between teachers' self-efficacy and both job satisfaction and life satisfaction.

In the study, it was also examined whether preservice teachers' lifelong learning tendencies and teaching self-efficacy predicted their employment hope. In the first two analyses, perseverance, motivation, classroom management, and student engagement sub-dimensions, which were found to be significant predictors of employment hope, were subjected to multiple linear regression analysis with employment hope. In the first model established as a result of regression analysis, the perseverance sub-dimension explained 17.7% of the variance in the employment hope, and in the second model, which included classroom management, the variance explained was increased to 25.9%. In other words, it can be seen that the contribution of classroom management to the model is 8.2%, and this contribution is considerable. In the third model of the analysis, it was determined that perseverance, classroom management, and motivation explained 27.2% of the variance in employment hope. In the fourth model, perseverance, classroom management, motivation, and student engagement were found to explain 28.1% of the variance in employment hope. Based on these data, the contribution of motivation and student engagement sub-dimensions included in the model third and fourth model to the explained variance was evaluated to be quite low. Considering that the perseverance and classroom management sub-dimensions explained 25.9% of the variance in employment hope, it was concluded that these two sub-dimensions were strong predictors of employment hope. In the study conducted by Akın and Kocak (2007), it was found that there was a positive and significant relationship between teachers' classroom management skills and job satisfaction, and in the study conducted by Ayra and Kösterelioğlu (2015), teachers' lifelong learning tendencies and professional self-efficacy perceptions.

It was found that perseverance tendencies and classroom management competence perceptions were predictors of employment hope in preservice teachers. The word perseverance is defined by the Turkish Language Association as "keeping one's word or being determined and continuing a work till the end." Based on the related definition, it can be evaluated that the tendency of the preservice teachers to pursue their professional decisions and the fact that they consider themselves adequate in classroom management have an increasing effect on their employment hope. Increasing the employment rates of students graduating from higher education is one of the important goals of higher education institutions. Therefore, supporting the perseverance tendencies and classroom management competencies of the preservice teachers in the education that will be offered to them will enable the preservice teachers to look at the future with hope.

RECOMMENDATIONS

Based on the results of the study, the following recommendations can be made:

1. In the faculties of education, conducting various activities aiming to change the perspectives of preservice teachers towards social life and to provide their personal development can positively affect their employment hope.
2. Outputs aimed at providing perseverance and entrepreneurship skills to preservice teachers in faculties of education can be included in preservice training.
3. Efforts to develop self-management and discipline skills of preservice teachers can be carried out in professional knowledge courses such as classroom management.
4. In higher education institutions, strategies can be developed for the measures to be taken regarding the employment status of preservice teachers.
5. The active work of the career planning units of the universities and the activities related to the career development of the preservice teachers can provide an increasing effect on their employment hope.

Researchers' contribution rate

The research was planned in line with the problem situation identified by E.O. During the research process, E.O. collected and analyzed the data based on the problem situation. O.S. guided the research process. The results of the research were discussed and reported by the authors.

Ethics Committee Approval Information

The implementation process of the research has been completed in the 2017-2018 academic year. During the writing process of the study, scientific, ethical, and citation rules were followed. We undertake that the "Kastamonu Education Journal Editorial Board" has no responsibility for all ethical violations to be encountered, all responsibility belongs to the Responsible Author, and this study has not been sent to another academic publishing environment for evaluation.

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Investigation of Preschool Teachers' Use of Technology in Teaching in Terms of Technology Self-Efficacy Levels

Okul Öncesi Öğretmenlerinin Öğretimde Teknoloji Kullanım Amaçlarının Teknoloji Öz-Yeterlik Düzeyleri Açısından İncelenmesi

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Abstract

Purpose: The aim of this research was to examine the purpose of preschool teachers' use of technology in teaching in terms of technology self-efficacy levels. For this aim, the technology self-efficacy of preschool teachers was evaluated according to age, professional seniority, and learning level independent variables.

Design/Methodology/Approach: The study is a mixed-method research in which quantitative and qualitative research patterns are used together. Since the quantitative data in the data collection process were predominant, the explanatory mixed-method was used. The working group of the study consisted of preschool teachers working in Istanbul. 80 preschool teachers were included in the quantitative dimension of the research. Participants included in the qualitative dimension of the research were identified through outlier sampling. According to this, teachers in the general sample group created for the research were directed to the Use of Technology in Education Self-Efficacy Scale [TESS] developed by Doğru (2014). Then, four participants with the highest and lowest scores from this scale were determined for the qualitative dimension. Semi-structured interview questions developed by the researchers were directed to the determined sub-sample group. The statistical significance of the difference between TESS scores of preschool teachers and independent variables was evaluated with the SPSS program. On the quantitative data, respectively, Kolmogorov Smirnov normality test, descriptive statistics, and one-way analysis of variance were carried out. Inductive content analysis was made in the analysis of qualitative data.

Findings: As a result of quantitative data analysis, it has been determined that all preschool teachers have firm self-efficacy beliefs in technology use in teaching. In addition, it was found that the technology self-efficacy of preschool teachers did not differ significantly according to age, professional seniority, and education level. On the other hand, findings obtained from qualitative data analysis showed that teachers with high technology self-efficacy present their purpose of using technology in a more purposeful and reasoned way.

Highlights: Teachers with high technology self-efficacy have referred to the themes of *providing motivation, continuity, participation, strengthening participation, and justification.* These results are discussed based on the available literature, and various recommendations are presented in the context of preschool education.

Öz

Çalışmanın amacı: Bu araştırmanın amacı, okul öncesi öğretmenlerinin öğretimde teknoloji kullanım amaçlarının teknoloji öz-yeterlik düzeyleri açısından incelenmesidir. Bu amaç doğrultusunda okul öncesi öğretmenlerinin teknoloji öz-yeterlilikleri yaş, mesleki kıdem ve eğitim düzeyi bağımsız değişkenlerine göre değerlendirilmiştir.

Materyal ve Yöntem: Araştırma nicel ve nitel araştırma desenlerinin bir arada kullanıldığı karma yöntem bir araştırmadır. Verilerin toplanması sürecindeki nicel veriler ağırlıkta olduğu için açıklayıcı karma yöntem kullanılmıştır. Araştırmanın çalışma grubu İstanbul'da görev yapmakta olan okul öncesi öğretmenlerinden oluşmaktadır. Araştırmanın nicel boyutuna 80 okul öncesi öğretmeni dâhil edilmiştir. Araştırmanın nitel boyutuna dâhil edilen katılımcılar aykırı durum örneklemesi aracılığıyla belirlenmiştir. Buna göre araştırma için oluşturulan genel örneklem grubundaki öğretmenlere, Doğru (2014) tarafından geliştirilen Eğitimde Teknoloji Kullanımı Öz Yeterlilik Ölçeği [TESS] yöneltilmiştir. Ardından bu ölçekten en yüksek ve en düşük puan alan dörder katılımcı nitel boyut için belirlenmiştir. Belirlenen alt örneklem grubuna araştırmacı tarafından geliştirilen yarı yapılandırılmış görüşme soruları yöneltilmiştir. Okul öncesi Öğretmenlerinin TESS puanlarının bağımsız değişkenler ile arasındaki farkın istatistiksel anlamlılığı SPSS programıyla değerlendirilmiştir. Nicel veriler üzerinde sırasıyla; Kolmogorov Smirnov normallik testi, betimsel istatistik ve tek yönlü varyans analizi gerçekleştirilmiştir. Nitel verilerin analizinde ise tümevarımsal içerik analizi yapılmıştır.

Bulgular: Nicel veri analizleri sonucunda okul öncesi öğretmenlerinin tamamının öğretimde teknoloji kullanımı öz-yeterlik inançlarının yüksek olduğu tespit edilmiştir. Ayrıca, okul öncesi öğretmenlerinin teknoloji öz-yeterliklerinin yaş, meslekî kıdem ve öğrenim düzeyine göre anlamlı olarak farklılaşmadığı tespit edilmiştir. Diğer yandan nitel veri analizleri sonucu ulaşılan bulgular, teknoloji öz-yeterliği yüksek olan öğretmenlerin teknoloji kullanım amaçlarını daha amaçlı ve gerekçeli bir şekilde sunduklarını göstermiştir.

Önemli Vurgular: Yüksek teknoloji öz-yeterliğine sahip olan öğretmenler motivasyonu sağlama, devamlılık, katılım, katılımı güçlendirme ve kullanma gerekçesi temalarına atıf yapmışlardır. Bu sonuçlar, mevcut literatür temelinde tartışılmış ve okul öncesi eğitimine bağlamında çeşitli öneriler sunulmuştur.

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INTRODUCTION

The changes and developments that societies have made in science and technology are also changing the existing structure in which they live. In addition to this change, it also creates several differences in education. These differences in education constitute the society of the future (Alkan, 2005). The speed of change created by technology in social life differs from one society to another. This speed can affect societies positively or negatively. For children, who are considered minor individuals in society, this effect is of great importance (Aral & Doğan-Keskin, 2018). Children in early childhood correspond to the concrete operational stage from Piaget's stages of cognitive development. Therefore, the more stimulus children are exposed to in this process, the better their mental, social, language, and psychomotor skills will be enriched. To achieve this, materials for all areas of development need to be used effectively. Materials selected for early childhood should attract the child's attention, and the opportunity to concretise it should be allowed. This concretisation will increase the permanence of what the child has learned (Korkmaz & Ünsal, 2016). It is no longer possible for knowledge to be transmitted and learned by traditional teaching techniques. In this period, the central role belongs to the teacher, who guides the child. All the studies that the teacher has carried out on his/her behalf and the teacher's self-efficacy are also crucial for the child. Bandura was the first to introduce the concept of self-efficacy within the framework of Social Cognitive Theory. According to this theory, contrary to what is described in many theories, the behavior of people is not only affected by environmental factors or characteristics of a person, but also by the environment, expectations, interests, goals, perceptions of that person, and also expectations, interests, goals, and perceptions affect the environment at the same level. In other words, the individual and the environment are in a state of interaction (Bandura, 1977).

One of the most valid reasons for the everyday use of technology in our lives is that its level of accessibility has increased, and now many homes have these tools and equipment. In addition to this, information only reached us in printed sources in the past; however, having some basic skills is sufficient to access information and technology today. Since technology has a constantly developing and evolving nature, it appeals to every age group (Yılmaz ve Özkan, 2013). The light, color, and mobility that the technological tools contain attract children. Therefore children spend a long time with technology. These children are referred to as "digital natives" by Prensky (2005), who face technology before being born and from the first time they are born. While the time these children spend with technological tools is essential, the quality, content, and appropriateness of this time are of the same importance (Christakis & Garrison, 2009). Considering that children use technology for such a long time in everyday life, this use should effectively contribute to the development of children (Ömrüuzun, 2019). It is possible to say that education is the factor that facilitates efficient and effective use of technology, contributing to development and compliance with technology (Wang, Ertmer & Newby, 2004). One of the outcomes of technological change is that education methods and content also have to change. With the change in the teaching system, the role of teachers has changed to a model and guide. For this reason, a person should believe in self-efficacy that increases his or her ability to cope with and resist the difficulties he or she faces while performing a task. If the teacher has a firm belief in self-efficacy, he or she is more inclined to use various teaching methods (Henson, 2001). For teachers are considered one of the most critical parts of the education system. The teacher's self-efficacy also plays a vital role in the effectiveness of the student and the school (Ekici, 2008). This research is essential for determining the preschool teachers' purpose of using technology in education and their level of technology self-efficacy. Hence, teachers should introduce technology to children, but they should do this consciously. The facility and benefits that technology brings should be carefully selected, and their negativity should also be told to children. Technological awareness is important for teachers, children, and families severely.

Within the scope of the literature review, studies on the aims of technology use of preschool teachers and their self-efficacy beliefs in technology are examined. The literature review showed that several studies had been conducted at the national and international levels (Eneyati, Modanloo & Kazemi, 2012; Giles, 2016; Korkmaz & Ünsal, 2016). These studies mostly used teacher candidates or teachers with different branches as a sample group (e.g., İlkay, 2017; Birişçi & Kul, 2018; Ünal, 2013). However, the literature review has shown that there is only a small number of studies on the self-efficacy beliefs of preschool teachers who are already working. Additionally, no study that uses the mixed method can be found. In addition, there is no study in which the practices of preschool teachers in the classroom are verbally included in the study. For all these reasons, it is possible to say that this research is significant in terms of the sample group, method, and content. When the literature on the subject of technology is reviewed, it has been found out that studies are examining the perceptions of teacher candidates regarding technology or their perceptions of professional self-efficacy (Özdemir & Taç, 2017; Korkmaz & Ünsal, 2016). While preschool teachers and technology subjects are rarely found together, there is no study involving the teacher's practice with the child. There is almost no research in which the belief in technology self-efficacy and the teacher coexists (Abbitt, 2011; Sezgin, Erdoğan & Erdoğan, 2017). As a research method, quantitative studies are included in general (Köroğlu, 2014; Saracaloğlu, Yenice & Özden, 2013; Uysal, 2013, Kartal, 2019). No study can be found in which the preschool teacher, technology self-efficacy, analysis of practices, and the mixed method combined. In the reviewed studies, either teachers' perceptions of self-efficacy or perspectives on technology constitute the content of the research alone (Küçük, Altun & Paliç, 2013; Kurt, 2012; Altuğ, 2017). The main aim of the current research was to ensure that preschool teachers are aware of the purposes of using technology and to analyze its transfer to children in terms of belief in technology self-efficacy. For this purpose, answers to the following research questions are sought.

- What is the level of preschool teachers' self-efficacy beliefs in the use of technology?
- Do the self-efficacy beliefs of preschool teachers' use of technology significantly differ according to age, years in the job, and level of education?

- How do preschool teachers' belief levels of technology self-efficacy affect their purpose and status of using technology in education?

Based on these, technology is at the center of our lives and has a vital role in every stage of our lives. This new system influencing all individuals also applies to preschool children born into technology and referred to as "digital natives." Therefore, teachers should introduce technology to children, but they should do this consciously. The facility and benefits that technology brings should be carefully selected, and their negativity should also be told to children. Therefore, technological awareness is essential for teachers, children, and families severely.

The Role of Teacher in Preschool Education

Today children, who have to be provided with education by teachers, are digital natives and born into the technological structure. Some of these children receive education from digital natives and some from digital immigrant teachers. Nevertheless, teachers are expected to help children gain critical thinking, creativity, support the formation of decision-making mechanisms, direct them to do teamwork, and provide the necessary environment for them to make enough use of technology (Özdan, 2018). For teachers to ensure this, they must prepare learning environments by taking into account the individual differences, interests, wishes, and needs of children and supporting them with different methods and techniques, as well as adopting different assessment methods (Rhodes, 2017). A teacher is the only person who determines the future of a society, a country, since every person in society becomes helpful in their homeland by taking shape in the hands of a teacher. In the 21st century, science and technology are changing and developing very quickly. Thanks to this change, the old ones are being renewed (Yılmaz & Uslu, 2018). One of the most significant changes is the value given to preschool. The importance given to preschool is increasing and getting stronger every day (Özgül, 2011). The teacher must have tremendous pedagogical potential in ensuring the active participation of children and be open to social sharing during the learning and teaching processes. This is one of the most critical innovations in developing society (Grosseck, 2008). Today, to achieve the educational goals expected by the family, society, and age, it is necessary to establish a bond of love and respect based on trust between the teacher and the child. In addition, the teacher should know the child sufficiently, recognize his interests, needs and have full knowledge of the characteristics of the child's family (Yılmaz, Tomris & Kurt, 2016; Arabacı & Aksoy, 2005). The professional experience, expertise in the field, view of the profession, and levels of education of preschool teachers, who are expected to have all these skills and abilities simultaneously, are evaluated as teacher qualifications. One of the most important factors determining quality in education is the quality of the teacher (Kılıç & Acat, 2007).

Teachers should use informatics and technology at all stages of their lives and education (Sincar & Aslan, 2011). The preschool teacher can attract children's attention and increase the permanence of learning by using simulation or instructive video in an educational environment. Activities seen by children and practiced by doing and living become more permanent. In addition, the technology provides convenience to the teacher in the classroom, offers the opportunity to obtain unlimited documents, and strengthens communication with both other teachers and parents (McLoughlin, Brady, Lee & Russell 2007). When all this information is considered, every preschool, primary, middle, and high school child in the education system is called digital natives. At this point, all branch teachers are obliged to be advanced, knowledgeable, and skilled in technology. However, after preschool children encounter advanced technology in life, their first contact with the outside is in the preschool institution and with their first teacher. Preschool teacher is the first person to get them involved in technology outside of their family. The teacher should both make technology beneficial to the child by attracting his or her attention in the way the child is used to and raise the child's awareness of the harms of technology. Considering the first encounters are more complex in every aspect, the importance of technology self-efficacy of the preschool teacher becomes apparent.

Technology Self-Efficacy

The rapid expansion of technological developments has made the support of technology in learning and teaching activities in educational environments mandatory, and the integration of technology and learning environments has become inevitable. This process, which began with the gradual development of new technologies and the use of computers, takes shape with teachers' concerns, attitudes, and perceptions of self-efficacy for using technology (Kurt, Günüç & Ersoy, 2013). For this reason, teachers need to have enough knowledge and skills on technology to support children's interests, wishes, and needs, and their efficient and effective use of the technological products, which are the outcomes of the age.

The concept referred to as self-efficacy perception can be observed in the behavior of individuals. Therefore, it would be appropriate to mention the concept of self-efficacy as one of the most important factors determining how individuals behave in situations, events, or difficult moments (Yaman, Cansüngü-Koray & Altunçekiç, 2004). It is a fact that the self-efficacy perception of a person who performs an action or fulfills a duty with his internal motivation, without the need for external motivation, is high (Kapıcı, 2003). On the other hand, individuals with low self-efficacy beliefs believe that the action or situation is more complicated and complex than it seems. Since they look at this situation from an opposing perspective, they cannot solve their problems on their own and successfully perform the task they want to do (Korkmaz & Ünsal, 2016).

Studies showed that the reflection of developing technology on the educational understanding also leads teachers to use technology as a teaching aid. The ability to include technology in education is one of the characteristics that a 21st-century teacher should have. Identifying and developing teachers' perceptions of technology self-efficacy is of great importance in terms of their

ability to use technology in education activities (Ekici, Taşkın-Ekici & Kara, 2012). Technology, which allows the teachers to use 21st-century skills, practice, and acts in collaboration with students, also offers a creative learning environment (Lambert & Gong, 2010). However, research has shown that the technology is not being used adequately by teachers (Hew & Brush, 2007). However, teachers' lack of experience in technology prevents them from teaching by using technology (Sutton, 2010). Therefore, to benefit from technology in the implementation process of education activities, it will be ideal that the concept of self-efficacy is introduced (Giles & Kent, 2016). To improve the use of technology, the importance of the ability to include technology in education should be emphasized, and teachers should have a belief in self-efficacy (Liu et al., 2014). Based on this idea, the higher the teachers' self-sufficiency is, the higher goals they will set for themselves, and they will be more willing to achieve these goals.

With the inclusion of technology in the education environment, the adaptation of technology by teachers to the classroom has become an essential task for teachers (Southall, 2012). This shows the importance of the concept of self-efficacy of educational technology for teachers. When the teachers with low technology self-efficacy and high technology self-efficacy are compared, teachers with high self-efficacy beliefs are more efficient in the use of technology in education, and they include these activities in the classroom (Kutluca & Aydın, 2016). In addition to visualizing abstract concepts for preschool children, technology makes it easier for them to access information more safely (Li, 2007). When technology is used correctly in the classroom environment, children's motivation and confidence in the learning process also increase (Torff & Tirotta, 2010). It can also be said that children's participation in the process and academic skills increases (Mercier & Higgins, 2013). Therefore, teachers need to have enough knowledge and skills on technology to minimize the problems, support children's interests, wishes, and needs, and their efficient and effective use of the technological products which are the outcomes of the age we live in (Kurt, Günüç & Ersoy, 2013).

Technological tools, especially tablets, smartphones, have strong potential for preschool children. For this reason, these tools should be included in the learning process to increase children's academic skills (Sullivan, 2013). Because, according to the researchers, these technological materials are believed to help the transfer of information to children and their basic needs (Fernández-López et al., 2013). The correct use of technology in preschool education is about integrating technological material into the program and regulating it according to each child. Besides, it is believed that the correct use of the material will also be achieved with the competencies and knowledge of teachers (Haugland, 2000). Research showed that the inclusion of technology in the educational environment contributes to children's academic, cognitive, and social skills (Gedik, Çetin & Koca, 2017). The computer, which is one of the technological tools, gives children skills such as learning through exploring, problem-solving, decision making (Akkoyunlu, Akman & Tuğrul, 2002). Also, teachers are given new duties, and the requirements of the information society renew these standards. It can be said that it develops the child's learning, imagination, and innovative thinking and integrates learning activities with technology (Orhan et al., 2014). A situation that critically affects the success or failure of a child is the positive effect of the teacher's belief in his or her ability and efficacy (Slutsky, 2016). With the inclusion of technology in the education environment, the adaptation of technology by teachers to the classroom has become an important task for teachers (Southall, 2012). This shows the importance of the concept of self-efficacy of educational technology for teachers. When the teachers with low technology self-efficacy and high technology self-efficacy are compared, teachers with high self-efficacy beliefs are more efficient in the use of technology in education, and they include these activities in the classroom (Kutluca & Aydın, 2016).

The perception of the use of technology by teachers and the teachers' views on the use of technology can be considered an essential tool in predicting progress in learning with the support of information technologies. For this reason, choosing technology and technological tools as educational materials is one of the properties that teachers should have in developing and changing educational understanding. Identifying, developing, and evaluating technology self-efficacy perceptions of teachers is essential for them to use information technologies in their teaching processes. For this reason, this study is important for determining teachers' self-efficacy beliefs in the use of technology.

METHODOLOGY

Research Pattern

This research, which aimed to examine the purposes of using technology in the teaching of preschool teachers in terms of technology self-efficacy levels, is a mixed type of research in which quantitative and qualitative research patterns were used together. This combination of use covers a broader area than the use of a qualitative or quantitative method alone (Creswell, 2015). In this study, which combined both quantitative and qualitative methods simultaneously, the qualitative data was collected and analyzed and then studied in depth according to the scores obtained from the quantitative data collection tool. The pluralism and selectivity of the mixed method make it superior to the other methods. In the mixed method, qualitative and quantitative methods were used together in a study or ongoing successive studies. This combination of use covers a broader area than the use of a qualitative or quantitative method alone (Maxwell, Fuller, Brooks & Watson, 2016). In this way, both the credibility and diversity of the research increase, and it develops and expands. Thus, the research reached a level that can obtain enriched data (Johnson & Onwuegbuzie, 2004). In addition, an extensive and deep process was carried out.

Study Group

This research was carried out with 80 female preschool teachers who are currently working in preschool educational institutions affiliated with the Ministry of National Education in the European side of Istanbul. Participants in the study were determined by the extreme case sampling method, one of the purposive sampling methods. The purposive sampling method

enables identifying the people who will provide rich data required by the research and communicate with them (Bernard & Ryan, 2010).

Subsampling

Preschool teachers in the study were divided into two subgroups (lower and upper) according to the scores they received from the Use of Technology in Education Self-Efficacy Scale (TESS) to determine their perspective on technology and their competence in practice. In light of the extreme case sampling, which is one of the purposive sampling methods, the lower group appears less effective at using technology, and the upper group is more effective at using technology. This research followed below ways to determine the lower and upper groups:

1. The TESS was applied to 80 preschool teachers.
2. The average and standard deviations of the Self-Efficacy Scale of Technology Usage scores were calculated, and two formulas were used (Fraenkel, Wallen & Hyun, 2011).

Mean + Standard Deviation / 2 < **High Group**

Mean – Standard Deviation / 2 > **Low Group**

3. As can be seen from the formulas, the scores above the score obtained from the sum of half of the arithmetic average and standard deviation are in the upper sample group, and the scores below the score obtained from the difference of half of the arithmetic mean and standard deviation are in the lower sample group.
4. According to the formula, eight participants were selected from the lower and upper groups representing at least 10% of the participants, and qualitative processes were carried out with the participation of these teachers (Corbin & Strauss, 2014). Participant information is shown in Table 1.

Table 1. Participant features

Teacher	Age	Education Level	Seniority	Scale Score
T_{2upper}	22-27	Postgraduate	1-5 year	240
T_{3upper}	22-27	Undergraduate	1-5 year	240
T_{1upper}	22-27	Postgraduate	1-5 year	240
T_{4upper}	22-27	Postgraduate	1-5 year	234
T_{1lower}	35-40	Undergraduate	11-15 year	195
T_{2lower}	28-34	Undergraduate	1-5 year	191
T_{3lower}	22-27	Undergraduate	1-5 year	183
T_{4lower}	22-27	Undergraduate	1-5 year	172

Data Collection Tools

In this study, two different data sources were used to answer the sub-problems. These sources are the Use of Technology in Education Self-Efficacy Scale (TESS), which allowed the participant to measure their knowledge of technology and noticed their use, and semi-structured interview questions. In addition, the data collection tools mentioned were detailed.

The Use of Technology in Education Self-Efficacy Scale (TESS): It is developed by Doğru (2017). There are 48 clauses on the scale, and clauses 39 and 48 are coded as the reverse item. High scores from the scale consisting of five-point Likert structures indicate that teachers' technology self-efficacy is high, while low scores indicate that teachers' technology self-efficacy is low. The highest possible score from the scale, which is scored between 1 and 5, is 240, while the lowest score is 48. The average value for this scale is 144.

Semi-Structured Interview Questions: The researcher prepared these questions by receiving expert opinions. To ensure the internal validity (Yıldırım & Şimşek, 2008) of the interview questions, expert opinion was received from two faculty members specialized in preschool, technology, and qualitative study. After the necessary corrections were done on questions according to expert opinions, a pilot study was carried out with a preschool teacher who was not in the participant group, has a master's degree and two years experience, in order to determine the clarity, meaning, and suitability of the questions, and to strengthen the internal validity. The final version of the questions was prepared together with an expert. Questions are provided below.

Table 2. Semi-structured interview form questions and characteristics

	Question	Characteristics
Q-1	For what purpose do you use technology in your teaching? Why is that?	Technology intended use
Q-2	During which instructional activities do you use technology more? *Why is that?*	Type of instructional activities
Q-3	Do you feel yourself competent to include technology in teaching? *Why is that?*	Technology self-efficacy
Q-4	How would you use technology in your teaching? *Give an example.*	Techno-pedagogical strategies

Data Collection Process

The data collection process of the research was carried out in two stages. It took about five weeks for all the data to be collected. Data was obtained through the Self-Efficacy Scale of Technology Usage, and semi-structured questions asked to preschool teachers.

Collection Process of Quantitative Data

In the first stage of the data collection process, a total of 80 preschool teachers working in kindergartens affiliated with the Ministry of National Education in the European side of Istanbul were reached. When determining the people who will provide the rich data required by the research using the purposive sampling method, ease of accessibility communication to the sample group was considered. After obtaining the necessary permission from the ethics committee and informing the participants that volunteering was essential and that they do not have to participate, the TESS was presented to the participants. The scale took about 10-15 minutes to fill.

Collection Process of Qualitative Data

For the second part of the research involving the qualitative data collection, approvals of the ethics committee, the Ministry of National Education, and the participants were received. At this stage, the scores of 80 preschool teachers working in kindergartens affiliated with the Ministry of National Education in the European side of Istanbul were calculated and transmitted to the participants. A total of eight preschool teachers, four of them in the lower group and four of them in the upper group, were contacted. At the scale application stage of the research, participants were asked to add full names, making it easier to reach them. After arranging appointments with the participants, semi-structured interviews were conducted on the appropriate date and time. Interviews were recorded with a voice recorder to ensure that transcription was complete and healthy. Each teacher's interview lasted about 6 to 10 minutes.

Analysis of The Data

The data analysis process of the conducted research consisted of two stages. In the first stage, the data collected to determine the self-efficacy levels of the preschool teachers involved in the research for the use of technology was analyzed with the social science data analysis program SPSS 20 (Statistical Package for the Social Sciences). With this program, the data was analyzed using descriptive statistics. After calculating the scores obtained from this scale, the people who will be included in the lower and upper groups were determined based on the participants' scores. Then, through the same program, it was attempted to determine the differentiation between the total score obtained by preschool teachers from the TESS and the independent variables of age, professional seniority, and level of education. For this purpose, the ANOVA test, which was used in cases where the number of independent variables is more than two, was used. In addition, the Kolmogorov-Smirnov Test for Normality was applied to test the normal distribution of the data (Büyüköztürk, 2012).

The inductive content analysis and the constant comparative method were used to analyze the data obtained from the participants included in the lower and upper groups created by using the data obtained after quantitative analysis. Data analysis is a complex and challenging process that continues by interacting between data and findings from deductive and inductive approaches (Merriam, 1998). Before applying the analysis, the data obtained from the preschool teachers with whom the pilot study is carried out are turned into a document, expert opinion is taken, and then the analysis is carried out. After this stage, the data was first transcribed for inductive content analysis and then continued in stages based on the study of Yıldırım and Şimşek (2008). These stages consisted of open coding, category creation, and summarization. In the first stage, meaningful concepts were created by dividing the data into sections for content analysis. Based on these concepts, themes were created with the necessary arrangements, and thus the second stage was completed. In this way, similar answers among the participants' answers to semi-structured questions were collected together and regulated to make them suitable for interpretation (Zhang & Wildemuth, 2009). These answers were then compared in-depth and in detail according to the purpose of the research with the answers given by the participants to semi-structured questions in the use of technology through the constant comparative method (Glaser & Strauss, 1967). Then the themes were made into propositional sentences, and hypothesis sentences were created.

FINDINGS

In this part of the research, the results obtained from the analysis of the TESS and Semi-Structured Interview Questions Answered by preschool teachers are presented. First, the normality test results are included, which showed whether the scale scores are generally distributed according to the participants' responses to the TESS (Table 3). After that, findings of the descriptive

analysis showing the level of self-efficacy of technology use of preschool teachers and results from the ANOVA test are presented. Finally, the results of inductive content analysis and constant comparative method performed based on the participants' responses in the subsample to semi-structured interview questions are included. Data from preschool teachers and quotations from their responses to semi-structured interview questions are encoded independently of the research to ensure that credentials are kept confidential.

Table 3. Kolmogorov-Smirnov normality test results

TESS	N	X̄	SD	Z	p
Total	80	207.37	19.22	.09	.169

In Table 3, it is found out that the data collected from the preschool teachers in the sample group (total score) showed a normal distribution (p>, 05). In the study, the normal distribution of the data emphasizes that the tests to be applied to the data must be parametric. Therefore, the significance of the difference between the self-efficacy beliefs of preschool teachers in the use of technology and the variables of age, professional seniority, and level of education was determined using the ANOVA test.

Findings on the Level of Technology Self-Efficacy

Descriptive analysis findings to determine the level of self-efficacy beliefs of preschool teachers participating in the study for the use of technology in education are given in Table 4.

Table 4. TESS descriptive analysis findings

TESS	N	Minimum	Maximum	X̄	Standard Deviation
Total	80	160	240	207.37	19.215

According to the descriptive statistical values given in Table 4, it is found that the average score received by preschool teachers from the self-efficacy scale for the use of technology in education was (X=207.37). It is found that the minimum score was 160, and the maximum value was 240 in terms of the total scores that preschool teachers received from the scale. It is discovered that the total average scores received by participants were well above the average value. This finding revealed that preschool teachers have high self-efficacy for the use of technology in education.

Findings on Change of Level of Technology Self-Efficacy

Table 5. ANOVA test results for the change of self-efficacy beliefs for technology use in teaching by age

	Age	N	X̄	SD	F	p
TESS	22-27	53	208.28	19.749	.569	.637
	28-34	12	210.42	11.000		
	35-40	9	202.33	22.215		
	40 and over	6	200.83	24.359		
	Total	80	207.38	19.215		

In Table 5, it is found that there was no significant difference between the age-independent variable of preschool teachers and the self-efficacy beliefs of the use of technology in education (p= .637). However, although there was no significant difference, there was a descriptive difference between the age of 40 (X=200.83) and the age range of 28-34 (X=210.42). Preschool teachers with an age range of 28-34 years have firmer self-efficacy beliefs in the use of technology in education than preschool teachers with an age of 40 years and older. ANOVA was also applied to the data to determine the significance of the statistical change of self-efficacy beliefs of preschool teachers in the use of technology according to the professional seniority variable. The findings can be seen in Table 6.

Table 6. ANOVA test results for the change of self-efficacy beliefs about technology use in teaching by seniority

	Seniority	N	X̄	SD	F	p
TESS	1-5	55	207.84	19.476	1.729	.168
	6-10	9	213.67	10.817		
	11-15	6	212.83	13.790		
	15 and over	10	195.90	23.412		
	Total	80	207.38	19.215		

As shown in Table 6, there was a significant difference between the preschool teachers' professional seniority variable and the self-efficacy beliefs in the use of technology (p=.168), which were obtained from the scale for evaluation of self-efficacy beliefs in the use of technology in education. In addition, the self-efficacy beliefs of preschool teachers with professional seniority of 6-10 years in the use of technology in education (X=213,67) was more than the preschool teachers with professional seniority over 15 years (X=195.90). In other words, the self-efficacy beliefs of the teachers with professional seniority of 6-10 years in the use of technology in education differed from the preschool teachers who have 15 years or more professional seniority. Based on these

findings, the teachers with the lowest self-efficacy belief in the use of technology in education were the ones whose professional seniority was over 15 years. ANOVA was also applied to the data to determine the significance of the statistical change of self-efficacy beliefs of preschool teachers in the use of technology according to the level of education variable. The findings can be seen in Table 7.

Table 7. ANOVA test results for the change of self-efficacy beliefs about technology use in teaching according to education level

	Education Level	N	X̄	SD	F	p
TESS	Associate Degree	11	207.91	19.486	1.831	.167
	Undergraduate	52	204.79	18.724		
	Postgraduate	17	214.94	19.629		
	Total	80	207.38	19.215		

As shown in Table 7, there was no significant difference between the preschool teachers' level of education independent variable and self-efficacy beliefs in the use of technology (p= .167), which were obtained from the scale for evaluation of self-efficacy beliefs in the use of technology in education. In other words, it was found that the level of education of preschool teachers did not have any effect on self-efficacy beliefs in the use of technology in education. However, the group consisting of the preschool teachers with graduate education had the highest score on the scale for the use of technology in education (X=214.94). The group with the lowest self-efficacy belief in the use of technology in education was preschool teachers who have a bachelor's degree (X=204.79). In other words, preschool teachers with the highest level of education had the firmest belief in self-efficacy in the use of technology in education.

Findings on Change of the Purpose and Situations of Using Technology According to Self-Efficacy

Quantitative findings of this study, which aimed at investigating preschool teachers' self-efficacy beliefs in the use of technology in education, revealed that participants' self-efficacy was generally high and also closed to each other. However, although not meaningful, significant differences were found between some values, and semi-structured interviews were conducted with 8 participants, while half of them had received the highest scores, the other half had received the lowest scores, to investigate the research in-depth. The results obtained from the analysis of preschool teachers' responses to semi-structured interview questions were collected under four main headings. The results of the inductive content analysis on the responses to semi-structured interview questions are described in detail in Table 8.

Purpose of Using Technology in Education

To determine their conceptualizations of the use of technology in education, the question of *for what purpose do you use technology in education? Why?* was asked to the preschool teachers participating in the study. According to answers, while the teachers of the upper group with high self-efficacy scores concentrated on two different themes, the teachers in the lower group concentrated on a single theme. The theme on which both groups concentrated consisted of the examples the teachers give on *enriching education*.

> T_{4upper}: Writing and hearing are more permanent for adults, but children's visual memory is stronger, and they can transfer it to other things. They can combine what they see with other processes they have learned. They can make some analogies such as we learned this, we saw that. I can say that I use technology for these purposes because they are more permanent.

> T_{3lower}: We also know that visuality especially has gained significant importance today. Therefore, to enrich the course, short videos, printed materials, photos, blackboard, computer, projector, which we also call overhead projector, internet, I use the technology in this way.

As can be seen in the example quotations from the teacher statements given above, both the teacher in the upper and lower groups emphasized enriching the activity environment by using the visualization of technology features. In addition, while the teacher in the upper group mentioned that they aim for permanence by increasing the visuality, the teacher in the lower group makes no such comment.

> T_{2upper}: Now children's interests are more in this direction; I think it is better to use a teaching tool to do something in the direction in which they are interested. I think the reason is that children are already born into technology, and their interest is entirely in this direction because they are constantly interacting with technological tools.

> T_{2lower}: Verbal lecturing can be insufficient in some subjects; sometimes, an image, a video, an audio recording is necessary for effective learning. For example, when I tell a forest, I tell it verbally, but the children cannot visualize it. It is more permanent when I show them a visual, a video. Or sometimes, I need to make them listen to the voices of different animals living in that forest. We do not always have the opportunity to make a trip to the forest and observe it, or when I tell a historical artifact, I cannot take the kids to see that historical artifact. When we show them with an image or a video, we save time and show the kids these real images. So I frequently use technology in education.

As we continued to examine the answers given by teachers in-depth, it has been stated that teachers in the upper group turn to the use of technology to increase children's interest and that this was because children are born into a world where technology exists. Teachers in the upper group emphasized that in addition to *enriching education*, they also tried to use technology in educational settings to *ensure children's motivations* towards education. Teachers in the lower group said that they used it to

make children listen to different sounds and see images during activity exercises, that is, to include them in their work to *enrich the learning process*.

> **T₃ᵤₚₚₑᵣ**: I know that visuals are of great importance in education since the age group we work with cannot always make sense with verbal expressions. For this, and because I have children who appeal to visual memory, I use technology in education because I know that learning is more permanent when visual and verbal guidelines are combined.
>
> **T₂ₗₒwₑᵣ**: I most often use technology to appeal to children's sense organs. As for a reason, the more I appeal to the child's sense organs, the more concrete learning I perform.

According to these statements, it is found that teachers who scored high on the scale view technology more broadly and evaluated it under two different headings. While the teachers in the lower and upper groups shared a heading, the teachers in the upper group mentioned another heading.

Table 8. Teacher conceptualizations for the use of technology in teaching

Question Characteristics	Upper		Lower	
	Theme	Concept	Theme	Concept
Technology Purpose of Use	Enriching Teaching	Concretization Visualization Permanence	Enriching Teaching	Auditory Reinforcement Strengthening Activities Concretization Strengthening Activities Method Technique Providing Diversity
	Providing Motivation	Research Attention Gathering Attention Technological Game Conversation Compliance with Interests		
Type of Instructional Activities	Activity Type	Reading-Writing Activities Science Activities Mathematics Activities All Events	Enriching Teaching	Concretization Using the Auditory Side Zoom to Real Life Visualization Strengthening Efficiency
	Enriching Teaching	Visualization Concretization Strengthening the Work	Activity Type	Cognitive Domain Turkish Activities Art Activities Science Activities Music Activities Literacy Activities
	Continuity-Continuity	Permanence Setting Up My Compatibility		
	Participation	Attention Attention Gathering		
Technology Self-Efficacy	Strengthening Participation	Active Child Technology Requirement Practicality	Technological Possibilities	Poor Vision Material Shortage Lack of Materials
	Technological Possibilities	Material Shortage Lack of Possibilities Smartbord		
Techno/Pedagogical Strategies	Enriching Teaching	Visualization Concretization Persistence in Mind Show and Make. Instant Feedback Use in the Listening Direction	Enriching Teaching	Using the Auditory Side Strengthening Activities Visualization Including Everyday Life Permanence
	Strengthening Participation	Active Child Attention Curiosity Awakening Inclusion in Progress		

	Rationale for Use	Learning Differences Learning by Doing and Living Incomplete Completion Accessibility Suitability for Different Purposes

Usage Area of Technology in Education

To learn the preschool teachers' usage area of technology in activities, a second question, which is *In what educational activities do you use technology more? Why?* has been asked, and the analysis on the answers abiding by the scores received on the scale showed that the teachers in the upper group make conceptualizations such as *activity type, enriching education, continuity, and participation*. In addition, conceptualizations provided by inference from the answers given by the teachers in the lower group were *enriching education and activity type.*

> *T₂upper:* It depends on the topic I am lecturing on. Because I apply different techniques for each topic. Sometimes I may need to show it when I tell it. I might use the show and tell technique. And sometimes, I may need to support it after I tell it. So that can change. But I am trying to use technology in all areas.
>
> *T₃lower:* Likewise, we can do this in mathematical activities such as addition and subtraction. We can study numbers, like drawing on the board and using visuals. I think that technology gives benefits in all other areas, whether in Turkish or in art and science activities.

As can be seen from the example quotations from the statements shown above, all teachers in the upper and lower group said that the technology could be used in all activities implemented in the classroom. It can be seen that all teachers agreed regarding the benefits of technology.

> *T₁upper:* Therefore, we need to do the activity of preparing for reading and writing either by using a toy that will appeal to five sense organs or with a technological tool that can draw their attention rather than doing it, for example, on paper, so that it has more permanence. So we use technology more in situations where children cannot focus.
>
> *T₄upper:* Because the age group we address is quite young and their attention is very short, their attention span is very short. For this reason, such technological products, technological tools become very interesting and attractive for them. For this reason, what I do is using, as much as possible, for example, story activity, for example, there are audio slides or storytelling in the form of videos, or for example, there can be a program where you can create your own story. These kinds of things are more attractive to children, and I use them more in Turkish language activities.

However, the preschool teachers in the upper group added two different concepts to the question of *In which educational activities do you use technology more? Why?* As can be understood from the above examples, one of these concepts is *participation.* The other concept, which is *continuity*, can be seen in the examples below:

> *T₃upper:* To be more exact, it is true that I use it in book exercises because I know that their attention is short, and I want to increase their attention a little more by differentiating the exercises with visuals, adapt them with the topic, make it permanent in memory.
>
> *T₄upper:* I mean it becomes much more permanent when the child learns the concept of old and young by establishing connections on the two topics he/she has learned, rather than giving it on a photocopy and hanging it in the air. So I can say that I think it is effective in this regard; I think it is effective to use technology during educational activities.

Looking at the answers to the semi-structured questions here, teachers in the upper group approach the use of technology in education more broadly and in detail, while teachers in the lower group view it more superficially.

Teacher Efficacy

Eight preschool teachers have answered the following question under a common heading: *Do you consider yourself efficient to incorporate technology into teaching? Why?* In addition, the upper group added another different answer. Examples of this are presented below.

> *T₁upper:* Because the technological opportunities provided by the school are not very sufficient compared to today. I mean, while technology advances so much every day, the technological tools that we use are very inadequate for us. Sometimes we even use the internet with limited opportunities. And the interactive whiteboards, too. Therefore, I think that while technology is advancing at this rate, if there is an improvement or diversity in the tools used in kindergartens, primary schools, we can incorporate more technology into education.
>
> *T₂upper:* Within current opportunities, yes, I consider myself efficient. I try to evaluate all the opportunities I have. But I have limited opportunities. For example, I have a laptop, and I have a small sound system. I mean, it has a speaker, but the sound is hard to hear because the number of children is too high. I do not have an interactive whiteboard in class, and when I want to show them a video, I show it on my laptop, and after a while, the children get bored.
>
> *T₂lower:* I consider myself efficient in terms of the opportunities I have. Because unfortunately, we do not have an interactive board, an internet connection, a projector at school. I can rather use a computer and speakers. So I try to use these opportunities as much as I can.

T4lower: Apart from me, there are some technological tools that still have not reached us due to the physical conditions of the school. Some materials arrive, but there is no internet infrastructure, for example. I do not consider myself fully efficient, but I try to do what I can, thinking it is better than nothing.

As an answer to the question, teachers in both the lower and upper groups attributed their level of efficacy in technology to the physical conditions of schools. In light of these, it is seen that all eight participants meet under a common theme. The theme that includes all these concepts is *technological possibilities.*

T4upper: If I had an interactive whiteboard, it would be more attractive because the screen is large, and children have little chance of doing anything on the laptop, but on the interactive whiteboard, at least I could get children to play games that I designed myself in class. We could draw pictures on the interactive whiteboard. I would involve the kids in it. I could attract the attention of the kids by using different software.

T2UPPER: As far as possible, I already prefer more practical platforms, in which I can do something quickly,

In the quotations given above, teachers in the upper group talked about the insufficiency they experienced in technology and the insufficiency it gave to the children while using. In this regard, it is rationally mentioned that technology teaches by making the child active, and the use of technology facilitates teachers' work.

Usage Method of Technology in Education

It is a source of data related to the usage area of technology in the education of preschool teachers participating in this study. For this purpose, all the participants' answers from the lower and upper groups to this question were analyzed: *How do you use technology in education? Please give an example.* According to the answers, while the teachers in the upper group draw attention to strategies related to *enriching education, improving participation*, and *usage reasons* for technology usage methods, the teachers in the lower group draw attention to the issues of *enriching education*.

T1upper: We can use the technology on the interactive whiteboard, projector, or stereo as audial. For instance, we want children to find images on a subject that we want children to research and bring them in flash memory. Then we can collect them all in a file and show them on the interactive whiteboard in slides. Or, in a preparation exercise for reading and writing, we create a matching or grouping page, and using the interactive whiteboard pen, we can turn this activity into a process that includes children. Or, as I said, We can investigate the science experiment, the science activity, an activity or experiment that we cannot do in the classroom and watch the video and visualize it. Or we can research a subject we are curious about and concretize it.

T3upper: We have book exercises. Since our book exercises are interactive, we also upload them to our interactive whiteboards. We project them from it; we make implementations on it. Let's say we have a matching question on the page. Instead of telling it completely, first, I am doing one example on the board to show it. After that, they come one by one and do the matching on the board. If they make it wrong, the word wrong appears on the board. If it is true, applause appears.

T4lower: I record it so that the child can hear his/her voice; I make the child listen. Apart from the instruments I play myself, I make the child listen to an instrument in music activities. We can make them listen to animal sounds, nature sounds. I use the sound system a lot in that sense.

As can be seen from the example quotations given above, it was observed that teachers in the lower group and upper group used the auditory and visual aspects of technology to enrich education and thus included children in education.

T2upper: Now, children's learning methods are different from each other. Some learn by doing, some learn by watching, some learn by listening. We are already using learning by doing, experiencing more in kindergarten. But sometimes, it can really work to make them watch a video on the internet. For instance, if we are doing an activity related to planets, if I am also telling it, it can better stick in the mind when I show this video over the internet, and it already draws their attention. In this way, children's learning levels also increase, or if I give missing information, the missing learnings are completed.

T4upper: It is not like suddenly saying we are looking at this today; first, I show it with my own means and then include the technology.

As can be seen from the sample answers shown above, the teachers in the upper group also cared about the learning methods and styles of the children. It was observed that they applied technology and tried different methods. As can be seen from the example statements, the teachers in the upper group mentioned strategies related to *enriching education, improving participation*, and *usage reasons* for technology usage method, while the teachers in the lower group only mentioned the topic of *enriching education*. At this point, it can be stated that both the lower and upper groups of teachers agreed on the theme of enriching education as a usage area of technology in education. In addition, it was observed that the teachers in the lower group did not express their opinion on the subjects of *improving participation and usage reason*.

DISCUSSION, CONCLUSION, AND SUGGESTIONS

This study aimed to investigate the self-efficacy beliefs of 80 preschool teachers who are currently working in preschool education institutions affiliated with the Ministry of National Education in the European side of Istanbul in the use of technology in education. The results obtained from the data analysis are listed below.

1. All preschool teachers have firm self-efficacy beliefs in the use of technology.
2. No significant difference was found between preschool teachers' self-efficacy beliefs in the use of technology in education and age, professional seniority, and educational level.
3. The preschool teachers who were in the upper group, due to their high technology self-efficacy, mention more justified, rational themes than the teachers in the lower group.

4. Unlike teachers in the lower group, teachers in the upper group also referred to the themes of motivation, continuity, participation, improving participation, and usage reason.

A theoretical discussion is made according to these results while also considering the results obtained in theoretical studies.

Levels of Preschool Teachers' Self-Efficacy Beliefs in The Use of Technology

In this study, preschool teachers' views on the use of technology in education were investigated, and interview questions back these views. When the national and international literature is examined, no study can be found conducted with people who are already working as preschool teachers and includes quantitative and qualitative analyses on the self-efficacy of using technology in teaching. Additionally, there are many technologies and computer-based studies conducted with preschool teacher candidates, science teachers, class teachers, teachers working in different branches, and lecturers in different disciplines of the faculty of education.

When the results of the study are examined, it is concluded that all teachers involved in the study have firm self-efficacy beliefs in the use of technology in education. With the increase of the importance given to preschool education, technology, which is a necessity of the 21st century, is also included in education (Özgül, 2011). It is argued that the teachers who participated in the research can perform simple technology operations and that their use is necessary. At this stage, the most critical point is that the teacher can transfer the technology to the child properly (Sayan, 2016). In this sense, the self-efficacy belief of the teacher should be firm (Henson, 2001). Preschool education is when children first have the opportunity to experience a different environment as a learning environment outside the home. For this reason, preschool teachers have to follow the age more closely and consciously pass on their experiences to children. One of the researches carried out on this subject with different branch teachers, Özdemir (2017), also concluded that the class teacher candidates have high technology self-efficacy beliefs. In many such studies, it has been concluded that teachers' self-efficacy beliefs in technology are firm (e.g., Eneyati, Modanloo & Kazemi, 2012; Köroğlu, 2014). The results of all these studies emphasized that teachers should be prepared to offer technology-based education practice. Teachers should use new technologies in the learning environment and in the classroom to support the education system and provide a teaching environment with more quality and facilitate the learning process.

Change of Teachers' Self-Efficacy Beliefs in The Use of Technology in Education

When the results of the research are examined, no significant differences were found between the age, professional seniority, levels of education of teachers, and the self-efficacy beliefs in the use of technology in education. However, a study carried out by Çetin and Güngör (2012) with class teachers in Niğde found a significant difference between age and technology self-efficacy and concluded that it is in favor of younger teachers. Although there was no significant difference as a result of the current research, there were descriptive differences among the data. The oldest members of the group have the lowest average. The average scores of younger teachers were higher. However, the numeric difference between them was relatively slight. Preschool teachers being older or younger may not be an essential factor for technology self-efficacy. Spiegel (2001) also concluded that self-efficacy belief in computer use has a negative relationship with age. In another study conducted in Denizli, results were obtained in favor of the group of younger teachers. Erdoğan and Erdoğan (2017), who used the *Technology Proficiency Self-Assessment Scale* in Ankara, concluded that technology self-efficacy decreases as age and seniority increase. A study conducted by Bütün-Kuş (2005) concluded that there was a significant difference between technology self-efficacy and seniority. It is in favor of the teachers with less seniority. It is thought that the reason for this is that education was different at the period when the teachers with high seniority were raised. The technology experience and knowledge of younger teachers might be more recent and advanced (Pajares, 2002).

Teachers with less professional seniority have firmer beliefs in technology self-efficacy (e.g., Sengir, 2019; Özçelik & Kurt, 2007). That being said, no significant difference was found in the research carried out by Sengir (2009) with secondary school branch teachers. Science and technology teachers present no differentiation in their attitudes towards the use of technology in the field of education, whatever their educational status might be (Barut, 2015). Although the educational levels of preschool teachers do not cause a significant difference, while the teachers at the graduate level have the highest average score, the ones at the undergraduate level have the lowest average score. Thus, the group of preschool teachers with the highest level of education has higher technology self-efficacy.

In light of all these findings, it can be thought that teachers are developing themselves to educate children and make plans accordingly. It is found that there is no link between independent variables such as age, professional seniority, and level of education of preschool teachers, and self-efficacy beliefs in the use of technology. These variables are considered as teacher qualifications, determining the quality of education (Kılıç & Acat, 2007). For the children in the age group 0 to 6, who spend the vast majority of their daily lives interacting knowingly or unknowingly with tablets, computers, smartphones, and similar technological tools, it is of great importance in technological activities in the educational environment (Kılınç, 2015). Regardless of teachers' age, professional seniority, and level of education, it can determine how to educate the rising generation of digital natives (Prensky, 2005) individuals born into the age of technology.

Change of The Purpose and State of Use of Technology According to Self-Efficacy

Eighty preschool teachers who participated in this study were made to take the TESS and ranked according to the scores they received on this scale, and two (lower-upper) groups consisting of four teachers are formed according to their self-efficacy beliefs

in the use of technology in education. The answers given by the teachers in the lower and upper groups during the implementation-data collection process were recorded and transcribed with the help of a voice recorder and analyzed using the qualitative analysis method. To strengthen the analysis carried out using the quantitative method and to be able to build it on solid ground, the qualitative analysis method was applied. The purpose was to determine how and for what preschool teachers use technology in classroom practice, which was not encountered in the national and international literature.

The results were obtained after the applied inductive content analysis. The preschool teachers in the upper group, due to their high technology self-efficacy, mentioned more justified, rationally conceptualized themes than the teachers in the lower group. In the answers to the question about *the purpose of using technology in education*, all of the teachers in the lower and upper groups emphasized that technology is suitable and necessary to *enrich education* in the educational environment. In addition, teachers in the upper group also stated that they see technology as a source of *ensuring motivation* for purposes such as drawing children's attention during education and gathering their interests. Almost all the teachers believed that children are motivated in the preschool education environment and that learning is more permanent with incorporating technology in it (Clements, Nastasi & Swaminathan, 1993). For the question regarding *the type of educational activities*, the teachers of the upper and lower groups again mentioned the titles of enriching education and the type of activity, emphasizing the need to use visualization, technology in the education of children. While the teachers of the two groups mentioned the benefits of using technology in all activities, they specifically emphasized that they used it more in the activities of preparing for reading and writing. Teachers care about visuality and being permanent for children regarding the use of technology. The high technology self-efficacy of teachers might indicate that they are actively using technology (Sezgin et al., 2016). According to different research in the literature, many teachers believe that computers will have positive effects on education (Çağıltay ve Çakıroğlu, 2001). In addition, teachers in the upper group also have different themes for this topic. These are *continuity* and *participation*. Teachers in the upper group also mentioned concepts such as permanence and drawing interests. A study conducted by Yurt and Kalburan (2010) find out that 69.5% of participating teachers used computers to *support activities in their daily plans*, and the rest use computers to *search for information*. In addition, in the same study, 62.1% used technology in musical activities, 45.3% in literacy activities, and 64.2% in cognitive development activities. 52.6% used it to improve their language skills. At this point, it can be considered that teachers use computers for educational purposes. Technological tools provide children with different musical experiences. Visual and auditory symbols offer new learning opportunities to children (McDowall, 2003). Koç (2014) emphasises that computers are often used in music events. Computers are often used in musical activities; however, they are also used in reading-writing activities. In the preschool period, skills such as story creation and learning new words can be supported by using computers thanks to some software (Yurt & Kalburan, 2010).

In answer to the question asked to measure *the technology self-efficacy*, the teachers in the lower and upper groups mentioned *the technological possibilities* by talking about the lack of technological tools and opportunities in the institution they work. However, teachers in the upper group also mentioned *improving participation*. In terms of the subject that teachers in both groups focus on simultaneously, the environment in which they can access lesson plans, materials, and activities for both their development and implementations in the classroom is provided by technology. Nevertheless, due to reasons such as lack of infrastructure in schools or lack of knowledge, in some cases, technology may not be able to be used as wanted (Akkoyunlu, 2001).

In the last question, which aimed at learning *techno-pedagogical strategies*, teachers in the lower and upper groups mentioned the theme of *enriching education*, as in the first question. Unlike the teachers in the lower group, the teachers in the upper group also emphasized *improving participation* and *usage reason*. An educational environment involving many stimulants can simultaneously activate all the senses of a child and make it permanent. Technological devices that can provide both visuality and auditory data at the same time contribute to the learning process of children and increase their motivation by ensuring that children willingly and effectively participate in the learning process (Akkoyunlu et al., 2002). In the light of all this information, teachers who are actively involved in technology and therefore have a firm belief in technology self-efficacy may be aware of the influence of technology on children and may have made statements accordingly.

Suggestions

In this part of the research, suggestions are presented considering the results obtained by the researcher.

- The sample group of this research consisted of 80 teachers working in schools affiliated with the Ministry of National Education in the European side of Istanbul. A similar study can be done by selecting different cities and reaching more teachers.
- The research was conducted only with preschool teachers. A study like this can be prepared in which preschool teachers and preschool teacher candidates are also included.
- By keeping the context of research, the same observation technique can be added to the practices of the teachers.
- Permanence can be supported by ensuring that the lessons given to teachers in technology-based in-service trainings are practical.
- The number of studies on technology self-efficacy involving preschool teachers can be increased.
- The research context can be prepared by comparing the preschool teachers working in schools affiliated to the Ministry of National Education and the preschool teachers working in private preschool education institutions.

- The data of this research were collected before the pandemic process experienced with the effect of the Covid-19 process. Therefore, the same research can be done after the pandemic period.
- New research with teacher participation can be conducted on pedagogically based preschool technology applications prepared on technology self-efficacy involving preschool teachers, and the number of such studies can be increased.

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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

The study was approved by Istanbul Aydin University Social Sciences Ethics Committee (08.11.2019-2019/18).

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| Research Article / Araştırma Makalesi|

A Scale Development Study for Public Relations Process in School and Its Investigation in Terms of Various Variables

Okulda Halkla İlişkiler Sürecine Yönelik Bir Ölçek Geliştirme Çalışması ve Çeşitli Değişkenler Açısından İncelenmesi

Adil ÇORUK[1]

Abstract

Purpose: The importance of public relations increases with social life. Public relations is a process that aims to regulate the relations between society and institutions and ensures mutual communication and cooperation. The public relations process, which has become more important with the rapid changes, has become a necessity for schools as well. The aim of the study was to develop a scale for the public relations process at school and examine the public relations process in the school in terms of various variables through the data collected with this scale.

Design/Methodology/Approach: The study is descriptive research designed as a relational survey method. For scale development, exploratory and confirmatory factor analyses were performed over different samples. Data were collected from 198 teachers for exploratory factor analysis (AFA) and 344 teachers for confirmatory factor analysis (CFA).

Findings: As a result of the analyses, a 39-item scale was obtained. Validity and reliability studies related to the scale were conducted and examined in terms of gender, branch, managerial experience, and school type. Since the data showed normal distribution, independent samples t-test was performed for gender, branch, and management experience variables. While no significant difference in terms of gender, there were significant differences regarding branch and management experience. The ANOVA test conducted for the type of schools variable showed that there were significant differences.

Highlights: It is thought that this developed scale will contribute to the field. It is thought that the application of the scale by testing it in different populations and samples will increase the interest and awareness of the field.

Öz

Çalışmanın amacı: Toplumsal yaşamla birlikte önemi daha da artan halkla ilişkiler; toplum ile kurumlar arasındaki ilişkileri düzenlemeyi hedefleyen karşılıklı iletişimi ve işbirliğini sağlayan bir süreçtir. Eğitim ortamlarında yaşanan hızlı değişmelerle birlikte önemi daha artan halkla ilişkiler süreci okullar için de bir gereksinim haline gelmiştir. Bu kapsamda, çalışmanın amacı okulda halkla ilişkiler sürecine yönelik bir ölçek geliştirmek ve bu ölçekle toplanan veriler üzerinden okuldaki halkla ilişkiler sürecinin çeşitli değişkenler açısından incelemektir.

Materyal ve Yöntem: Araştırma ilişkisel tarama modelinde yapılmış betimsel bir çalışmadır. Ölçek geliştirme sürecine ilişkin farklı örneklemler üzerinden açımlayıcı ve doğrulayıcı faktör analizi yapılmıştır. Açımlayıcı faktör analizi (AFA) için 198, doğrulayıcı faktör analizi (DFA) için 344 öğretmenden veri toplanmıştır.

Bulgular: Analizler neticesinde elde edilen 39 maddelik ölçek geçerlik ve güvenirlik çalışmaları yapılarak cinsiyet, branş, yöneticilik deneyimi ve görev yapılan okul türü değişkenleri açısından incelenmiştir. Veriler normal dağılım sergilediği için cinsiyet, branş ve yöneticilik deneyimi değişkenleri için bağımsız gruplar t-testi yapılmıştır.Cinsiyet değişkeni açısından anlamlı bir farklılık ortaya çıkmazken, branş ve yöneticilik deneyimi değişkenleri açısından anlamlı farklılıklar ortaya çıkmıştır. Görev yapılan okul türü değişkeni açısından yapılan ANOVA testi sonucuna göre anlamlı farklılıklar olduğu ortaya çıkmıştır.

Önemli Vurgular: Geliştirilen ölçeğin alana katkı sağlayacağı düşünülmektedir. Ölçeğin farklı evren ve örneklemlerde de test edilerek uygulanmasının alana yönelik ilgiyi ve farkındalığı artıracağı düşünülmektedir.

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INTRODUCTION

It is extremely important for organizations, which are constantly interacted with the environment to know the structure and features of the environment that they are in. Many factors such as the cultural and economic structure of the society, its tendency towards social change, its resources, development level in the technology and scientific field constitute the general environment of the school, and these variables affect the school directly or indirectly (Başaran, 2000). Schools, which are social organizations in that their input and output are human, are required to be in close contact with their environment. The school, which is an institution established to realize the goals of society, is an organization that has an informal aspects formal structure as well as formal ones, and in this respect, it is constant in interaction with its environment (Arr, 1996). Societies are unaware of the school's programs and goals due to the lack of public relations in schools (Morris & Vrabel, 1979). It is known that schools have a critical place in society in terms of public relations. In this context, the crucial point of public relations in terms of schools is to explain what has been done by telling the school and convincing the public about what has been done. Public relations have an important place in terms of providing support in the relations that schools establish with their environment (Yıldırım, 2007). In the past, schools were under the supervision of only educational circles, and other stakeholders were not too involved in the education process. Schools were provided with information sharing only when requested. However, with the developments in the 21st century, the situation has changed, and school administrators have had to interact with the internal and external stakeholders of the schools (O'Reilly & Matt, 2013). This situation has revealed the idea of public relations in schools, and schools have started to benefit from public relations practices in the context of reaching a wider audience.

As well as the concept of public relations is an implementation-specific to the period that we are in with regards to its basic qualities, it has been practiced for a long time. However, the emergence of public relations as a planned field has been realized as a result of the public and private organizations having to organize their relations with the environment and society. Today, the public has turned into a situation that is not content with what institutions and organizations provide but expects certain duties from them and wants to learn the reasons for these duties (Pira & Kocabaş, 2005; Sülüş, 2009). Therefore, as long as institutions continue their activities, they have to act in coordination with all groups that affect their decisions and are affected by their decisions (Şentürk & Selvi, 2019).

Although public relations go back a long way in thought, it is a new concept in the field of social sciences. It is accepted that public relations start with social life. There is no single definition of public relations that is agreed upon due to its implementation in many different fields (Yıldırım, 2007). With the development of modern management understanding, public relations has taken its place as an activity aiming to regulate the relations between institutions and society as an important element of social life. The focal point of public relations is constituted of humans and his/her environment. Many definitions have been made on public relations. However, with the rapid changes, it becomes obligatory to develop public relations activities. As a result, there has been an increase in studies conducted in the field of public relations, and different definitions have been developed in these studies (Karpat, 1999).

Public relations have been defined in different ways as; a process that helps to maintain the mutual communication process between the target audience and institutions by providing mutual understanding, acceptance, and cooperation (Yıldırım, 2007); the totality of the efforts of institutions to integrate with society (Sabuncuoğlu, 2001); planned and continuous efforts of institutions to ensure and maintain mutual goodwill and understanding with their environment (Election, 1998); the public adoption of the policies carried out by the management, announcing these policies to the public, creating a positive atmosphere for the management and managers as a result, and also knowing what the people think about the administration, their expectations from the administration and ensuring cooperation with the public in this direction (Tortop, 2006).

In a broader definition developed by Harlow (1976: 36) based on different definitions of public relations, it is stated as "Public relations is a privileged management function that helps to establish and maintain mutual communication, understanding, acceptance, and cooperation between an organization and its target audience, includes the management of problems and problems, responses to the public, helps to management to inform the public, defines and emphasizes the responsibility of management to serve for public benefit, also serves as an early warning system to help anticipate trends, assists management to take advantage of changes effectively, and uses moral communication techniques and researches as its primary means"(Hutton, 1999; p.200; Okay & Okay, 2015; p.2; Özer, 2018; p.1).

Okay and Okay (2015) defined public relations as a strategic management process aiming to achieve mutual understanding between organizations and their target audiences and achieving goals. On the other hand, Balta-Peltekoğlu (2016) stated that the concept of public relations has new meanings over time, the field of the concept has expanded further, and public relations have been given important responsibilities with the combination of business purposes and communication purposes.

Public relations is an integral part of the management process in achieving institutions to their goals and has become a management function that ranks high in decision-making mechanisms. Public relations and management can meet the public's need to be informed (Cutlip et al., 2000). Public relations constitute an important field of study to ensure the continuity of institutions both in the private and public sectors (Erdem & Akbaba, 2007). Herein, the main purpose of public relations is to ensure that the relations of institutions with their environment are positive and make the communication-interaction environment efficient (Çamdereli, 2000). Public relations include both the institution's relations with the society and its relations with other institutions and communities (Tortop, 2006; Balta-Peltekoğlu, 2013). Since schools are institutions that feature open

systems, they have to give more importance to public relations practices. Therefore, it is very important to realize these applications in a process in order to run schools more effectively.

Public Relations Process

The public relations process consists of four basic steps. These steps are; research (determination), planning (strategic and tactical planning), implementation (communication), and assessment steps. Steps towards public relations should definitely go through this process consisting of four steps. In this process, goals should be determined, strategies and tactics should be established (Balta-Peltekoğlu, 2016). When the public relations process is expanded based on four basic steps, it is approached as temporary problem identification, target determination, strategy determination, tactics determination, implementation, and control (evaluation) (Türk & Güven, 2007).

Cutlip et al. (2000) associated the public relations process with an iceberg. A large part (three quarters) of this iceberg is underwater (research, planning, assessment), and the remaining quarter is on the surface of the water (implementation). The first step of the public relations process constitutes the information gathering-research (situation analysis) process. At this step, it is investigated who is affected by the activities of the institution and how and this step is also very important for later steps (Balta-Peltekoğlu, 2016). For a systematic and planned implementation, it is necessary to collect information about the target audience first. The public relations activities to be carried out by the institution for its target audience are planned in line with the content of the data collected and the presentation of the problem. At this step, the strengths and weaknesses of the institution should be determined. A public relations practice that is attempted to be implemented without this step will not yield the desired results (Erciş, 2017).

The second step of the public relations process is the planning process. Planning aims to determine the future course of action in terms of public relations. There are two types of plans as strategic and tactical in public relations practices. In the first step of planning, information is collected from different sources instead of taking any decision. Then, in the light of the gathered information, strategic and tactical plans for the future are prepared. Strategic plans are the studies that determine which point the organization wants to reach in terms of public relations in the long term. Tactical plans, on the other hand, are the determination of what will be done in the short term within the framework of the basic policies followed by the organization. Tactical plans cover short-term decisions. The goals in tactical plans are more concrete, and what to do can be set out one by one (Erciş, 2017). Tactics are more specific than strategy and are based on the implementation of strategies (Korkmaz, 2010). Tactics are important tools in implementing strategies, and in this respect, they are reactive (Dikici, 2019). While strategies are intellectual processes about order and design, tactics are for action and implementation. Therefore, tactics are tools that realize the strategy and are its indispensable continuation (Eren, 2000).

Implementation, the third step of the public relations process, constitutes the tip of the iceberg, as Cutlip et al. (2000) also stated. This step is the most comprehensive and difficult step of public relations, and implementation is being initiated to achieve the determined goals (Erciş, 2017). The implementation step is the realization of the targeted actions with the determined budgets in the determining process after the research and planning steps (Aydoğan, 2018). During the implementation step, opposite negative consequences may occur, although it may be possible to inform, persuade the target audiences and influence their decisions (Türk & Güven, 2007).

The last step of the public relations process is the assessment step. At this step, the level of compliance of the practices carried out within the framework of the decisions made to the target and plan is determined (Güven, 2014). The purpose here is not to prove some things but to try to determine how and which application has taken place (Balta-Peltekoğlu, 2016). In the assessment step, problems such as the accuracy of the plans, the level of realization of the objectives, the level of affecting the target audience are tried to be eliminated (Erciş, 2017), besides the decisions regarding public relations, information that will shed light on the decisions of the organization may be included (Okay & Okay, 2015).

The effectiveness of public relations programs in schools primarily depends on the leadership of the school principal. The principal's ability to identify an applicable theme in the school's public relations activities is essential to ensure the active participation of staff and the community. Here, emphasis is placed on the importance of the public relations role of school staff, rather than the number of bulletins or parent programs prepared by schools. A strategic public relations plan is essential for schools to achieve their goals. In the public relations process, analysis of the needs, determining the targets, assigning the personnel for the process, implementation of the program, assessment of resources on behalf of the organization, and control of the program activities are important issues for the success of the program. Schools need to take a proactive approach to reach the public, as opposed to the "wait and see" or "counter the crisis" approach. Effective public relations programs in schools should be continuous (Norton, 2013).

It is seen that the number of studies on the public relations process in schools is limited, and these studies are devoted to public relations practices, especially in private schools (Kılıç, 2006; Aycan-Yüksel, 2009; Yılgın, 2016; Mandacı, 2019; Önsal-Kuyumcu, 2019). In the relevant literature, there is no study involving scale development regarding the quality of the public relations process in schools. Considering that a scale developed on this subject will be important in obtaining valid and reliable information, it is aimed to develop a scale for the public relations process in schools in this study. Realization of public relations practices, which are not carried out currently by planned units in schools, within a process will make this process more effective.

For this reason, it is thought that this study will fill an important gap in the field. Moreover, the public relations process in schools was tried to be evaluated in terms of some variables.

METHOD

A correlational survey model was used in this study, which was carried out with the aim of developing a measurement tool that can be used to reveal the public relations process in school. While general survey models are survey models conducted on the whole of the scope that includes many different elements or a certain sample taken from it in order to reach a general opinion about the scope; correlational survey model is a model that aims to determine the existence or degree of variance between two or more variables (Karasar, 2013).

Study Group

In the process of developing the scale for the public relations process at school, two different data were collected from different teacher groups for explanatory and confirmatory factor analyses. First, a preliminary study was applied to 198 teachers to perform the exploratory factor analysis (EFA). Data were collected from 344 teachers for the confirmatory factor analysis (CFA) for the factor structure obtained with EFA. The demographic information about the teachers reached for CFA is presented in the table below.

Table 1. Demographic Features of the Sample

Variance	Categories	n	%
Gender	Female	188	54.7
	Male	156	45.3
School Type	Preschool	23	6.7
	Primary School	82	23.8
	Secondary School	83	24.1
	General High School	59	17.2
	Vocational High School	73	21.2
	Others	24	7.0
Branch	Primary School Teacher	93	27.0
	Branch Teacher	251	73.0
Management Experience	Yes	186	54.1
	No	158	45.9

Considering the distribution of the sample group, it was seen that 188 of the participants were female (54.7%), and 156 (45.3) were male. When considering the distribution of the types of schools' participants work in, it was seen that 23 of the teachers who worked in preschool education institutions, 82 of them worked in primary schools, 83 of them worked in secondary schools, while 59 of them worked in general high schools, 73 of them worked in vocational high schools, and 24 of them worked in other educational institutions. It was seen that 93 of the teachers were primary school teachers and 251 were branch teachers, and 186 teachers had management experience, while 158 teachers did not have management experience.

Data Collection Tools

In this study, the public relations process scale at school was developed as a data collection tool and applied to the participants. Information based on the scale is given below.

Public Relations Process Scale in School

In the process of developing the data collection tool, four stages of scale development (Büyüköztürk, 2012) were followed respectively like defining the problem, article writing, expert opinion, and analysis. While conducting a new scale study, firstly, the relevant literature should be scanned after the problem situation is defined. In this process, it should be evaluated which questions are appropriate for the scale subject (DeVellis, 2014). In this framework, the relevant literature has been researched, and the questions related to the stages of the public relations process have been stated. In the first stage, it was paid attention that the question item was excessive. While creating the scale items, 68 questions were prepared based on the principle that the items are understandable and simple, and the items do not have more than one judgment statement (Ekici, Taşkın Ekici, & Kara, 2012). The 68 items in the item pool were given to 10 students who studied at the postgraduate level in the field of Educational Administration and Supervision and took the Public Relations at School course, and they were asked to examine the items. Within the framework of the feedback from the students, the item pool was reduced to 53 and revised. Later, 53 statements remaining in the item pool were presented to 3 academicians working in the field of educational administration and 3 academicians working in the field of the Turkish language in order to get an expert opinion. Content and face validity was ensured with expert opinion (DeVellis, 2014). In line with the suggestions, some items were changed in terms of expression. The scale, which was shaped according to expert opinion, was applied to a sample group of 20 people selected as a draft.

The five-point Likert-type rating scale was used to determine the level of agreement of the teachers participating in the statements in the scale, and the values here were expressed as "1" Never Agree, "2" Disagree, "3" Partially Agree, "4" Agree, and "5" Strongly Agree). There are no negative items on the scale.

Data Collection

The first data about the research were collected from teachers and administrators via Google forms between April and May 2018. The scale form was applied to the participants within the framework of the voluntary principle after making the necessary explanations by the researcher. Participants were asked to mark the option that they think is suitable for them. Since the data collection process was required for CFA one more time, the form was applied by the researcher on a different sample between November-December 2019 using Google forms. Since it was aimed to reveal the relationships between variables in this form, questions for demographic information were also included.

Data Analysis

In line with the answers received from the participants, first of all, validity and reliability studies were conducted for the scale. SPSS 15.0 statistical package program was used in the analysis of the data regarding the scale developed as a draft. Within the scope of validity and reliability analyses, principal component analysis was first preferred within the scope of EFA in order to determine the construct validity of the draft scale, which was validated with expert opinions. Factor analysis is a multivariate statistic that aims to find a small number of unrelated and conceptually meaningful variables by bringing together related variables (Büyüköztürk, 2003). Kaiser-MeyerOlkin (KMO) coefficient and Bartlett Sphericity tests were applied primarily to determine whether the obtained data and sample are suitable for principal component analysis. In order to interpret the factors in a more meaningful way, the frequently used Varimax rotation method, which aims to minimize the complexity of the factors by maximizing the variance of the loads in each factor (Tabachnick & Fidell, 2015), was preferred. While determining the number of factors, the lower limit of item eigenvalues was taken as 1.00. The variance explained in the scale development studies carried out in social areas is considered sufficient up to 30% as the lower limit in single factor scales. In multi-factor scales, the explained variance is expected to be higher (Büyüköztürk, 2003). Items that were available in more than one factor and the difference between their load values were below .10 were removed from the scale. The results related to the construct validity were also analyzed by calculating the correlation between the sub-dimensions of the scale. Within the scope of item analysis, the differences between the item average scores of the lower 27% and upper 27% groups formed according to the total scores of the test were tested with the independent groups t-test. After factor analysis and item discrimination procedures were implemented, reliability analyses were performed for the overall scale, the sub-factors included in the scale, and each item in the factors. In this framework, the Cronbach Alpha coefficient was calculated.

CFA was performed to test the model obtained after EFA. While EFA is used to determine the most appropriate number of factors based on the relationships between variables (Büyüköztürk, 2003; Brown, 2015), CFA is used to test a hypothesis determined for the relationship between variables (Büyüköztürk, 2003; Noar, 2003) and is an analysis used for specifying the fit between the obtained factors and the actual data. There are many fit indices to demonstrate the adequacy of the model tested with CFA (Büyüköztürk et al., 2004). Although there is no consensus on which fit indices will be accepted as standard (Şimşek, 2007), Cabrera-Nguyen (2010) suggested using more than one fit indices in studies on fit indices. When the goodness of fit indexes are considered, it is seen that χ^2/sd value that is the most frequently used index of fit is below 2, but if it is five or less, it is an acceptable value (Sümer, 2000; Şimşek, 2007), the RMSEA value is acceptable if it is close to .07. (Steiger, 2007). Also, it is understood that it is a good fit if the GFI value is 0.90 and above (Hooper et al., 2008); however, GFI value being greater than 0.85 and AGFI value being higher than 0.80 are considered as criteria for model fit (Schermelleh-Engel, Moosbrugger, & Muller, 2003). Having CFI and AGFI values close to the level of 1 strengthens fit (Çokluk, Şekercioğlu, & Büyüköztürk, 2012). For CFA conducted on this study, Chi-square fit test (χ^2/sd), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), Adjusted Goodness of Fit Index (AGFI)) and Root Mean Square Error of Approximation (RMSEA) fit indices were preferred among the multiple fit indices. SPSS AMOS 21 program was used in confirmatory factor analysis.

The scale, whose validity and reliability studies were completed, was applied to 344 teachers. In addition, information on variables such as the gender of the teachers, the presence or absence of management experience, the branch, and the type of school they work in were obtained from the personal information form. Kurtosis and skewness values and normal distribution graphics were examined in the analysis of normality tests of the scales. If the kurtosis and skewness values are between 2 values, it is accepted that the data are normally distributed (George & Mallery, 2010, Can, 2014). Since the kurtosis and skewness degrees of the scale were within these ranges (Table 5), it was decided to use parametric tests considering the normal distribution of the data in the study. Independent groups t-test was conducted for gender, branch, and management experience variables. One-Way Analysis of Variance (ANOVA) was used for the school type variable. In cases where the difference was significant, the Tukey test, one of the multiple comparison tests, was conducted to determine the source of the difference. When comparing the groups, the value of 0.05 was taken into account as the significance level.

FINDINGS

In order to reveal the construct validity of the scale relating to the public relations process at school, an exploratory and then a confirmatory factor analysis (CFA) was conducted. Construct validities provided by exploratory and confirmatory factor analysis are given below.

Findings on Exploratory Factor Analysis

The Kaiser-Meyer-Olkin (KMO) value was determined as .955 in the EFA conducted to determine the factor structure of the scale, and it was observed that result of the Barlett Sphericity test was statistically significant ($\chi2 = 7094.776$, sd = 741, p <.001). In cases that the KMO value is above 0,90, it is accepted that the data set is perfectly compatible with factor analysis (Kalaycı, 2008). Moreover, the Bartlett test result showed that the data set was suitable for factor analysis.

As a result of the factor analysis conducted via the Principal Component Analysis method and varimax rotation technique, it was seen that the scale consists of six sub-dimensions with an eigenvalue being greater than 1, but some items were overlapping. In the study, it was required to have a factor load of at least .40 in order for an item to be included in any factor. In addition, the difference between the load values in the factor in which the items were found and the load values in other factors were required to be .10 and above. After the items that did not meet these requirements (14 items) were removed one by one, a 39-item structure under five sub-dimensions was constituted. While the first sub-dimension explained 54.329% of the total variance, it was identified that the other sub-dimensions explained 5.619%, 3.893%, 3.457%, and 2.816%, respectively. Five sub-dimensions explained 70.115% of the total variance in the scale. The scale consisted of 39 factors as 16 items in the first factor (assessment), 10 items in the second factor (strategic planning), 5 items in the third factor (tactical planning), 5 items in the fourth factor (research-situation analysis), and 3 items in the fifth factor (implementation). It is seen in Table 2 below that the scale has factor load values between .481 and .805.

Table 2. Results of Exploratory Factor Analysis

Item No	Pre-Rotation Factor Loads	After-Rotation Factor Loads					Item-Scale r	t
		1. Factor	2. Factor	3. Factor	4. Factor	5. Factor		
2	.567				.805		.556	-8.882*
1	.590				.789		.577	-9.134*
3	.609				.632		.593	-9.072*
4	.723				.601		.711	-13.476*
8	.685				.500		.669	-12.796*
33	.775		.709				.757	-13.802*
32	.794		.687				.780	-14.281*
13	.749		.675				.734	-13.595*
27	.739		.670				.724	-11.106*
26	.815		.639				.802	-15.864*
28	.789		.632				.776	-15.525*
31	.800		.627				.785	-15.911*
29	.791		.606				.778	-15.624*
14	.741		.598				.726	-13.373*
15	.775		.581				.761	-13.652*
20	.582			.792			.571	-8.103*
19	.636			.779			.620	-11.787*
21	.687			.690			.673	-13.382*
18	.697			.632			.682	-11.586*
23	.613			.512			.596	-8.314*
35	.601					.677	.581	-9.565*
34	.639					.653	.619	-10.439*
36	.549					.481	.530	-7.856*
51	.794	.744					.777	-12.442*
49	.820	.744					.803	-14.503*
50	.726	.739					.707	-10.397*
44	.822	.727					.804	-15.594*
40	.823	.720					.806	-17.806*
41	.780	.712					.763	-15.692*
42	.796	.707					.778	-14.860*
53	.767	.700					.749	-14.913*
48	.821	.696					.803	-15.468*
45	.836	.691					.821	-15.767*
47	.829	.689					.811	-17.908*
43	.794	.680					.775	-15.206*
52	.739	.659					.720	-11.124*
46	.821	.654					.804	-14.854*
39	.689	.621					.669	-11.546*
38	.755	.606					.738	-13.677*
Eigenvalue		21.188	2.191	1.518	1.348	1.098		
Variance explained (%)		54.329	5.619	3.893	3.457	2.816		
Total variance (%)							70.115	

Correlations between item and total scale were analyzed to reveal the distinctiveness of the items. It was seen that these correlations have values between .530 and .821 in Table 2. It showed that the items exemplify similar behaviors when items-total correlations were found high and positive, and this revealed that the internal consistency of the test was high. If the item-total correlation is higher than .30, it shows that the distinctiveness of the items is good (Büyüköztürk, 2012). Accordingly, it was seen that the distinctiveness of the items in the scale was good. The total scores that the participants could get from the scale regarding item distinctiveness were also calculated. According to the scale total scores, the scores obtained from the answers of the participants in the lower and upper 27% groups were compared with the independent groups t-test, and the t values are given in Table 2. It can be stated that the difference in total scores of groups observed in favor of the upper group groups was significant, and within this scope, the distinctiveness of the items was at a good level.

Findings on Confirmatory Factor Analysis

39-item and 5-dimensional structures that emerged after EFA and the goodness-of-fit indices for the model were examined as a result of the analyzes.

CFA was conducted over a different study group to analyze the construct validity of the public relations process scale at school. Analysis result was X^2 = 1433,034; sd = 676 and p <.000. The values related to the goodness of fit were assessed by considering the values accepted in the literature, and their suitability was analyzed (Sümer, 2000; Schermelleh-Engel, Moosbrugger, & Muller, 2003; Şimşek, 2007). The modifications suggested by the AMOS program in the CFA model were analyzed. In line with these suggestions, the necessary modifications were made in order to obtain clearer values for the model among items that were very similar in terms of the properties measured, provided that each sub-dimension was limited within itself. The values before and after the modification are given in the Table 3 below.

Table 3. Results of Confirmatory Factor Analysis

Goodness-of Fit Values	Acceptable Value Range	Before Modification	After Modification	Result
X^2 /sd	X^2 /sd ≤ 3	2.901	2.120	Acceptable
RMSEA	RMSEA ≤ .08	.074	.057	Acceptable
GFI	.90 ≤ GFI	.747	.820	Unacceptable
NFI	.90 ≤ NFI ≤ .95	.862	.902	Acceptable
CFI	.90 ≤ CFI	.905	.945	Acceptable
AGFI	.80 ≤ AGFI	.715	.792	Unacceptable
IFI	.90 ≤ IFI	.905	.946	Acceptable

The fit index values in Table 3 showed a good fit and confirmed the factor structure of the PRPSS. The visual model obtained with CFA is given in Figure 1 below.
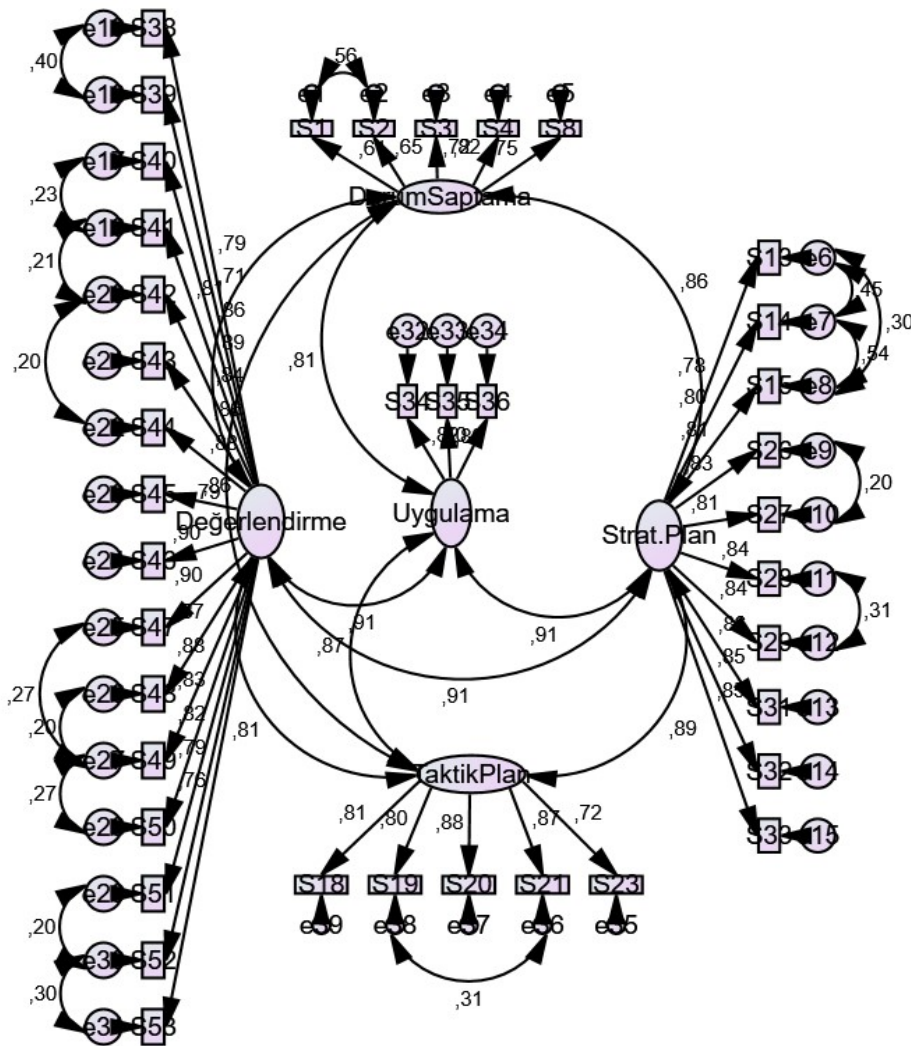
Figure 1. CFA Results of Public Relations Process Scale at School

Findings on Reliability Studies

Reliability test was conducted to reveal the reliability of the public relations process scale in the school. The reliability value of the scale was determined by Cronbach Alpha, and it was found that it got a very high value of .983. When the reliability values were considered in terms of sub-dimensions, it was identified as .848 in the research (situation analysis) dimension; 958 in the planning of strategies; .908 in the planning of tactics; 813 in the implementation dimension, and .975 in the assessment dimension. Cronbach Alpha coefficients above .70 obtained for both the whole scale and the sub-dimensions showed that the scale and its sub-dimensions were highly reliable. Assessing the correlations between dimensions, it was seen that there were significant relationships ranging from .668 to .874. A correlation coefficient of more than .70 is considered to be high, and between .70 and .50 is considered to be moderately related (Kalaycı, 2008). Table 4 below showed that the relationship between research (situation analysis) and planning of tactics and implementation sub-dimensions was moderate; also, the

relationship between other sub-dimensions was high and positive. Strong correlations between dimensions showed that dimensions make up the whole.

Table 4. Correlation values between factors after CFA

Factors	n	$\overline{X}$	df	Cronbach α	F1	F2	F3	F4	F5
Research- Situation Analysis	344	4.104	.638	.848	-				
Strategic Planning	344	3.748	.768	.958	.767**	-			
Tactical Planning	344	3.890	.728	.908	.690**	.833**	-		
Implementation	344	3.701	.759	.813	.668**	.795**	.743**	-	
Assessment	344	3.754	.752	.975	.721**	.874**	.782**	.821**	-
Total	344	3.811	.685	.983					

**p<.01

Findings on Study of Public Relations Process in the School in terms of Different Variables

Firstly, the perception level of teachers towards the public relations process in the school is given; then, findings on the opinions of teachers on demographic variables are stated under this title.

Examination of Perception Level of Teachers towards Public Relations Process in the School

The perception level of teachers towards the public relations process in the school and its sub-dimensions are given in the table below.

Table 5. Perception level of teachers towards public relations process in the school

Dimensions	N	$\overline{X}$	s	Kurtosis	Skewness
Research- Situation Analysis	344	4.104	.638	-.773	-.248
Strategic Planning	344	3.748	.768	-.546	-.161
Tactical Planning	344	3.890	.728	-.294	-.346
Implementation	344	3.701	.759	-.289	-.100
Assessment	344	3.754	.752	-.567	-.144
Overall Scale	344	3.811	.685	-.593	-.124

The perception level of teachers towards the public relations process in the school was seen as "I Agree" level ($\overline{X}$ =3.811) in general of the scale. Considering sub-dimensions, the highest mean ($\overline{X}$ =4.104) was seen in the research (situation analysis) stage, while the lowest mean ($\overline{X}$ =3.701) was found in the implementation stage. It was found that the perception level of teachers towards the public relations process in the school was "I Agree" level in all sub-dimensions and in general of the scale. Skewness and Kurtosis values were analyzed in the scope of normality test concerning which tests were required to evaluate demographic variables. It was seen that Kurtosis values were between -.289 and -.773 while Skewness values were between -.100 and -.346 in the table above. Accordingly, it was decided to use parametric tests since data were distributed normally.

Examination of Teachers' Opinions on Demographic Variables

Teachers' opinions are discussed in terms of demographic variables under this title.

Findings on Gender Variable

T-test for independent groups was conducted to find out whether teachers' opinions towards the public relations process in the school and its sub-dimensions differed significantly in terms of gender variable or not. The results of the analysis are given in Table 6.

Table 6. Findings on Gender Variable

Dimensions	Gender	N	$\overline{X}$	s.s.	Sd	t	p
Research- Situation Analysis	Female	188	4.115	.631	342	.345	.730
	Male	156	4.091	.647			
Strategic Planning	Female	188	3.698	.762	342	-1.322	.187
	Male	156	3.808	.774			
Tactical Planning	Female	188	3.823	.751	342	-1.857	.064
	Male	156	3.969	.693			
Implementation	Female	188	3.670	.783	342	-.840	.402
	Male	156	3.739	.731			
Assessment	Female	188	3.733	.741	342	-.586	.559
	Male	156	3.780	.766			
Overall Scale	Female	188	3.780	.684	342	-.927	.355
	Male	156	3.849	.686			

It was seen that there was no significant difference in teachers' opinions towards the public relations process in the school and its sub-dimensions in terms of gender [$t_{(342)}$ =-.927, p>0.05]. Also, considering sub-dimensions, the gender variable did not create a significant difference.

Findings on Branch Variable

T-test for independent groups was conducted to find out whether teachers' opinions towards the public relations process in the school and its sub-dimensions differed significantly in terms of branch variable or not. The results of the analysis are given in Table 7.

Table 7. Findings on Branch Variable

Dimensions	Branch	N	$\bar{X}$	s.s.	Sd	t	p
Research- Situation Analysis	Class Teacher	93	4.193	.637	342	1.588	.113
	Branch Teacher	251	4.071	.636			
Strategic Planning	Class Teacher	93	3.943	.715	342	2.892	.004*
	Branch Teacher	251	3.676	.776			
Tactical Planning	Class Teacher	93	4.108	.666	342	3.435	.001*
	Branch Teacher	251	3.809	.734			
Implementation	Class Teacher	93	3.857	.703	342	2.320	.021*
	Branch Teacher	251	3.644	.773			
Assessment	Class Teacher	93	3.942	.702	342	2.849	.005*
	Branch Teacher	251	3.685	.759			
Overall Scale	Class Teacher	93	3.989	.634	342	2.975	.003*
	Branch Teacher	251	3.745	.692			

*p< 0.05

It was seen that there was a significant difference in teachers' opinions towards the public relations process in the school in terms of gender [$t_{(342)}$ = 2.975, p<0.05]. It was seen that opinions of class teachers were more positive in contrast with branch teachers, and this difference was significant. Also, considering sub-dimensions, it was found that there was a significant difference in all sub-dimensions except research (situation analysis) sub-dimension in terms of branch. Opinions of class teachers were more positive in all dimensions.

Findings on Management Experience Variable

T-test for independent groups was conducted to find out whether teachers' opinions towards the public relations process in the school and its sub-dimensions differed significantly in terms of management experience variable or not. The results of the analysis are given in Table 8.

Table 8. Findings on Management Experience Variable

Dimensions	Management Experience	N	$\bar{X}$	s.s.	Sd	t	p
Research- Situation Analysis	Yes	186	4.207	.613	342	3.277	.001*
	No	158	3.984	.646			
Strategic Planning	Yes	186	3.835	.772	342	2.284	.023*
	No	158	3.646	.754			
Tactical Planning	Yes	186	3.963	.729	342	2.053	.041*
	No	158	3.803	.718			
Implementation	Yes	186	3.733	.797	342	.832	.406
	No	158	3.665	.713			
Assessment	Yes	186	3.841	.769	342	2.335	.020*
	No	158	3.652	.720			
Overall Scale	Yes	186	3.894	.697	342	2.452	.015*
	No	158	3.713	.659			

*p< 0.05

According to the results of the T-test for independent groups, which was conducted to find out whether teachers' opinions towards public relations process in the school and its sub-dimensions differed significantly in terms of management experience variable or not, it was seen that there was a significant difference in opinions of teachers [$t_{(342)}$ = 2.452, p<0.05]. It was seen that the opinions of teachers who had management experience were more positive in contrast with teachers who had no management experience, and this difference was significant. Also, considering sub-dimensions, it was found that there was a significant difference in all sub-dimensions except the implementation sub-dimension step in terms of the management experience variable. It was seen that the opinions of teachers who had management experience were more positive in all dimensions.

Findings on School Type Variable

One-Way Analysis of Variance (ANOVA) was conducted to find out whether teachers' opinions towards the public relations process in the school and its sub-dimensions differed significantly in terms of school type variable or not. The results of the analysis are given in Table 9.

Table 9. Findings on School Type Variable

Dimensions	School Type	n	$\overline{X}$		Sum of Squares	Sd	Mean of Squares	F	p	Significant Difference
Research-Situation Analysis	Preschool	23	4.374	Between Groups	3.188	4	.797	1.955	.101	
	Primary	82	4.178	Within Groups	128.412	315	.408			
	Secondary	83	4.068	Total	131.600	319				-
	High School	59	4.044							
	Vocational Sch.	73	4.003			Levene (F=1.467, p=.212)				
	Total	320	4.099							
Strategic Planning	Preschool	23	4.213	Between Groups	11.463	4	2.866	5.038	.001	Preschool > high school, vocational s. Primary > vocational s.
	Primary	82	3.899	Within Groups	179.167	315	.569			
	Secondary	83	3.737	Total	190.630	319				
	High School	59	3.580							
	Vocational Sch.	73	3.547			Levene (F=5.047, p=.001*)				
	Total	320	3.740							
Tactical Planning	Preschool	23	4.157	Between Groups	8.724	4	2.181	4.203	.002	Primary > high school, vocational s.
	Primary	82	4.100	Within Groups	163.444	315	.519			
	Secondary	83	3.836	Total	172.168	319				
	High School	59	3.759							
	Vocational Sch.	73	3.715			Levene (F=2.963, p=.020*)				
	Total	320	3.885							
Implementation	Preschool	23	4.015	Between Groups	5.375	4	1.344	2.396	.050	
	Primary	82	3.817	Within Groups	176.668	315	.561			
	Secondary	83	3.679	Total	182.043	319				-
	High School	59	3.650							
	Vocational Sch.	73	3.543			Levene (F=5.108, p=.001*)				
	Total	320	3.702							
Assessment	Preschool	23	4.122	Between Groups	6.742	4	1.685	3.064	.017	Preschool > high school
	Primary	82	3.887	Within Groups	173.283	315	.550			
	Secondary	83	3.708	Total	180.025	319				
	High School	59	3.607							
	Vocational Sch.	73	3.655			Levene (F=3.161, p=.014*)				
	Total	320	3.753							
Overall Scale	Preschool	23	4.174	Between Groups	7.161	4	1.790	3.910	.004	Preschool > high school, vocational s.
	Primary	82	3.949	Within Groups	144.225	315	.458			
	Secondary	83	3.776	Total	151.386	319				
	High School	59	3.679							
	Vocational Sch.	73	3.671			Levene (F=4.617, p=.001*)				
	Total	320	3.807							

*p< 0.05

According to Table 9, It was seen that there was a significant difference in teachers' opinions towards the public relations process in the school in terms of school type variable [$F_{(4-315)}$=3.910, p<0.05]. Tukey test, one of the multiple comparison tests, was conducted to determine the source of the significant difference between opinions. It was seen that there was a significant difference in favor of opinions of teachers working in preschool institutions when compared with opinions of teachers working in general high schools and vocational high schools. It was found out that considering sub-dimensions, teachers' opinions did not reveal a significant difference in research (situation analysis) and implementation sub-dimensions in terms of school type variable; however, there was a significant difference in opinions of teachers in other sub-dimensions. It was seen that there was a significant difference in teachers' opinions in the strategic planning sub-dimension [$F_{(4-315)}$=5.038, p<0.05]. It was seen that the significant difference was in favor of opinions of teachers working in preschool institutions when compared with opinions of teachers working in general high schools and vocational high schools. Also, there was a significant difference in favor of opinions of teachers working in primary schools when compared with opinions of teachers working in vocational high schools. It was seen that there was a significant difference in teachers' opinions in the tactical planning sub-dimension [$F_{(4-315)}$=4.203, p<0.05]. According to the results of the Tukey test conducted to determine the source of the significant difference between opinions, it was found out that there was a significant difference in favor of opinions of teachers working in primary schools when compared with opinions of teachers working in general high schools and vocational high schools. Lastly, it was revealed that there was a

significant difference between opinions of teachers working in preschool institutions and general high schools in the assessment sub-dimension [$F_{(4-315)}$=4.203, p<0.05]. This difference was also found in favor of preschool teachers.

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

In this study, it was aimed at developing an assessment instrument especial for the public relations process in the school. Accordingly, the items that were thought to constitute the scale were written as a result of the relevant literature review. In the first stage, 68 items were determined, and these items were distributed to 10 students studying in the Department of Educational Administration and Inspection and taking the Public Relations course in the school. Then, the item pool was reduced to 53 within the framework of the feedback received. In the next stage, these items were submitted to expert opinion in order to provide content and face validity. After receiving expert opinion, the 53-item scale was applied to 198 teachers for exploratory factor analysis. After EFA made with the obtained data, it was seen that the scale was consisted of six sub-dimensions with eigenvalues greater than 1, but some items were overlapped. Thus, the overlapping items were removed one by one; in this line, 14 items were removed, and a structure consisting of 39 items with five dimensions was obtained. This structure, which was obtained after EFA, was applied to a different sample of 344 teachers, and then the CFA was made for the model. Taking the sub-dimensions that emerged into consideration, the dimension were named respectively from the first sub-dimension as "research (situation analysis)," "strategic planning," "tactical planning," "implementation," and "assessment." In order to reveal the reliability of the scale, Cronbach's Alpha values were examined in the context of the reliability test, and it was concluded that the reliability values of the scale were high. Since the Public Relations Process Scale in the School consisting of 39 items with five dimensions was a 5-point Likert-type rating scale, the highest score that can be obtained from this scale was 195, and the lowest score was 39. Since there is no reverse item in the scale, it can be said that when the scores obtained from the scale gets higher, the public relations process in the school becomes more effective.

It was seen that the item factor loads of the Public Relations Process Scale in School were between .481 and .805; accordingly, it was concluded that the factor loads of the construct were appropriate. In addition, it was concluded that since values of the item-total correlations in the scale were between .530 and .821, item discrimination and internal consistency of the test were also high. Moreover, the scores obtained from the responses of the participants in the lower and upper 27% groups according to the scale total scores were compared with the t-test for independent groups; by this comparison, a significant difference emerged in favor of the upper group, and it was concluded that the discrimination of the items was high. In order to determine the relationships between the sub-dimensions of the scale, it was concluded that the correlation values varied between .513 and .812, and there was no multiple correlation problem between the sub-dimensions. According to Field (2009), it is desirable that the correlation between the sub-dimensions of the scales is below .90.

In the second part of the study, teachers' opinions about the public relations process in school were examined in terms of various demographic variables. It was concluded that the perception levels of the teachers towards the public relations process in school were not higher than the level of "I agree." It was revealed that the highest mean was in the research (situation analysis) sub-dimension while the lowest average was in the implementation sub-dimension. It can be said that this result showed that the success in research -determining the situation- was not reflected in implementation. It was found that teachers' opinions did not make a significant difference in terms of gender variables. In the study conducted by Ciner (2003), it was stated that there was no difference between the opinions of male and female participants in the activities carried out in the field of public relations. However, it was concluded that teachers' opinions created significant differences in the variables of branch, management experience, and type of school.

In terms of the branch variable, opinions of the classroom teachers about the public relations process in the school were more positive than the opinions of the branch teachers. It was revealed that there was no difference only in the research (situation analysis) dimension. Classroom teachers spend more time with school administrators in schools. Therefore, they are in more interaction with the school administrators in the process of making certain decisions. Class teachers are also more in contact with the students, for whom they are responsible for their education and training, and their parents. This situation is also thought to create a difference in teachers' opinions. As stated by Bozkurt, Bayar, and Üstün (2018), public relations have an important place in the dynamic and constantly changing relationship of schools with their environment. It is thought that the classroom teachers have a positive opinion as they are more involved in this process through the students for whom they are responsible for their education and training.

It was concluded that teachers' opinions about the public relations process in school created significant differences in terms of management experience variable in other dimensions besides the implementation sub-dimension. It was found that the opinions of teachers with management experience were more positive than teachers who did not have management experience. In the research conducted by Yıldırım (2007), it was found that experienced managers emphasized the role of public relations in the efficient execution of educational services. However, in the same research, it was stated that only half of the administrators had education and knowledge about public relations. In the research conducted by Tan (2002), it was revealed that managers' management training created a difference in the organization dimension of public relations activities while their management seniority differed in the dimensions of recognizing the external target audience and acting according to the principles of public relations. As a result of these researches, it can be said that having management experience changes the

perspective on public relations. It can be said that having management experience creates an advantage in terms of considering different alternatives, especially in activities carried out for the external target audience.

It was concluded that teachers' opinions about the public relations process in school in terms of school type variable made significant differences in other dimensions except for the research (situation analysis) and implementation sub-dimensions. It was concluded that the significant differences were in favor of the opinions of preschool teachers and primary school teachers. Teachers working in preschool and primary schools evaluated the public relations process in school more positively than teachers working at other levels. Preschool education level and primary schools are institutions from which parents have more expectations. For this reason, public relations activities gain more importance. In the study conducted by Bayrak and Köksal (2017), it was emphasized that parents had high expectations from preschool education institutions. Similarly, primary schools are educational institutions where parents' expectations are higher than other levels, and the school administration and teachers are more in contact with parents. As stated by Kılıç (2006), primary education institutions concern with more segments of the society and they need environmental support both financially and educationally in a direct or indirect way. It is thought that the opinions of teachers working at these levels are more positive due to the more intense communication with parents and the relevant environment.

As a result of the findings; it can be said that the Public Relations Process Scale in School, which has been developed in the study, is a valid and reliable measurement tool in terms of evaluating the systematic approach to activities in the public relations process in schools and can fill the deficiency for a measurement tool in the field. The developed scale can be used by testing in different populations and samples. Also, the scale was developed in Turkish. Adaptations to different languages and cultures can be made. In addition, the difference in practices regarding public relations among educational levels can be supported by qualitative research. It can be said that it will make the process more effective to provide administrators working in educational institutions with in-service and pre-service trainings for public relations, especially before or during their management process.

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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

The study was conducted and reported by the researcher.

Ethics Committee Approval Information

"Certificate of Ethical Approval" undertaken for this study is received from the Social Sciences, and Educational Sciences Ethics Committee of Çanakkale Onsekiz Mart University with the meeting numbered 04 and 2020/70 protocol on the date of 04.05.2020.

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Attachment: Dimensions of the scale and scale items

Boyut	Maddeler	Katılma Düzeyi				
	Maddenin başına şu ifadeyi koyarak cevaplandıralım: **Okuldaki halkla ilişkiler etkinliklerinde**	1	2	3	4	5
Durum Saptama	Sorundan kimlerin etkilendiği belirlenmektedir.					
	Öncelikle sorunun ne olduğu ortaya konulmaktadır.					
	Kuruma gelen raporlar, şikâyetler, öneriler dikkate alınmaktadır.					
	Çevreyi izleme araştırmaları yapılmaktadır.					
	Kurum çalışanlarının özellikleri dikkate alınmaktadır.					
Stratejilerin Planlanması	Alternatif iletişim araç ve teknikleri belirlenmektedir.					
	İletişim araçları ve teknikleri belirlenmektedir.					
	Hedef kitle analizi yapılmaktadır.					
	Hangi medya aracının kullanıma uygun olduğu belirlenmektedir.					
	Hangi halkla ilişkiler yöntemlerinin kullanılacağı belirlenmektedir.					
	Etkinliğe ayrılan bütçe ve dağılımının nasıl yapılacağı belirlenmektedir.					
	Hedef kitle analizi sonucunda elde edilen bilgiler ışığında stratejiler geliştirilmektedir.					
	Kurumun diğer planlarıyla bütünlük içerisinde olmasına dikkat edilmektedir.					
	Hedef kitlenin beklentilerine yönelik çalışmalar yapılmaktadır.					
	Hedef kitlenin kuruma yönelik takındıkları tutum ve tavırlar incelenmektedir.					
Taktiklerin Planlanması	Etkinliğin gerçekleştirileceği yer konusu belirlenmektedir.					
	Görevli personel (yetki ve görev dağılımı) belirlenmektedir.					
	Görev tanımları ortaya konmaktadır.					
	Maliyet analizi yapılarak gerekli bütçe hazırlanmaktadır.					
	Uygun mesajlar medya organlarına gönderilmektedir.					
Uygulama	Katılımcılar hazır bulunmaktadır.					
	Etkinlikler belirtilen zaman aralığında yapılmaktadır.					
	Etkinlikler arasında boşluklar oluşmamaktadır.					
Değerlendirme	Hedef kitlede ve medyada oluşan değişimler gözlenmektedir.					
	Hedef kitleyle istenilen iletişimin kurulup kurulmadığı değerlendirilmektedir.					
	Öngörülen maliyetin yeterli olup olmadığı değerlendirilmektedir.					
	Dönütler üzerinde değerlendirmeler yapılmaktadır.					
	Etkinlikler sonrasında paydaşların görüşleri alınmaktadır.					
	Etkinliklerin sonrasında katılımcıların dönütleri dikkate alınmaktadır.					
	Etkinliklerin sonrasında öğrencilerin dönütleri dikkate alınmaktadır.					
	Etkinliğe katılanların tepkileri alınmaktadır.					
	Yapılan uygulamanın planlama doğrultusunda yapılıp yapılmadığı değerlendirilmektedir.					
	Plan çerçevesinde yapılan uygulamanın verdiği sonuçlar saptanmaktadır.					
	İstenen amaçları gerçekleştirip gerçekleştirmediği tespit edilmektedir.					
	Gerçekleştirilen etkinliğin etki düzeyi belirlenmektedir.					
	Etkinliğe katılanların sayısı ve özellikleri değerlendirilmektedir.					
	Süreç ilk aşamadan itibaren tüm ayrıntılarıyla değerlendirilmektedir.					
	Görevli personel yetki ve sorumluluklarını yerine getirmektedir.					
	Etkinliklerin sunumu etkili bir şekilde yapılmaktadır.					

| Research Article / Araştırma Makalesi|

Investigation of Multiple Intelligence Practises in Social Studies Courses in Context of Textbooks and Teachers' Opinions

Sosyal bilgiler Dersi Çoklu Zekâ Uygulamalarının Ders Kitapları ve Öğretmen Görüşleri Bağlamında İncelenmesi[1]

Nurcan Şener[2], M. Cihangir Doğan[3]

Abstract

Purpose: The present study was designed to examine multiple intelligence applications in the fourth and sixth-grade social studies learning environments. The research was conducted through case study design, one of the qualitative research patterns. In addition, a face-to-face interview was carried out with eight classroom teachers in fourth grade and social studies teachers in sixth grade at a public and private school in the European side of İstanbul.

Design/ Methodology/ Approach: The data were collected by document analysis and interview techniques and analyzed with content analysis technique.

Findings: According to the results of document analysis, the activities included in social studies textbooks were respectively logical, verbal, and visual activities in terms of intensity. The teachers mostly stated that 'it gives students the chance of expressing themselves' concerning the message proposed by the theory and emphasized that 'it makes students familiar with different methods and techniques', 'it ensures student-centered learning' and 'it includes students in the lessons more.' The teachers who regarded social studies textbooks as inadequate in terms of multiple intelligence practices mostly stated that 'they have to use the supportive book' and 'the books consist of simple activities inappropriate for students' age'. The majority of teachers who expressed concerns on the requirements for more successful multiple intelligence applications suggested that 'education programs and seminars concerning the theoretical and practical parts of the theory must be arranged' and 'activities with the involvement of students must be organized and learning through experience must be promoted.'

Highlights: In the light of the findings of the study, it is recommended that textbooks must be reviewed in terms of the Theory of Multiple Intelligence, teachers must be encouraged to participate in applied trainings, and the parents must be included in these applied trainings, thereby ensuring continuous and permanent learning.

Öz

Çalışmanın Amacı: Bu araştırmanın amacı, "4 ve 6. sınıf sosyal bilgiler dersi öğrenme ortamlarında çoklu zekâ uygulamalarının incelenmesidir. Araştırma, nitel araştırma modeli kapsamında durum çalışması yöntemi ile gerçekleştirilmiştir Talim Terbiye Kurulu tarafından onaylanmış ilkokul 4. sınıf ve ortaokul 6. sınıf sosyal bilgiler kitapları içinde dört ayrı ders kitabı incelenmiştir. Ayrıca, İstanbul ili Avrupa Yakası'nda bulunan bir özel ve bir devlet okulunda görev yapan 4. sınıf, sınıf öğretmenleri ve 6.sınıf, sosyal bilgiler öğretmenlerinden oluşan toplam sekiz öğretmen ile yüz yüze görüşme yapılmıştır.

Materyal ve Yöntem: Veriler doküman incelemesi ve görüşme teknikleriyle toplanmış, içerik analizi tekniğiyle çözümlenmiştir.

Bulgular: Doküman incelemesinden elde edilen sonuçlara göre; sosyal bilgiler ders kitaplarında yer alan etkinliklerin içinde yoğunluğuna göre; mantıksal, sözel ve görsel zekâ etkinlikleri yer almaktadır. Öğretmenler, kuramın kendilerine verdiği mesaj ile ilgili en çok; "öğrenciye kendini ifade etme özgürlüğü tanıdığını" belirtmiş, "değişik yöntem ve teknikleri öğrencinin önüne getirdiği" ve "öğrenci merkezli öğrenmeyi sağladığı", "öğrenciyi derse daha fazla dâhil ettiğini" vurgulamışlardır. Sosyal bilgiler ders kitaplarının çoklu zekâ etkinlikleri açısından yeterli olması konusunda yetersiz görüş bildiren öğretmenlerin en çok; "yardımcı ders kitabı kullanma zorunda kaldıkları", "yaşlarına uygun olmayan, basit etkinliklerin mevcut olduğu" görüşleri ön plana çıkmıştır. Çoklu zekâ uygulamalarının daha başarılı olabilmesi için yapılabileceklere yönelik görüş bildiren öğretmenlerin çoğu; "kuramın teorik kısmıyla uygulamasına yönelik eğitim ve seminerler düzenlenmesi", "öğrencilerin de dâhil oldukları etkinlikler düzenlenmesi, yaşayarak öğrenmelerinin sağlanması gerektiği" görüşlerini bildirmişlerdir.

Önemli Vurgular: Araştırmadan elde edilen bulgular çerçevesinde; ders kitaplarının Çoklu Zekâ Kuramı açısından yeniden ele alınması, öğretmenlerin kuram ile ilgili uygulamalı eğitimlere katılımlarının teşvik edilmesi, bu eğitimlere velilerin de dâhil edilerek öğrenmelerin sürekliliği ve kalıcılığının sağlanması önerilmektedir.

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INTRODUCTION

In today's world, rapid developments and changes in every aspect bring about fundamental changes in national education systems (Çağlayan and Kıratlı, 2017). On the basis of those developments and changes is the need to raise healthy and successful individuals by all odds and lead them in accordance with their abilities and interests. In this regard, it is worth noting that individuals' learning process is affected by their differences and characteristics (Kuzgun and Deryakulu, 2017). Therefore, individual differences among students should be taken into consideration by teachers while arranging teaching-learning environments. Therefore, the teaching-learning environment should be shaped based on the fact that each student has different learning styles and intelligence types (İnan and Erkuş, 2016). In recent years, as a curricular innovation in schools, the traditional approach adopting behaviorism has been intended to be replaced by constructivism and multiple intelligence practices. Accordingly, teachers' roles have been re-defined, and different responsibilities and abilities have come to the fore; in addition, it has become a must to appeal to multiple intelligence modalities in educational practices and carry out teaching processes addressing different intelligence types. In the Theory of Multiple Intelligence, educational processes planned with appropriate activities enable students to receive an education that meets their own individual differences. This process is subjectified based on individuals' prior experiences and learning (Kabapınar, 2012). Gardner (2019) introduced eight different types of intelligences and noted that there may be other candidate intelligences over time. The intelligences modalities described by him include verbal/linguistic intelligence, logical/mathematical intelligence, visual/spatial intelligence, bodily/kinaesthetic intelligence, musical/rhythmic intelligence, social/interpersonal intelligence, intrapersonal intelligence, and naturalistic intelligence. Gardner kept on developing his efforts in this field, and he added another type, existential intelligence, as the ninth type in the list of multiple intelligences (Fleetham, 2014). Below, the intelligence types as conceptualized in the Theory of Multiple Intelligence are described in detail, with the aim of clarifying the research:

Verbal/ Linguistic Intelligence: Also known as reading, writing, and speaking intelligence, it is, unawarely, the most prevalent intelligence type. Furthermore, it is the most remarkable intelligence type amongst individuals. Gardner (1993) stressed that language was a preeminent example of human intelligence and had indispensable importance in the process of socialization. Humans are able to analyze memories, handle problems properly and construct their future thanks to their thinking skills with words (Campbell, Campbell, and Dickinson, 1996; as cited in Bümen, 2005).

Logical/Mathematical Intelligence: This intelligence type is misinterpreted and not completely understood. The idea that the individuals possessing this type of intelligence are considered to be only good at mathematical operations does not reflect the truth. On the contrary, individuals with this intelligent type have the ability to consider the problem from various perspectives. They are able to inquire through deductive and inductive approaches and propose solutions by taking different cause and effect relationships into consideration (Bellenka, 1997).

Visual/Spatial Intelligence: Visual intelligence is completely different from looking at something. Individuals with this intelligence type have a good sense of reviewing and interpreting visual images. Temiz (2007, p. 25) claimed that visual/spatial intelligence is beyond drawing a picture; instead, it is associated with reading a map, finding an address, remembering where an object is, making cognitive imaginations, and printing it on a paper.

Bodily/Kinaesthetic Intelligence: Individuals with bodily/kinaesthetic intelligence are able to employ their bodies in different activities via strong communication between their body movements and brains. Also known as sensorimotor intelligence, it refers to the potential of using the whole body or parts of the body by integrating the mind and body with great harmony and willpower (Gardner, 1993).

Musical/Rhythmic Intelligence: Musical intelligence is related to the identification of tones, melodies, sounds, and rhythm. Individuals with this intelligence type learn best through rhythm, melody, and music (Tuğrul and Duran, 2003). Musical intelligence is a unique type of intelligence that is easily applicable to all learning situations. The individuals who excel in this intelligence type have a strong ability to recognize such music-relevant factors as rhythm, acoustics, melody, cadence, and other components of music.

Social/Interpersonal Intelligence: An individual with a high level of interpersonal ability would likely possess both an awareness of people's characteristics and also an understanding of them. Individuals who are high in social intelligence are capable of cooperating with group members in a group, working in harmony, and communicating verbally or non-verbally with others (Saban, 2005). The high level of social intelligence is correlated more strongly with an individual's self-confidence and qualified communication with others.

Intrapersonal Intelligence: This intelligence type is described as 'self-knowledge, a clear concept of oneself and the ability to assume responsibility for life and learning' (Doğan, Alkış, 2007, p. 330). From Gardner's description, intrapersonal intelligence is the 'key intelligence in life, and it represents the awareness of one's own self-knowledge and his/her ability to take responsibility for his/her own life and learning' (Demirel, 2000, p. 151). Thus, an individual having this intelligence type is aware of his/her own self and becomes self-sufficient (Erman, 2003).

Naturalistic Intelligence: This intelligence type is directly related to the individual's capacity to perceive, appreciate, and understand the natural world (Doğan and Alkış, 2007; Bellenka, 1997). She/he is sensitive to the problems regarding both living and non-living objects and lifecycle. She/he seeks solutions for environmental health.

Gardner (2019) asserted that each individual has a unique profile of intelligences of varying strengths and highlighted the cultural dimension of intelligence shaped by biology and environment. He also added that inherited intelligence does not have the chance to develop if it is not of paramount importance in society. According to Gardner, the fact that people are different from one another is due to the fact that the combination of intelligence profiles is not the same in each individual. The Theory of Multiple Intelligences, therefore, has been especially powerful in the context of education. The theory suggests that each individual is different from one another and, not surprisingly, talented in different fields. The idea that an individual regarded as successful in a certain field would be successful in other areas as well has been, hereby, outdated. The individuals' talents in different fields are substantially related to their intelligence profiles and dimensions (Demirel, Başbay, and Erdem, 2006). Those changes in education have also led to a change in teachers' roles and responsibilities. A teacher does not adjudge or establish rules; instead, she/he is the one who teaches his/her students how to learn and leads them to handle a problem properly (Kuran, 2005). In this regard, through proper guidance, a student understands that making mistakes while learning is of great importance, should definitely not be regarded as a failure, and, contrary to this, it is a chance to learn. If she/he is not able to solve a problem in a certain way, she/he notices that there is another way to handle it. No experience is the same as another, and the unique wisdom of each experience comes into existence only when experienced holistically (Peterson and Kolb, 2018).

It is quite compelling to nourish the interests of children who are continuously subjected to different stimulants. For this reason, it seems necessary to provide them qualified, permanent, and entertaining learning processes through activities addressing different intelligence domains. In addition, several changes around the world have entailed reconsidering curricula, adopting modern approaches, and altering course books which are the main instruments of in-class learning. Within this period, investigation of course books and teachers' views is highly significant. The originality of the research underlies the fact that no study elaborating on this topic has been encountered when examining prior studies on the course books in Turkey.

The present study is designed to 'examine multiple intelligence applications in the 4th and sixth-grade social studies learning environments.' To this end, answers to the following questions have been sought:

1. To what extent the activities in 4th and sixth-grade social studies course books are appropriate for the Theory of Multiple Intelligences?
2. What are the opinions of 4th and sixth-grade teachers on the use of the Theory of Multiple Intelligences in social studies learning environments?

METHOD

The research was conducted through case study design, one of the qualitative research patterns. Case study is considered appropriate for this research as 'it is used in such situations as, for instance, analyzing the current fact within the frame of its life or the situations as having more than data and an evidence' (Yin, 1984; as cited in Yıldırım and Şimşek, 2011, 281). A holistic multiple-case study design has been employed in this study. In a holistic multiple-case study design, there is more than one case that may be regarded as holistic by itself, and each case is examined in itself, then they are integrated with one another (Yıldırım and Şimşek, 2011). At the first phase of the study, activities included in 4th and sixth-grade social studies course books were analyzed in detail within the context of multiple intelligences. Then, at the second stage, a face-to-face interview with classroom and social studies teachers were carried out through semi-structured interview form concerning the application of multiple intelligences in educational environments.

Study Group

The study group was determined by using a criterion sampling strategy, one of the purposeful sampling methods. Criterion sampling involves selecting cases based on some predetermined criteria. Here, the criterion can be formed by the researcher, or a predetermined criterion list can be used (Yıldırım and Şimşek, 2011). Accordingly, four different course books in 4th and 6th grade in the social studies field published by three different publishers approved by the Board of Education and Discipline in 2019-2020 academic year and eight teachers who were classroom teachers at fourth grade and social studies teachers at sixth grade at a public and private school in the European side of Istanbul were included in the research. Teachers' years of service varied between 5 and 41 years, and three of them were female, five of them were male teachers. Furthermore, the study group was determined based on the 'convenience sampling' model, one of the purposeful sampling methods. This model was chosen due to the fact that the schools and teachers in these schools were easy-accessible and had appropriate physical conditions for the activities.

Data Collection Instruments

As data collection instruments, 'document analysis' where the activities addressing multiple intelligences in course books in fourth and sixth grade in social studies field approved by the Board of Education and Discipline in 2019- 2020 academic year and 'semi-structured interview form' with teachers were used.

Document analysis involved the processes of reviewing related literature and forming a conceptual framework concerning social studies courses and multiple intelligences. Besides, the suggestions of academicians studying in different fields were attempted to be included in the research. The conceptual framework assisted the researcher with developing data collection instruments and obtaining findings. The opinions of three academicians who excel in the field were asked in order to investigate

to which intelligence domain the activities in course books appeal and to ensure validity. The codes were re-arranged, and the study was carried out.

During the implementation of the semi-structured interview form, expert opinion was asked in order for questions to be clear, intelligible, and in accordance with the purpose of the study. In addition, certain questions regarding what they did concerning multiple intelligences were asked to three classes and three social studies teachers that were not included in the study group and were requested to write a composition. Their responses were analyzed by three academicians through content analysis. Finally, the questions agreed to be included in the interview form were selected.

Data Analysis

The goal of data analysis is to interpret the responses, observations, and written data and put them into perspective (Merriam, 2018). In the current research, content analysis was employed to analyze the research data. Content analysis is a research tool used to organize and elicit meaning from the data collected and draw realistic conclusions from it. In this regard, the data collected were conceptualized first, then certain arrangements were conducted based on those concepts and themes explaining the data were formed (Yıldırım and Şimşek, 2011). In the present study, the activities in the fourth and sixth grade social studies course books were examined, and, accordingly, the data obtained were coded. The content analysis was investigated again following determining intelligence domains addressed by the activities. The implementations carried out by a researcher were analyzed by another researcher and, then numeric analyses were conducted by calculating intelligence domains specified in the course books. Finally, the data obtained were tabulated and interpreted.

In the process of semi-structured interview form analysis, teachers were requested to read their own responses in order to ensure that there were no statements in the forms except the ones uttered by them. The data obtained were coded and divided into categories. The data were classified under these categories, and the teachers' responses were analyzed in-depth. Similar responses were included in the same categories. The statements in teachers' responses were attached meaning, and themes were identified. The categories obtained were confirmed by another researcher. The frequency values of categories were calculated, tabulated and the data were supported by direct citations. The pseudonyms were used in order to ensure confidentiality. Instead, such codes as T1, T2…, T8 were preferred.

Validity and Reliability

In the current research, the implementations carried out by a researcher were analyzed by another researcher and, then, intelligence domains specified were calculated, and numeric analyses were conducted. Convergent reliability and consistency were assessed. The consistency was calculated based on the formula described in Miles and Huberman (1994):

Reliability = Number of Agreements/ Number of Agreements + Disagreements

The reliability value for intelligence domains, addressed by the activities in social studies course books, calculated through the formula above was shown in Table 1.

Table 1. Reliability Values for Intelligence Domains Addressed by the Activities

Books	Reliability
Course Book	88%

According to Table 1, reliability between the codes created by two different researchers was found high. The high level of consistency is regarded as the internal reliability of qualitative analyses.

The responses gathered from the interview form were examined in-depth; moreover, meaningful parts and statements were determined. The classifications of the data obtained from interviews were made based on Miles and Huberman's (1994) formula, and convergent reliability was found as 88%.

FINDINGS

This section covers the findings related to the results of the analysis on the basis of research goals.

Findings concerning Course Books

The findings regarding multiple intelligence domains addressed by the activities in social studies course books are presented in Table 2.

Table 2. The Distributions concerning the Multiple Intelligences Activity Types in Social Studies Course Books

Intelligence Domains	Course books				Total
	MoNE Fourth Grade	Tuna Fourth Grade	MoNE Sixth Grade	Altın Sixth Grade	
Logical	73	66	85	84	308
Verbal	24	45	40	110	219
Visual	37	21	38	31	127
Social	15	29	22	12	78
Intrapersonal	37	16	5	15	73
Naturalistic	4	8	4	19	35
Musical	1	-	-	-	1
Kinaesthetic	-	-	-	-	-
Total Number of Activities	191	376	194	271	841
The Number of Pages(Net)	134	178	148	134	594
Activity/Page Rate	1.4	2.1	1.3	2	1.4

As shown in Table 2, the activities in MoNE fourth grade social studies course books (MoNE, 2005) mostly appealed to the logical intelligence domain (n= 73). Similarly, the activities in Tuna 4th grade social studies course books address the logical intelligence domain (n=66). The same situation has been observed in the activities in MoNE sixth grade social studies course books; those activities mostly appealed to the logical intelligence domain (n=85). However, the activities in Altın sixth grade social studies course books addressed the verbal intelligence domain (n=110). Furthermore, in Table 2, the intelligence domains addressed by the activities in course books were determined respectively as follows: logical intelligence (n=219), social intelligence (n=78), intrapersonal intelligence (n=73), naturalist intelligence (n=35), musical intelligence (n=1). No activity appealing to kinaesthetic intelligence was found in the activities.

In addition, as for the rate of the number of activities addressing multiple intelligence domains to the net number of pages in course books, the activity/page rate in MoNE (2005) fourth-grade social studies course book was found as 1.44; in Tuna fourth-grade social studies course book as 2.11; in MoNE (2005) sixth-grade social studies course book as 1.31 and in Altın sixth-grade social studies course book as 2.02. With this regard, the highest number of activities addressing multiple intelligences depending on the number of pages was found in Tuna fourth-grade social studies course book. Besides, a total number of multiple intelligences activities depending on the number of pages was found as 841, and the number of primary activities/the number of pages of the course books rate was determined as 1.41. Below is an example of the activities in course books:

Figure 1. Social Studies Course Book. Altın Publishing, p. 110.

In Figure 1, a text regarding the subject of 'Our Natural Resources not be Scarced' in 'Resources of Our Country' unit was presented to students. The text appeals to verbal and visual intelligence domains. Here, students were asked how people are affected by the destruction of forests, and they were requested to discuss this topic. With this activity, it was addressed to students' naturalistic intelligence in the first place; then, thanks to verbal and visual texts, logical-mathematical intelligence was appealed by requesting drawing conclusions from the text.

Figure 2. Social Studies fourth- Grade Course Book (Second Book), MoNE, p.118.

In Figure 2, 'Let's Think!' activity and two newspaper reports were included in the preparation part of 'Our Projects' subjects within 'Glad that We Have' unit. In 'Let's Think!' activity, the students were asked 'Each day, a new technological product come into our lives. What are the reasons for this rapid technological advancements?' This question was aimed to address *logical intelligence* domain. In the second part of the activity, regarding *verbal* and *logical-mathematical intelligence* domains, students were requested to investigate newspaper reports and asked, 'Why do you think the inventions mentioned in these newspaper reports were made?'

The Findings concerning the Interviews with Teachers

This section covers the findings related to the findings gathered from the recordings of interviews with teachers.

Teachers' Views on the Messages Conveyed by the Theory of Multiple Intelligences

Regarding multiple intelligences theory, teachers stated that 'it allows students to express himself/ herself' (n=2), 'it provides different methods and techniques to students' (n=2), 'it ensures student-centered learning' (n=2), 'it prevents learning from being monotonous' (n=1), 'it focuses on students' individual requests' (n=1), 'it ensures effective and permanent learning' (n=1), 'it focuses on students' interests and requests' (n=1) and 'it allows novel opinions to merge' (n=1).

The examples concerning teachers' statements on the messages conveyed by multiple intelligences theory are provided below:

T6; *"I do not have much information about the Theory of Multiple Intelligence. I am in favor of the fact that students have the right to express their opinions explicitly."*

T1; "The Theory of Multiple Intelligences is a new concept for me. However, as far as I am concerned, this is a method I have already attempted to implement. *I think that, according to this theory, we should allow our students to express their interest and requests explicitly."*

T2; "*For me, the Theory of Multiple Intelligences is a way to help different opinion patterns to merge."*

Teachers' Views on the Key Elements Paid Attention during the Implementation of Multiple Intelligences

Regarding the key elements paid attention during the implementation of multiple intelligences, teachers articulated that 'they pay attention to individual characteristics' (n=3), 'they apply different methods and techniques based on students' interests and curiosities' (n=2), 'they allow their students to express themselves explicitly' (n=1), 'they prepare different activities based on their students interests, talents and requests' (n=1), 'they plan certain activities appealing to visuality' (n=1), 'they pay attention to implement certain activities addressing five senses' (n=1) and 'they attempt to ensure equality of opportunities' (n=1).

The examples concerning teachers' statements on the key elements paid attention during the implementation of multiple intelligences are presented below:

T3; "*I pay attention to apply certain activities addressing five senses. For example, in the lessons when I use globes, my students can see the localization of our country while being happy by touching the globe, thereby ensuring permanent learning."*

T8; "*The development of visual, auditory and social intelligence contributes to both student's personal development and academic achievement. Applying different methods depending on students' interests, for example, presentations, the use of globe, films etc. make contributions to students' success."*

T1; "*Based on students' interests and talents, I allow them to express their emotions, opinions, and ideas without permitting class discipline to be ruined. I arrange a number of activities with an aim to make them express their ideas explicitly in society and be creative and explorer."*

Teachers' Views on the Difficulties Faced during the Implementation of Multiple Intelligences

Table 3 presents the frequencies of social studies teachers' responses concerning the difficulties faced by them during the implementation of multiple intelligences.

Table 3. The Frequencies concerning the Difficulties Faced by Teachers during the Implementation of Multiple Intelligences

Views	F
Inadequacy of Materials	3
Intensive Curriculum	2
The need for teachers' being more active and well-informed	2
Inadequacy of lesson hours with regard to subjects	2
Having difficulty in including parents in the process	1
Having difficulty in ensuring classroom arrangement due to students' being quite active	1
The students' who do not have the right to speak being offended	1
The inappropriateness of educational environments for multiple intelligences	1
Having difficulty in meeting individual interests and needs	1
The inappropriateness of course books for multiple intelligences	1
The students' being accustomed to rote learning	1
Total	**16**

According to Table 3, regarding the difficulties faced by classroom teachers and social studies teachers during the implementation of multiple intelligences, they emphasized that 'they are faced with inadequacy of materials' (n=3), 'they are faced with an intensive curriculum' (n=2), 'the teacher himself should be more active and well- informed' (n=2), 'they are faced with insufficient lesson hours' (n=2) and 'they have difficulty in including parents in the process' (n=1).

The examples concerning teachers' statements on the difficulties faced during the implementation of multiple intelligences are presented below:

T5*; "The biggest difficulty I have ever faced during the implementation process is the inappropriateness of educational environment for this theory and inadequacy of materials."*

T*; "Inadequacy of materials, insufficient lesson hours, intensive curriculum and our having difficulty in keeping up with this curriculum."*

Teachers mostly noted that they were faced with the inadequacy of materials while preparing activities for different intelligence domains and added that the educational environment was inappropriate for multiple intelligence practices. Moreover, teachers highlighted the same points during the negotiations except for interviews.

Teachers' Views on Students' Skills Contributed by Multiple Intelligence Practices

Table 4 covers the data concerning fourth, sixth, and classroom teachers' views on students' skills contributed by multiple intelligence practices in social studies courses.

Table 4. The Frequencies concerning Teachers' Views on Students' Skills Contributed by Multiple Intelligence Practices

Views	F
Ability to express himself/ herself in a more comfortable way	2
Empowerment of self-confidence	2
Ability to raise awareness of his/ her own talents and develop self- acquaintance	2
Being more successful in each step of life	1
Increase in self-confidence	1
Being more eager to learning	1
Enhancement of creativity	1
Ability to learn to respect his/ her friends/ teachers opinions	1
Ability to propose different ways to handle a problem	1
Ability to improve verbal and visual intelligence, memory, and imagination	1
Better recognition of the environment	1
Ability to establish cause and effect relationships concerning the environment	1
Ability to consider subjects from different perspectives	1
Allowing students to learn by experiences instead of rote learning	1
Enhancement in visual and auditory intelligence domains	1
Total	**18**

As presented in Table 4, regarding students' skills contributed by multiple intelligence practices in social studies courses, teachers stated that 'students are able to express themselves in a more comfortable way' (n=2), 'students' self- confidence are empowered' (n=2), 'students become aware of their talents and are able to develop self- acquaintance' (n=2), 'students are more successful in each step of life' (n=1) and 'students' self-respect is improved' (n=1).

The examples concerning teachers' views on students' skills contributed by multiple intelligence practices in social studies courses are provided below:

T2; *"They are able to express themselves in a more comfortable way. Their self-confidence and self-respect improve. They learn to respect their friends and teachers and others' opinions. They are able to propose solutions to handle a problem fearlessly."*

T4; *"They become aware of their own talents and skills. It contributes better self-recognition."*

Techers' Views on Social Studies Course Books' Sufficiency in terms of Multiple Intelligence Activities

Table 5 presents fourth and sixth- grade teachers' views on social studies course books' sufficiency in terms of multiple intelligence activities. Teachers' responses were classified as 'Sufficient', 'Partially Sufficient' and 'Insufficient'.

Table 5. The Frequencies concerning Teachers' Views on Social Studies Course Books' Sufficiency in terms of Multiple Intelligence

Course Book	f
Insufficient	**18**
Being obliged to use a supportive book	3
The number of subjects' being excessive in course books	2
Poor presentation style of the subjects	1
The subjects' not being far-reaching	1
Poor integrity among subjects	1
The subjects should be designed in a better way	1
The visuals should be more interesting	1
The designs should be better	1
The visuals should be more interesting	1
Insufficient in terms of information and content	1
The subjects are not contemporary	1
The environmental factor was not taken into consideration	1
Insufficient in terms of leading students to investigate and research	1
Failure to offer information entailed for the exams carried out in the country	1
Inappropriate for the country's educational facts	1
Partially Sufficient	**7**
Insufficient lesson hours	2
Insufficiency of dialogue texts	1
Insufficiency of topics regarding the importance of a certain day	1
Books' printing quality is quite poor	1
The subjects in which students can be more active should be included more	1
Insufficiency of dialogue texts	1
Sufficient	**-**
Total	**25**

According to Table 5, teachers considering social studies course books insufficient in terms of multiple intelligence practices stated that 'they have to use supportive book' (n=3), 'there are too many subjects in course books' (n=2), 'the presentation styles of subjects are poor' (n=1), 'the subjects are not far- reaching' (n=1), 'the integrity among subjects are poor' (n=1) and 'the subjects should be designed in a better way' (n=1). However, the teachers considering the course books partially sufficient noted that 'the lesson duration is insufficient' (n=2), 'the dialogue texts are insufficient' (n=1), 'the subjects are insufficient in terms of the importance of a certain day' (n=1), 'the books' printing quality is poor' (n=1), 'the subjects in which students can be more active should be included more in course books' (n=1) and 'the dialogue texts are insufficient' (n=1). On the contrary, there have been no teachers' views stating that course books are sufficient.

The examples concerning teachers' views on social studies course books' sufficiency in terms of multiple intelligence activities are presented below:

T5; *"I think that course books are not appropriate for the current education system in Turkey; in this regard, I find them insufficient."*

T8; *"As a Social Studies teacher, I do not think that the presentation styles of subjects are different from the ones published in the past years. There is no integrity among subjects. In addition, the books' printing quality is not good."*

T6; *"I find course books insufficient in terms of information and content. I think that the subjects should be adapted according to today's world. Moreover, I find the course books quite insufficient in terms of leading students to investigate and research."*

RESULTS, DISCUSSION, AND SUGGESTIONS

The results of the study have shown that the activities in course books mostly appeal to the logical intelligence domain; however, musical or kinaesthetic intelligence domains are either included in course books with a limited level or not included. Since there were certain activities mostly addressing the logical intelligence domain, they allow creative thoughts to merge, and students are led to explain their opinions based on their current information. Nevertheless, the fact that other intelligence domains are not much included in course books- this situation is verified by teachers' views – requires reconsidering those books in terms of the Theory of Multiple Intelligence and to vary and arrange the activities based on different intelligence domains. This is considered significant in order for students to be able to think and explain their thoughts. The fact that different intelligence domains are included at similar levels in course books is important in order for sophisticated, social, and qualified individuals aimed by the course to reveal their intelligence domains. Yeşildere (2003) stated that students would be aware of their skills, recognize themselves, have a higher level of academic achievement and self-confidence on the condition that intelligence domains were integrated with appropriate learning environments.

The majority of teachers interviewed were revealed to have positive and negative views on the Theory of Multiple Intelligence. The 'positive' views are stated as follows: 'it prevents learning environments from being monotonous, students' experiencing success thanks to the activities addressing different intelligence domains, enhancing students' self-confidence and its contribution to academic achievement. ' These results are in accordance with the findings of a study by Gülfırat Kıbrız (2016). In the study, it was observed that there was a difference between post-test scores on experiment and control groups, and this difference was in favor of the experiment group in which multiple intelligence practices were conducted. This result indicated that multiple intelligence practices in social studies course had an impact on student achievement.

The 'negative' views on the Theory of Multiple Intelligences are as follows: 'inadequacy of opportunities, difficulties faced in the context of students' exploration of their own talents and problems resulted from teachers.' In today's world, individuals are required to be venturous, to have critical and creative thinking, to search and inquire, to propose alternative solutions for different problems, to be brave to try and eager to learn, to produce knowledge, and to follow technological advancements (Demircioğlu, 2005; Kaytancı and Dombaycı, 2020). In this regard, social studies course, by definition, should possess a more effective learning-teaching process, and teachers, as practitioners, should have more qualified competencies. Acat (2005) attempted to determine the utility of the Theory of Multiple Intelligences to plan and arrange learning-teaching situations in Turkey's conditions. A certain number of findings is in line with the results of the current study. The key factor to be paid attention to regarding the implementation process of multiple intelligences is that teachers are entailed to have a broad theoretical framework concerning the theory and implementation methods. In light of the results of the study, teachers need to pay attention to the fact that the contents of activities carried out in the learning process should appeal to students' all intelligence domains, and different methods and techniques should be included in the implementation process. Moreover, teachers should consider students' developmental characteristics and their changes during the learning process and talents.

Among teachers' responses concerning the key elements paid attention to during the implementation of multiple intelligences is the fact that 'they attempt to carry out different methods and techniques considering individual differences and students' different interests and curiosities.' Furthermore, teachers stated that 'students are able to express themselves in a better way, their self-confidence is empowered, they become aware of their abilities and recognize themselves better, and their self-respect is enhanced' through multiple intelligence practices. It is unlikely for a teacher to excel in all intelligence domains; however, it is of importance that she/he explores the resources by which she/he is able to prepare qualified activities concerning different intelligence domains, to make inferences, and to introduce new outcomes (Saban, 2002). The underlying reason why teachers agree on this issue to a great extent may be due to the fact that they are not well-informed about the Theory of Multiple Intelligences, and they do not include multiple intelligence practices in the lessons because of various reasons. This result is in accordance with teachers' responses during interviews.

Teachers' responses regarding the difficulties faced during the implementation of multiple intelligences are as follows: 'inadequacy of materials, intensive curriculum, the need for teachers to be more active and well- informed compared to traditional teaching approach, insufficient lesson hours and difficulties in including parents in the process.' The results of the study are in line with the study conducted by Başbay (2005) whoattempted to find out teachers' opinions on the process in a teaching-learning environment arranged in accordance with the Theory of Multiple Intelligences. Similarly, teachers who had negative views on the process emphasized inadequacy of time, intensive curriculum and exams, and examination anxiety. Likewise, in a study conducted by Yeşilbursa (2006) entitled 'The Views of the Teachers of the Primary Education Second Grade Social on Multiple Intelligence Theory', it was determined that physical conditions of schools were not appropriate for multiple intelligence theory, parents were not much well-informed about the theory, social studies teachers' had traditional intelligence approaches and parents and students were required to be informed about the theory. Moreover, in a study carried out by Erdem and Demirel (2005), it was drawn similar conclusions. The research was conducted with an aim to reveal the views of 72 teachers working at schools where

multiple intelligences practices were implemented. The fact that students learned by entertaining in certain activities designed in line with the Theory of Multiple Intelligence and they were more eager to attend the classes is among the findings of the study. In addition, they highlighted that students attempted to put more effort into multiple intelligence practices. This may be interpreted that students who learn by entertaining are more engaged in lessons and put more effort to learn in such a process compared to the traditional education system.

The results of the study imply that informative activities regarding the Theory of Multiple Intelligence fail to achieve a goal. In light of teachers' statements, MoNE is required to offer in-service tranings which includes various activities and workshops regarding the use of multiple intelligences in teaching-learning processes, and teachers' voluntary participation should be ensured. In-service trainings for teachers towards multiple intelligences should be integrated with seminars arranged for parents. It is worth noting that the process should not only be followed by teachers, but parents are also required to be informed about it in order for multiple intelligence practices to be successfully carried out.

According to fourth and sixth-grade social studies teachers, social studies course books are insufficient for multiple intelligence activities, 'supportive books are needed, and the curriculum is highly intensive.' There was no teacher considering course books sufficient. The fact that teachers need supportive books, activities in the books are required to be contemporary and interesting, there is no teacher regarding books as sufficient, and other negative views have revealed that course books should be re-designed. This finding showed consistency with a study conducted by Koyuncuoğlu and Kaya (2000). In their study, it was found that the contents of course books are entailed to address all students by taking students' different intelligence domains into consideration. With this regard, teachers are recommended to explore their students' abilities, to pay attention to arranging activities in a way to appeal to different intelligence domains, and to use methods and techniques that are appropriate for the Theory of Multiple Intelligences.

According to Yenilmez and Bozkurt (2006), the Theory of Multiple Intelligence has brought about fundamental changes and advancements in education. However, it has been determined that teachers are not well-informed about how to carry out this theory in learning environments, and this situation is the key factor preventing above-mentioned developments. To handle these problems, applied workshops held by MoNE play a pivotal role. The projects and trainings planned by MoNE should be presented to teachers as interesting activities. The more those applications are regularly carried out, the more permanent the learning process becomes.

Besides, this study was conducted on behalf of fourth and sixth- grade students. Therefore, the study can also be carried out by making comparisons among different class levels or by investigating course books published by different publishers.

Declaration of Conflicting Interests

Funding

Statements of publication ethics

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

Ethics Committee Approval Information

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| Research Article / Araştırma Makalesi|

STRCT-Inquiry-Based Science Schools in Nature: Effect on Environmental Awareness on Preschool Teachers and Children

TÜBİTAK-Doğada Sorgulama Temelli Bilim Okulları: Okul Öncesi Öğretmen ve Dönem Çocuklarının Ağaçları Tanıma Düzeylerine Etkisi[1]

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Abstract

Purpose: The aim of this research was to examine the effect of the "Tree Science School for Preschool Students" Project, which was supported for the second time in the 2017/2018 call period of TUBITAK 4004 Nature Education and Science Schools, based on environmental responsibility awareness from an early age, on the level of recognition of trees by preschool teachers and preschool children.

Design/Methodology/Approach: The research project was carried out in two stages: two days of teacher training with 30 preschool teachers and three days of training with 120 children, 40 of whom were preschool children every day. There were a total of 17 activities carried out within the scope of the project, with 8 for preschool teachers and 9 for preschool children for tree science education. The activities were designed with the help of field experts and based on active learning principles, with a focus on the project's target group's perceptions of nature and trees. The study sample of the research was determined by criterion sampling, one of the purposeful sampling methods, and consisted of 20 preschool teachers and 120 preschool children. The method of the research was the exploratory design from mixed-method research. The data collection tools of the research were the Utopia Given Tree Recognition Test (UGTRT) for preschool teachers, an interview form consisting of two semi-structured open-ended questions, and a drawing and telling technique for preschool children. The quantitative data collected in the research were analyzed using the SPSS 22.0 Program, the Mann Whitney U test, and the Kruskal Wallis test, and the qualitative data were analyzed using the content analysis technique.

Findings: According to the results of the research, it has been found that it has a positive effect on the environmental awareness of both preschool teachers and preschool children.

Highlights: The teacher's role is important in the development of scientific thinking in children. In this context, it is expected that the research findings will be useful in future activities involving tree education, which plays an essential role in preschool children's environmental education.

Öz

Çalışmanın amacı: Bu araştırmanın amacı, TÜBİTAK 4004 Doğa Eğitimi ve Bilim Okulları 2017-2018 çağrı döneminde ikinci kez desteklenen küçük yaşlardan itibaren çevresel sorumluluk bilinci temelli "Okul Öncesi Öğrencilerine Yönelik Ağaç Bilim Okulu" Projesi'nin okul öncesi öğretmeninlerinin ve okul öncesi dönem çocuklarının ağaçları tanıma düzeylerine etkisinin incelenmesidir.

Materyal ve Yöntem: Araştırma kapsamında ele alınan proje, 30 okul öncesi öğretmeniyle iki günlük öğretmen eğitimi ve her gün 40 okul öncesi dönem çocukları olmak üzere toplamda 120 çocukla olmak üzere üç günlük eğitim olmak üzere iki aşamada gerçekleştirilmiştir. Proje kapsamında gerçekleştirilen etkinlikler ağaç bilimi eğitimlerine yönelik okul öncesi öğretmenleri için 8, okul öncesi dönem çocuklarına yönelik 9 etkinlik olmak üzere toplam 17 etkinlikten oluşmaktadır. Etkinlikler, proje hedef kitlesinin doğa ve ağaç algılarına ilişkin aktif öğrenme ilkelerine göre alan uzmanlarıyla hazırlanmıştır. Araştırmanın çalışma grubu, amaçlı örnekleme yöntemlerinden ölçüt örnekleme ile belirlenmiş olup, 20 okul öncesi öğretmeni ve 120 okul öncesi dönem çocuklarından oluşmaktadır. Araştırmanın yöntemi karma yöntem araştırmalarından açımlayıcı (exploratory) desendir. Araştırmanın veri toplama araçları, okul öncesi öğretmenleri için Ütopya Verilen Ağacı Tanı (ÜVAT) Testi, yarı yapılandırılmış iki açık uçlu sorudan oluşan görüşme formu; okul öncesi dönem çocukları için resim çizip anlatma tekniğidir. Araştırmada toplanan nicel veriler SPSS 22.0 Programı ile Mann Whitney U testi ve Kruskal Wallis testi kullanılarak; nitel veriler çerik analiz tekniği kullanılarak analiz edilmiştir.

Bulgular: Araştırmanın sonuçlarına göre; hem okul öncesi öğretmeninlerinin hem de okul öncesi dönem çocuklarının çevresel farkındalıklarına olumlu yönde etkisi olduğu saptanmıştır.

Önemli Vurgular: Okul öncesi dönemde, çocuklarda bilimsel düşüncenin gelişmesi çevreye yönelik farkındalık ve olumlu tutumlar sergilemelerinde öğretmen anahtar rol oynamaktadır. Araştırma sonuçlarının okul öncesi dönem çocuklarının çevre eğitimi içerisinde önemli bir yere sahip olan ağaç eğitimi konusunda yapılacak etkinliklerde önemli olduğu düşünülmektedir.

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INTRODUCTION

The biological, physical, social, economic, and cultural environment in which living creatures retain relationships and interact with one another throughout their lives is considered as the environment (T.R. Ministry of Environment and Urbanization, 2017). In another definition, the environment is defined as "all kinds of biotic and abiotic factors that affect a living entity or a living community throughout their lives" (Yücel and Morgil, 1998). The concept of "environment" can be explained in terms of mountains, lakes, streams, atmosphere, plants, animals (natural elements), and buildings, bridges, roads, and houses (human/human elements) using these definitions. It gets the benefits based on its characteristics and basic requirements. However, as social life becomes more complicated, so do environmental issues, which are becoming more numerous and diverse. These issues are caused by the unplanned and unregulated growth of factors such as population, industrialization, urbanization, and tourism (Türküm, 1998). "Air, water, soil, food, light and noise pollution, radioactive pollution, global climate change, acid rain, erosion, destruction of natural life and forest fires, and reduction of biological diversity" are examples of environmental problems that occur as a result of these. Industrialization and urban life, which developed rapidly, exposed many universal problems and made them irreversible, especially in parallel with scientific and technological advancements. These are elements that pose a threat to life's continuation (Long and Salam, 2005). As a result, it falls to the person who is in charge of removing the potentially dangerous elements. This can only be achieved through environmental education. In order for human beings to develop responsibility and sensitivity, first of all, a special bond should be established between nature and humans. Then, people need to be supported to comprehend what the destructive factors are in terms of knowledge. Finally, by aiming to reveal sustainable behaviors, the permanence of education should be ensured (Atasoy, 2015). In this way, people can be sensitized by instilling a sense of responsibility for the environment. To sustain the natural functioning of living things among themselves and protect them from destruction, it is required to raise individuals who are sensitive to the environment and have a high level of environmental awareness. It provides significant improvements in the solution of these problems and needs, thanks to the education of people who will provide fundamental solutions to the environmental problems they face, produce useful services for humanity, and use them in their daily lives while remaining environmentally conscious. As a result, environmental education is defined as the process of influencing people's environmental behavior by expanding their environmental knowledge (Pooley and O'Connor, 2000). When the concept of environmental education is examined in detail, it means actively participating in the development of environmental awareness, achieving environmentally sensitive, permanent, and positive behavioral changes, protecting cultural, aesthetic, historical, and natural values, and actively participating in the solution of environmental problems (T.R. Ministry of Environment and Forestry, 2004). Teachers are regarded as one of the most important elements of environmental protection and education around the world, including in Turkey. While placing environmental issues in the education plans, the teacher should deal with the issues practically through various activities and guide the learning process in accordance with the pace of the students (Haktanır, 2007).

The uniqueness of the learning environment is the most essential element of environmental education, which both distinguishes it from other educational disciplines and allows it to collaborate with them. Environmental education focuses on learning in nature as much as possible. According to this, when learning takes place in nature, it is possible to learn in a thorough and meaningful way. Since environmental education is "teaching the world." Natural learning occurs through direct experiences, resulting in effective development, mental and social learning, as well as the principles of thinking, feeling, and acting. In addition to learning in nature, interesting and appropriate experiences can be provided to learners in museums, science centers, and botanical gardens (Brody, 2005; cited in Çabuk, 2019).

The early childhood period, which constitutes the scope of the research, is defined as the period in which development and learning are the fastest throughout human life, starting with birth and lasting until the age of eight (UNESCO, 2018). Children begin to develop socially, emotionally, cognitively, and physically from the moment they are born, and the basis for the knowledge, skills, attitudes, and behaviors they will acquire throughout their lives is formed during this time (Pianta, Barnett Justice, & Sheridan, 2012). Children's passion for inquiry and questioning are two of their most distinguishing characteristics in early childhood. Everything in life is worth exploring for them (Charlesworth & Lind, 2003). They discover and learn while tasting mulberries plucked from the tree, cuddling a kitten, listening to stones thrown into the water, watching the sunset, and smelling the soil after it has rained (Kahriman-Pamuk, 2019). As a result, many researchers working on early childhood environmental education have emphasized the importance of these critical years for future generations to become environmentally responsible and sensitive adults by emphasizing that attitudes toward the environment begin to form in early childhood (Russo, 2001; Basile, 2000; Davis, 1998; Wilson, 1996). As a result, the importance of early childhood education in the formation of positive perceptions, awareness, and, as a result, positive attitudes and behaviors toward the natural environment (Demir & Yalçn, 2014) are undeniable. It may be difficult for children who have not been exposed to environmental education since childhood to master the subject, absorb it, and grow up to be environmentally conscious adults. According to Chawla (1998), contact with natural areas in the open air during childhood is one of the most influential factors on the human-environment relationship in adult life. Accordingly, it can be claimed that adults who care about and protect the environment are people who interact with nature in their childhood and establish bonds.

Dewey (1997) believed that children's critical thinking skills should be emphasized and that they should participate actively in collaborative problem-solving processes (Dewey, 1997). Dewey's views have shaped today's approaches to early childhood education, such as inquiry-based or exploratory learning (Cremin, Glauert, Craft, Compton, & Stylianidou, 2015). One of the four

essential needs of the twenty-first century is problem-solving, which has been regarded as an important skill to acquire in environmental education (Trilling & Fadel, 2012). Based on these findings, it is critical to encourage children to successfully use their scientific process skills in early childhood environmental education. In this way, children will take responsibility for their own learning as well as play an active role in solving any environmental problem by observing, making predictions, collecting data, interpreting the data, and attempting to draw a scientific conclusion while observing, making predictions, collecting data, and interpreting the data. The key objective of inquiry-based education in nature is to complement and expand on print and electronic media-dominated classroom teaching by combining organized environments and natural environments with relevant contextual experiences. Today's children have little chance of unstructured play and regular contact with the natural world. In this context, nature-based education programs are a tool that can support children's access to the natural world. These education programs are focused on curriculum, behavior, production, protection, and survival (Shanely, 2006; Knapp, 1996).

Children have a strong desire to explore nature in an unmediated and unstructured manner. Nature takes on a feature that helps children's development in outdoor education while providing many different natural elements to them. Children can learn a lot merely by being in nature and examining it with all of their senses (Dinçer, 1999). Teachers' primary responsibility is to provide opportunities for children to interact with nature. While it is highlighted that place-based education should be provided on a regular basis beginning at a young age, studies have found that teachers do not pay enough attention to this issue (Knapp, 1996). Accordingly, preschool teachers are an element that brings dynamism to the process with the responsibilities they take as a guide, sometimes a facilitator, sometimes as an example, and the work they will do in the process from planning to ending the process (Kopnina, 2012). Undoubtedly, in addition to the professional qualifications that every teacher should have, it is expected to have additional knowledge and skills in terms of environmental education. Therefore, teachers need to follow up-to-date knowledge at a certain level in the education of the environment, which is an interdisciplinary science.

As a result, it is obvious that proper use of out-of-school learning environments is required for effective environmental education. Since children are expected to be out of school on a regular basis, to learn about the positive and negative effects of human activities on the functioning and continuity of ecosystems, and to develop more responsible behaviors related to nature in a correct Environmental Education Program (Güler, 2009).In this perspective, nature education activities, which are multidisciplinary in content, can be said to contribute significantly to out-of-school practices, particularly in environmental education. Based on these contributions, the Scientific and Technological Research Council of Turkey (STRCT) has been giving significant support to such nature education activities since 1999. Studies on nature education in Turkey have accelerated with the implementation of the "Scientific Environment Education in National Parks" programs, which were first prepared and initiated by the Earth Sea Atmosphere and Environmental Research Group in 1999 by STRCT (Ozaner, 2004). STRCT continued to support activities within the scope of nature education and science schools with an increasing rate in the following years.

The aim of this study was to examine how the "Tree Science School for Preschool Students Project", which was based on environmental responsibility awareness from a young age and was supported for the second time in the 2017-2018 call period of TUBITAK 4004 Nature Education and Science Schools, affects preschool teachers' and preschool students' tree recognition levels. Answers to the following research questions were requested for the purpose of the study:

1. According to the outputs of the project, which is applied based on inquiry in nature, is it effective on the tree recognition levels of the preschool teachers participating in the project?
    a. Do the tree recognition scores of the preschool teachers participating in the project show a significant difference according to their place of birth and growth, their answers about the most important benefit of trees, and whether they prefer playing games on a tablet/mobile phone rather than spending time in nature?
    b. What are the preschool teachers' opinions on the knowledge they learned about tree recognition and the activities they want to implement as a result of participating in the project?
2. Are the activities conducted in the project effectively in the preschool children participating in the project's tree recognition, according to the project's outputs based on inquiry in nature?

METHOD/MATERIALS

Research Model

The exploratory design of mixed research method studies was applied in this research to assess the impact of the "Tree Science School for Preschool Students" Project on preschool teachers' and preschool children's recognition levels. Mixed method studies combine quantitative and qualitative data collecting, analysis, and integration to ensure that the data collected by different methods complement each other and that the study results obtained in order to conduct in-depth analysis are stronger (Cresswell and Plano-Clark, 2007). The explanatory design is divided into two stages. In other words, the quantitative part of the study is completed first, followed by the qualitative part of the research based on the quantitative results. According to Cresswell and Clark (2011), this design consists of two sub-patterns. The tool development model is the first stage of the exploratory design, and it determines the main variables, themes, and dimensions of data collecting tools (such as surveys, scales, and inventories) developed using qualitative research. Potential variables and themes are revealed using an inductive approach using qualitative methods such as interviews, observation, and document analysis in the tool development model, and the results are examined by

constructing a quantitative data collection tool based on these variables and themes. The other is the taxonomy development model, where qualitative concepts, models, or processes are tested using qualitative methods (such as surveys and experiments) in order to reveal the key concepts, propositions, and processes in areas where the relevant literature is insufficient. In this model, the propositions that emerge in the qualitative stage are tested for the quantitative stage.

In the research, one group pretest-posttest weak experimental model was used as a quantitative research method. According to Karasar (2015:292), the measurements of the dependent variable of the subjects, who are a single group in this design, are obtained by using the same data collection tool as pre-test before the experimental procedure and post-test after the experimental procedure. Accordingly, the Utopia Given Tree Recognition Test (UGTRT) was applied to the teachers who formed the group before the experimental procedures were started and after the experimental procedures were completed.

A qualitative research method, a case study, was used in the study, which is one of the most commonly used research methods in the field of education. The most important feature of this research method is that the situation studied is chosen because of the person's or community's unique characteristics and is addressed in its own context. In this context, the purpose of a case study is to reveal the attitudes or behaviors of the participants chosen as the research's study group in order to examine a unique person, community, or event and to explain these characteristics or behaviors in a systematic manner (Johnson & Christensen, 2004).

Study Group

Criterion sampling, one of the purposive sampling methods, was used to determine the study group. This sampling method's basic concept is to investigate all situations that meet a predetermined set of criteria (Yıldırım & Şimşek, 2018). The following is a list of criteria that were determined as part of the project's scope:

- To work in preschool education institutions affiliated to the Ministry of Education in Ankara Etimesgut district of preschool teachers participating in the project.

- To go to preschool education institutions affiliated to the Ministry of Education in Ankara Etimesgut district of preschool children participating in the project.

- Voluntary and willingness of teachers and parents of preschool children.

The preschool teachers who made up the research's study group were chosen using the Google Questionnaire Form, with the assistance of Ankara Etimesgut district Ministry of Education, which is one of the project's partners, by explaining the participant selection procedure in detail and ensuring equal opportunity. Preschool children were chosen from among those whose parents agreed to participate.

According to the explanations given above, the study group of the research consisted of 30 preschool teachers and 120 preschool children. Preschool teachers who constituted the study group of the research were stated as T1, T2,…, T30, and preschool children as C1, C2,…, C120.

Data Collection Tools

The data collection tools of the research were the Utopia Given Tree Recognition Test (UGTRT) for preschool teachers, an interview form consisting of two semi-structured open-ended questions, and a drawing and telling technique for preschool children. Data collection tools used for preschool teachers are given below:

Utopia Given Tree Recognition Test (UGTRT): Personal information was collected in the first part of the test, and 22 trees (Thuja, Juniper, Boxwood, Silverberry, Calabrian Pine, Black locust, Birch, Oak, Scotch Pine, Cypress, Maple, Tatar Maple, Whitewood, Redbud, Willow, Hornbeam, Alder, Spruce, Cedar, Larch, Fir, and Linden) were collected in the second part. The test trees were developed with the help of specialists in the field. In the developed test, there were four photographs of each tree, and these photographs consisted of photographs of the tree from afar, where the leaf, trunk, and, if any, fruit can be seen clearly.

Interview Form: It comprises two semi-structured open-ended questions for preschool teachers to evaluate the project's outputs. The following are the questions:

Did you gain practical knowledge from the project? If your answer is yes, could you briefly describe your achievements?

How do you intend to carry out which project activities? Please clarify.

The following are data collection tools for preschool children:

Drawing and Telling Techniques: The technique of drawing and telling pictures is meaningful in that after the activities, children draw pictures about their experiences in the activity, both conceptualizing what they have learned and expressing their experiences in a different way (Önder, 2001). With this data collection tool, it has been attempted to reveal how children perceive their efforts to learn the language of nature and trees.

Application of the Project and Collection of Data

The Utopia Art Science and Game Center, which is rich in tree diversity, is located in the Yazıbeyli District of KahramanKazan District of Ankara. Yazıbeyli is a place rich in biodiversity, which is why the Utopia Science and Art Center was chosen as the project implementation area. Many tree species can be found in the application area, including juniper, fir, spruce, red pine, yellow pine,

stone pine, cedar, Arizona cypress, plane tree, willow, white poplar, birch, oak, redbud, horse chestnut, linden, boxwood, maple, mahaleb, oleaster, apple, pear trees, and so on.

The project was carried out in two stages, two days of teacher training with 30 preschool teachers and three days of training with 120 children, 40 of whom were preschool children every day. There were a total of 17 activities carried out within the scope of the project, with 8 for preschool teachers and 9 for preschool children for tree science education. The activities were prepared with the help of field experts and based on active learning principles, with a focus on the project's target group's perceptions of nature and trees.

Table 1 shows the preschool teacher activity program, which consisted of eight activities that were applied to a total of 30 preschool teachers over the course of two days.

Table 1. Activity program for preschool teachers

Activity name	Activity subject
Communication with creative drama	Communication-interaction/recognition - acquaintance
Teachers learn before children	Tree science school activities
The effect of environmental education on child development	The effect of ecology-based nature education on child development
I learn in my environment	Environmental education in the preschool period
I am an environmentalist as I am conscious	Environmental awareness
What I'm curious about the tree?	Environmental awareness
What is a herbarium?	Herbarium
What I learned and realized?	Getting written and verbal feedback from the participants

Table 2 shows the preschool day activity program, which consisted of 9 activities applied to a total of 120 students, 40 of whom are preschool children, on a daily basis.

Table 2. Activity program for preschool children

Activity name	Activity subject
What's in my nature bag?	Presentation of the place and teachers
Mysterious journey	Observation of living/non-living things in nature
Tree detective	Finding the mate of the tree in the picture in the garden
Hug your tree and feel it	Recognizing the characteristics of trees with the sense of touch
Seed-sapling-tree	Tree growth stages
Leaf specialist	Collecting leaves for herbarium
Let the leaves not be left unfinished!..	Leaves
My tiny herbarium	Making herbarium
What did we learn today?	General evaluation

The activities are described in detail in Köseoğlu, Gökbulut, Pehlivanoğlu, and Mercan's (2019) study titled "preschool tree science school activities."

The data collection tools of the project were applied to the preschool teachers in "Activity 8: What I learned and realized" and to the preschool children in "Activity 9: What did we learn today?" and the data were collected.

Criterion sampling, one of the purposive sampling methods, was used to determine the study group. This sampling method's basic concept is to investigate all situations that meet a predetermined.

Analysis of Data

The SPSS 22.0 program was used to analyze the quantitative data collected in the study. Since the results of the Utopia Given Tree Recognition Test (UGTRT) did not have a normal distribution, they were evaluated using the Mann Whitney U Test and the Kruskal Wallis test, both of which are nonparametric tests.

Content analysis with the MAXQDA 2018 Program was used in the analysis of the qualitative data obtained in the research. The purpose of this analysis is to provide the obtained data to reach the concepts and relationships within the scope of the research (Yıldırım & Şimşek, 2018).

The transcripts of the interviews conducted as part of the research were made by using a computer. During the casting, the researcher conveyed the participants' opinions exactly as they were; no additions or corrections were made to the individuals' expressions. The researcher listened to and evaluated the transcripted interviews. After the castings were completed, they were examined by an expert to determine whether any mistakes had occurred. The analysis steps used by Thomas and Hardene were used to conduct the content analysis (2008). These stages are outlined in the following sections.

Coding Findings: At this stage, the findings in the form of direct quotations or basic concepts extracted from primary research were coded by reading them line by line. The second stage can start after all of the findings have been coded.

Developing Descriptive Themes: The codes obtained at this stage were compared according to their similarities and differences and grouped to form a hierarchical tree structure. Each group formed is called a theme. Each theme was formed to cover the definitions and meanings of the grouped codes.

Generation of Analytical Themes: While this phase stays close to the findings of primary studies in the development of themes, new interpretative structures and explanations were produced by going beyond primary studies in the production of analytical themes. To answer research questions that have been put on hold for a while, descriptive themes developed from inductive analysis should be used to go beyond primary studies. As a result of comparing descriptive themes and discussing them with other researchers, more abstract analytical themes have emerged.

FINDINGS

In this part of the research, the findings obtained with the data collection tools and their comments are given.

Findings Regarding Personal Information of Preschool Teachers Participating in the Project

The findings regarding the personal information of 30 preschool teachers participating in the project are given in Table 3.

Table 3. Findings of the personal information of preschool teachers participating in the project

Personal information		Frequency (f)	Percentage (%)
Gender	Female	30	100%
	Male	-	-
Where teachers were born and raised	City	27	93.1%
	Village/town	2	6.9%
Thoughts about the most important benefit of trees	Human life	17	58.6%
	Climate	9	31.0%
Whether or not it's attractive to explore different types of trees by walking around the forest	Yes	29	100%
	No	-	-
Whether or not to play games on a tablet / mobile phone rather than spending time in nature	Yes	3	10.3%
	No	26	89.7%

According to Table 3, 100% (30 people) of the preschool teachers who participated in the project were women. According to the place where the teachers who participated in the project were born and raised, 93.1% (27 people) were cities, and 6.9% (2 people) were villages/towns. According to the teachers' thoughts about the most important benefit of trees, 58.6% (17 people) stated that it was human life, and 31.0% (9 people) stated that climate. According to the situation that whether or not it's attractive to explore different types of trees by walking around the forest, 100% (29 people) yes, and according to the situation that whether they preferred to play games on a tablet/mobile phone rather than spending time in nature, 10.3% (3 people) yes, and 89.7% (26 people) said no.

Findings Regarding the Tree Recognition Levels of the Preschool Teachers who Participated in the Project

The findings of the tree recognition scores obtained by the preschool teachers who participated in the project from the UGTR Test are given in Table 4.

Table 4. Findings of the tree recognition scores of the preschool teachers who participated in the project from the UGTR Test

Tree names	Those who recognize trees		Those who don't recognize trees	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1. Thuga	-	-	22	73.13%
2. Juniper	4	13.33%	16	53.33%
3. Boxwood	23	76.16%	1	3.33%
4. Silverberry	27	90%	1	3.33%
5. Calabrian pine	6	20%	17	56.66%
6. Black locust	24	80%	4	13.33%
7. Birch	6	20%	15	50%
8. Oak	24	80%	4	13.33%
9. Scotch pine	9	30%	21	70%
10. Cypress	16	53.33%	9	30%
11. Maple	11	36.66%	5	16.66%
12. Tatar Maple	12	40%	7	23.33%
13. Whitewood	10	33.33%	5	16.66%
14. Redbud	19	63.33%	-	-
15. Willow	27	90%	1	3.33%
16. Hornbeam	22	73.33%	2	6.66%

17. Alder	12	40%	7	23.33%
18. Spruce	3	10%	13	43.33%
19. Cedar	8	26.66%	12	40%
20. Larch	4	13.33%	9	30%
21. Fir	16	53.33%	9	30%
22. Linden	23	76.16%	3	10%

According to Table 4, according to the tree recognition scores of the preschool teachers who participated in the project from the UVAT Test, the trees most recognized by the teachers were; 90% (27 people) silverberry and willow, 80% (24 people) locust, and oak trees, and 76.16% (23 people) boxwood and linden trees; the least known trees were; 73.13% (22 people) are thuja, 70% (21 people) Scotch pine and 56.66% (17 people) were Calabrian pine.

The findings of the pre-test and post-test tree recognition scores of the preschool teachers who participated in the project are given in Table 5.

Table 5. Findings of the pre-test and post-test tree recognition scores of the preschool teachers who participated in the project from the UGTR Test

Post-test - pre-test	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	25	13.00	325.00	-4.390	0.000
Equal	2				

The Wilcoxon Signed Ranks Test was used to determine the findings of the pre-test and post-test tree recognition scores of the preschool teachers who participated in the project, as shown in Table 5. According to the findings, there was a significant difference between the pretest and posttest tree recognition scores of the teachers who took part in the UGTR Test ($p < 0.05$). According to this result, it can be said that project training has a positive effect on tree recognition levels.

Table 6 shows the results of the pre-test and post-test tree recognition scores of each tree included in the UGTR Test of the preschool teachers who took part in the project.

Table 6. Findings of the pre-test and post-test tree recognition scores of each tree in the UGTR Test of the preschool teachers participating in the project

Thuja	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	0	0.00	0.00	0.000	1.00
Equal	16				
Juniper	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	0	1.00	1.00	-1.000	0.31
Equal	12				
Boxwood	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	4	2.50	10.00	-2.000	0.05
Equal	1				
Silverberry	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	3	2.00	6.00	-1.732	0.08
Equal	21				
Calabrian pine	n	Order average	Order sum	Z	p
Negative order	11	6.00	66.00		
Positive order	0	0.00	0.00	-3.317	0.00
Equal	11				
Locust	n	Order average	Order sum	Z	p
Negative order	1	2.50	2.50		
Positive order	3	2.50	7.50	-1.000	0.32
Equal	1				
Boxwood	n	Order average	Order sum	Z	p
Negative order	1	0.00	0.00		
Positive order	3	2.50	10.00	-2.000	0.05
Equal	14				
Birch	n	Order average	Order sum	Z	p
Negative order	1	2.50	2.50	-1.000	0.32
Positive order	3	2.50	7.50		

Equal	10				
Oak	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	7	4.00	28.00	-2.646	0.05
Equal	16				
Scotch pine	n	Order average	Order sum	Z	p
Negative order	11	6.50	71.50		
Positive order	1	6.50	6.50	-2.887	0.00
Equal	10				
Cypress	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	12	6.50	78.00	-3.464	0.00
Equal	5				
Maple	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	7	4.00	28.00	-2.646	0.01
Equal	3				
Tatar maple	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	2	1.50	3.00	-1.414	0.16
Equal	1				
Whitewood	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	5	3.00	15.00	-2.236	0.03
Equal	0				
Redbud	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	9	5.00	45.00	-3.000	0.00
Equal	1				
Willow	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	2	1.50	3.00	-1.414	0.16
Equal	23				
Hornbeam	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	4	2.50	10.00	-2.000	0.05
Equal	1				
Alder	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	2	1.50	3.00	-1.414	0.16
Equal	2				
Spruce	n	Order average	Order sum	Z	p
Negative order	2	2.00	4.00		
Positive order	1	2.00	2.00	-0.577	0.56
Equal	6				
Cedar	n	Order average	Order sum	Z	p
Negative order	0	0.00	0.00		
Positive order	6	3.50	21.00	-2.449	0.01
Equal	8				
Larch	n	Order average	Order sum	Z	p
Negative order	4	3.50	14.00		
Positive order	2	3.50	7.00	-0.816	0.41
Equal	3				
Fir	n	Order average	Order sum	Z	p
Negative order	1	3.50	3.50		
Positive order	5	3.50	17.50	-1.663	0.10
Equal	8				
Linden	n	Order average	Order sum	Z	p

Negative order	0	0.00	0.00		
Positive order	3	2.00	6.00	-1,732	0.08
Equal	12				

According to Table 6, there was a significant difference in the pre-test and post-test tree recognition scores of each tree in the UGTR Test of the preschool teachers who participated in the project for Calabrian pine, oak, yellow pine, cypress, maple, whitewood, redbud, and cedar trees. Thuja, juniper, boxwood, silverberry, locust, birch, Tatar maple, willow, hornbeam, alder, spruce, larch, fir, and linden trees showed no significant differences.

The findings of the tree recognition scores obtained by the preschool teachers who participated in the project from the UGTR Test are given in Table 7.

Table 7. Findings of the tree recognition scores of the preschool teachers who participated in the project from the UGTR Test

	N	Minimum	Maximum	Average	Standard deviation
Tree recognition score	28	3	18	3	3.06

Table 7 shows that among the 22 trees in the TUVAT Test, the preschool teachers who participated in the project knew 18 trees the most and 3 trees the least. Furthermore, preschool teachers' average tree recognition score was found to be 3.

The findings of the tree recognition levels of the preschool teachers participating in the project are given in Table 8.

Table 8. Findings of the tree recognition levels of preschool teachers participating in the project

Tree recognition level	Frequency (f)	Percentage (%)
Very little knowers	1	3.4%
Little knowers	6	20.7%
Medium knowers	19	65.5%
Much knowers	2	6.9%

According to Table 8, the findings of the tree recognition levels of the preschool teachers who participated in the project, 3.4% (1 person) was very little knower, 20.7% (6 people) were little knower, 65.5% (19 people) were medium knower, and 6.9% (2 people) were those who know much.

The Mann-Whitney-U test was conducted to find whether there was a significant difference in the tree recognition scores of the preschool teachers who participated in the project according to the place where they were born and grew up. The obtained results are given in Table 9.

Table 9. Findings of the tree recognition scores of the preschool teachers who participated in the project regarding the place where they were born and raised

	Where they were born and raised	N	Order average	U	p
Tree recognition score	City	2	19	17	0.417

Table 9 shows that the tree recognition scores of the preschool teachers who participated in the project were p>0.05 (p=0.417) regardless of where they were born and raised, indicating that there was no significant difference.

The Mann-Whitney-U test was conducted to determine whether there was a significant difference in the tree recognition scores of the preschool teachers participating in the project, according to their answers about the most important benefit of trees. The obtained results are given in Table 10.

Table 10. Findings of the answers given by the preschool teachers participating in the project about the most important benefit of trees by their tree recognition scores

	Answers about the most important benefit of trees	N	Order average	U	p
Tree recognition score	Human life	17	12.03	51.50	0.329
	Climate	8	15.06		

According to the answers given about the most important benefit of trees, there was no significant difference as shown in Table 10 since the p-value for tree recognition scores of the preschool teachers who participated in the project were p>0.05 (p=0.329).

The Mann-Whitney-U test was conducted to determine whether there was a significant difference in the tree recognition scores of the preschool teachers who participated in the project, according to whether they prefered playing games on a tablet/mobile phone rather than spending time in nature. The obtained results are given in Table 11.

Table 11. Findings of the tree recognition scores of the preschool teachers participating in the project on whether they prefer playing games on a tablet/mobile phone rather than spending time in nature

	Whether or not they prefer to play games on a tablet/mobile phone rather than spending time in nature	N	Order Average	U	p
Tree recognition score	Yes	3	13.00	33.00	0.735
	No	25	14.68		

There was no significant difference in tree recognition scores of the preschool teachers who participated in the project, as p>0.05 (p=0.735), whether they preferred playing games on a tablet/mobile phone or spending time in nature, as shown in Table 11.

Findings on the Tree Recognition Knowledge Gained by Preschool Teachers Who Participated in the Project and Their Opinions on the Activities They Want to Apply

The opinions of the preschool teachers who participated in the project on the knowledge they gained about tree recognition were evaluated in 4 different categories in terms of function and concept when considered as a whole. These were learning skills (16), teacher professional development (14), affective skills (1), and attractivity (13). Some examples of preschool teachers' answers to the themes of these categories are given below:

Learning Skills (16): Permanent learning (2), Learning by doing (3), Facilitating learning (3), Learning with cooperation (2), Linking activities (6).

"Yes, I think we won. I had the opportunity to see the trees closely and examine them on site. The process of learning became more permanent. When our teachers made us find the name first, the tree names became more permanent. When the drama was used in other narrative activities as well, it was more effective. I believe I gained a lot of knowledge." **(T11)**

"Yes. I will be able to study in nature by living and doing. I noticed the difference between looking and seeing. My awareness has increased." (T18)

Teacher Professional Development (14): Recognizing trees (8), Classroom management (3), Increasing the repertoire of activities (3).

"Yes. Our teacher, Ozlem, taught me about calm classroom management, which means that classroom management can be done with both verbal and nonverbal communication. In addition, my teacher Gelengül taught me that excessive consumption should be avoided and that everything around us is an element of an activity. Our teacher, Tülay teaches how nature education activities can be carried out with children.We made a herbarium, but the paper needed to be replaced to keep the leaves from falling apart. The purpose I see around me is to learn the names of many trees that I am unfamiliar with." **(T17)**

"Yes. I will do it inside and outside the classroom. My repertoire of events has expanded." **(T2)**

Affective Skills (1): Love of nature (1).

"Yes. It has contributed to our learning of tree species and their properties in nature, in scientific studies with trees. As a preschool teacher, I think that it supports our young age group students with their love of nature, love of trees, and how we can do activities with their properties." **(T28)**

Attractivity (13): The idea of conducting the project's activities (6), Attractivity in trees and nature (1), and active use of cognitive process skills in nature education (3).

"Yes. I think I have learned the ability to actively apply cognitive process skills in nature education. I learned academic knowledge that I can apply to my work in nature education. I also broadened my knowledge by participating in numerous warm-up games." **(T5)**

"Yes. I think I will make the application more efficient by starting with arousing curiosity and phasing out the preparation phase, the implementation phase, and beyond." **(T7)**

The opinions of the preschool teachers who participated in the project on the activities they wanted to implement for tree recognition are given in Figure 1.
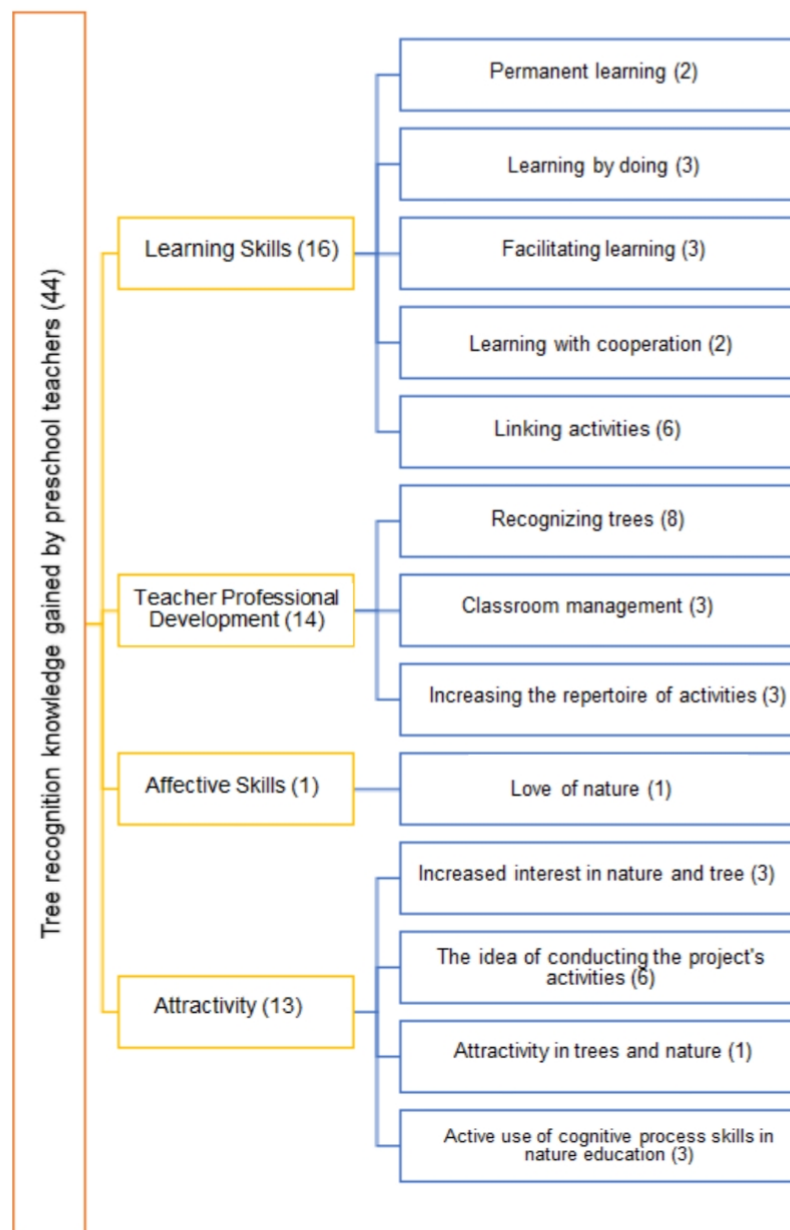
Figure 1. Opinions of preschool teachers who participated in the project on the activities they want to implement for tree recognition

When the views of the preschool teachers who participated in the project on the activities they wanted to implement for tree recognition were reviewed in terms of 6 different categories in terms of function and concept, as shown in Figure 2, they were classified into 6 different categories. These were; Leaf Expert Activity (2), Don't Let Leaves Unfinished Activity (5), Creative Drama Communication Activity (8), My Little Herbarium Activity (13), Tree Detective Activity (8), and Hug Your Tree and Feel Activity (1). Some examples of preschool teachers' answers to the themes of these categories are given below:

Leaf Expert Activity (2): Leaf collection (1), Leaf completion (1).

Don't Let Leaves Unfinished Activity (5): Grouping leaves (4), Completing half of the leaves (1).

Communication Activity with Creative Drama (8): Love of nature (1), Warm-up exercises (3), Recognition and Dating Activities (2), Scout applause, rain applause (2).

My Little Herbarium Activity (13): Applying Hebarium (13)

Hug Your Tree and Feel Activity (1): Teaching concepts in nature (teaching numbers with leaves) (1).

Findings Regarding the Efficiency of the Activities Implemented in the Project in Tree Recognition of Preschool Children Participating in the Project

Figure 2 shows the results of the project's effectiveness based on the technique of drawing and explaining the activities used in the project in the recognition of trees by preschool children who participated in the project.
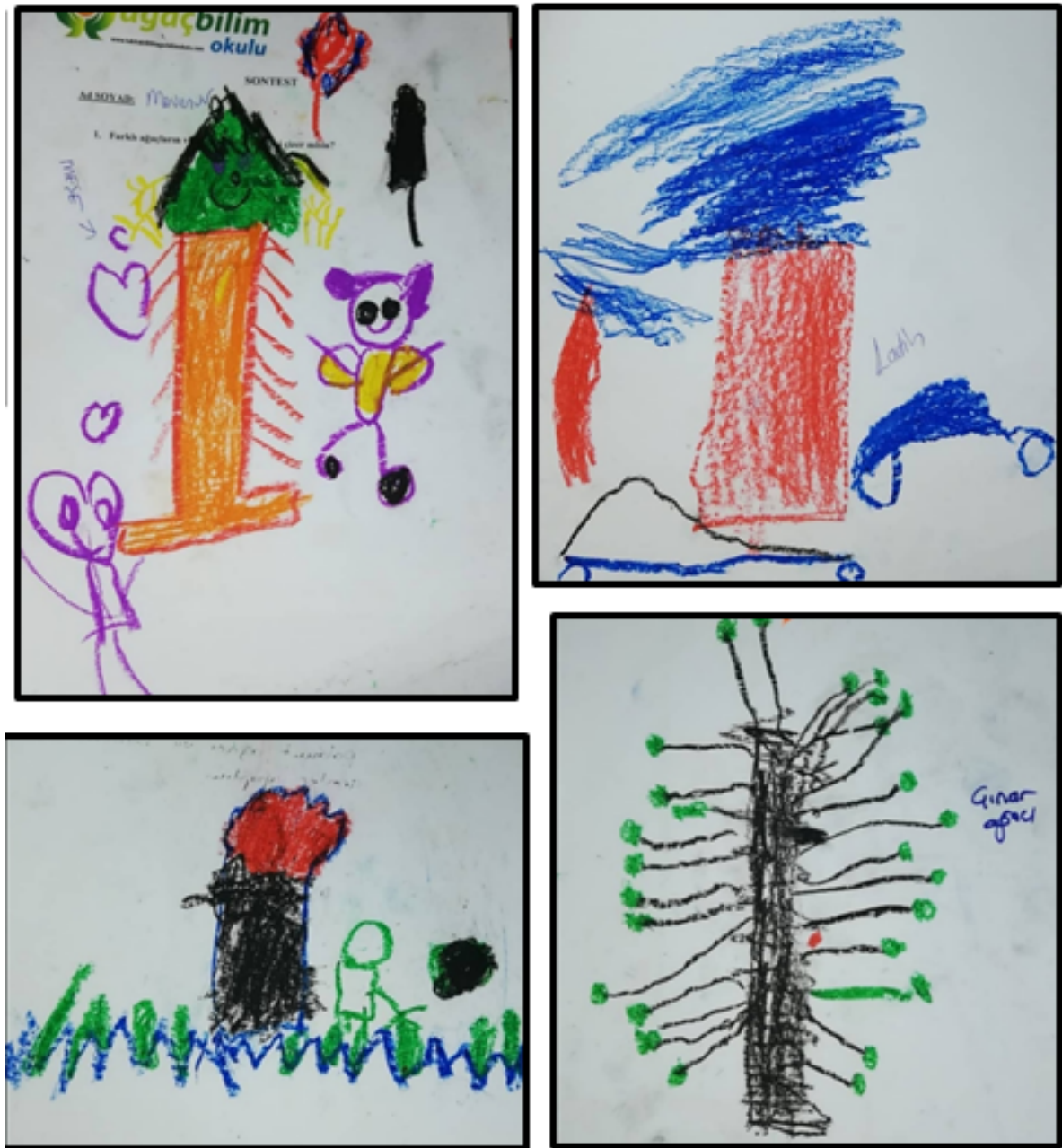
Figure 2. Findings on the project's effectiveness based on the technique of drawing and explaining the project's activities in tree recognition by preschool children who participated in the project

When the preschool children who participated in the project's activities were evaluated, it was found that they drew trees (oak, willow) and tree leaf shapes (poplar, gallnut) in the pictures they drew. Furthermore, it was assumed that the children were having fun while working on the project, as they drew trees, smiling children, and hearts. The findings were based on the children's descriptions of the pictures they drew, which showed that their awareness of the trees around them expanded, that there were living beings other than humans and that they should not harm them.

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

It was conducted to evaluate the effectiveness of the "Tree Science School for Preschool Students Project", which was supported for the second time in the 2017-2018 call period by STRCT 4004 Nature Education and Science Schools, based on

environmental responsibility awareness from an early age, in determining the level of recognition of trees by preschool teachers and preschool children. The results obtained are discussed in the context of studies conducted in the relevant literature and are given below:

According to the results of the pre-test and post-test tree recognition scores of each tree in the "Utopia Given Tree Recognition Test (UGTRT)" of the preschool teachers participating in the project for the purpose of the research; it was determined that there was a significant difference between the pre-test and post-test scores obtained from calabrian pine, oak, scotch pine, cypress, maple, poplar, redbud, and cedar; while there was no significant difference between pre-test and post-test scores obtained from thuja, juniper, boxwood, silverberry, black locust, birch, Tatar maple, willow, hornbeam, alder, larch, fir and linden trees. In this context, it is reasonable to conclude that the project's activities had a considerable favorable impact on preschool teachers' tree recognition levels. In the research conducted within the scope of the project "Arboriology Education for 9th Grade High School Students", (Köseoğlu, Mercan, and Pehlivanoğlu, 2020), it was determined that the activities carried out in the project had a positive effect on the tree recognition levels of high school students.

It was found that the tree recognition scores of the preschool teachers who took part in the study did not differ significantly based on where they were born and raised, the answers they gave about the most important benefit of trees, or whether they preferred to spend time in nature or play games on their tablet/mobile phone. In the study where teacher candidates studying at Hacettepe and Gazi Universities, Biology Education Department examined the level of recognition of trees in their close environment, the fact that no significant difference was found between the tree recognition scores of teacher candidates and the place where they were born and grew up (village/city) supports the research results. However, in the research conducted by Civelek (2012), Lückmann and Menzel (2013) with different research groups, the level of recognizing the plants and trees in their immediate surroundings of the individuals living in the villages compared to those in the city centers. In the study of Türküm (1998) and Şahin (2018), where they evaluated the awareness of biodiversity in the immediate environment, the fact that those who have animals in their homes or gardens for a part of their lives have higher animal recognition levels than those who do not, doesn't support the findings of the research.

When the opinions of the preschool teachers who took part in the project on the knowledge they gained about tree recognition were summed up, they were categorized into four separate groups based on function and concept; there are learning skills (16), teacher professional development (14), affective skills (1), and attractivity (13). When considering the opinions of the preschool teachers who participated in the project on the activities they intend to implement for tree recognition as a whole, they were categorized into six different categories based on function and concept. These are; Leaf Expert Activity (2), Don't Let Leaves Unfinished Activity (5), Creative Drama Communication Activity (8), My Little Herbarium Activity (13), Tree Detective Activity (8), and Hug Your Tree and Feel Activity (1). Teachers are guides who bring people to peace, happiness, goodness, unity, reconciliation, solidarity, hope, and trust (İnanlı, 2003). As a result, as a role model, the teacher has an additional responsibility to the society to which he belongs. These obligations are crucial in environmental education, as well as in all other fields of education. At this point, the teacher should be an example by attracting the interest and curiosity of the child with his/her positive attitudes towards the environment, environmentally friendly behaviors, and mentality. In this context, it is seen that the knowledge gained by the preschool teachers participating in the project on tree recognition matches the desired results of the project discussed in the study.

When the preschool children who took part in the project had their drawings evaluated, it was found that they drew trees (oak, willow) and tree leaf forms (poplar, acorn) in the activities in the project application. Furthermore, it was assumed that the children were having fun while working on the project, as they drew trees, smiling children, and hearts. The findings were based on the children's descriptions of the pictures they drew, which showed that their awareness of the trees around them expanded, that there were living beings other than humans, and that they should not harm them. Children wanted to be encouraged to think about the products they have made, to understand how to solve issues, the feeling of discovery, and to live. It is possible to learn skills such as questioning, analytical thinking, comparison, expressing opinions, interpretation, concept, and understanding as a result of the activities carried out with the picture sketching and narrative technique. The achievements thus far are discussed (Artut, 2017). In the research, which was developed by Ogelman, Önder, Durkan, and Erol (2015) and carried out within the scope of the TUBITAK project, aiming to introduce children to the soil and concepts related to soil, 5-6-year-old children from families with lower socioeconomic status and their families were included in the study. The significant improvement in children's knowledge of soil as a result of the education supports the research findings. Çabuk (2003) used a picture measurement tool designed by the researcher to interview 200 preschool children between the ages of three and six who attended ten preschool education institutions in order to determine their environmental awareness levels. According to the findings of the study, children's awareness levels rise as they become older. For example, six-year-olds have a higher level of awareness than three-year-olds. In this case, it can be claimed that more detailed awareness studies should be carried out as the children get older by giving environmental education appropriate to their age (Hazır-Bıkmaz & Akben, 2007). In this case, it is of great importance to carry out practices aimed at developing children's knowledge of environmental issues in real-life environments in order for children to love nature, respect nature, and develop a sense of responsibility for nature.

The teacher's role in the development of scientific thinking in children, as well as awareness and positive attitudes toward the environment, is critical during the preschool years. The richness of the opportunities offered, the positive attitudes and behaviors of teachers during environmental activities, and the different methods they use lead children to research, examine, and question,

which are the basis of scientific thinking. Preschool teachers should offer different options in environmental activities and allow children to think and discuss science and nature events (Bowmen-Barba, 1998). Since the mental connections that children make as they "explore" with all of their senses will determine their lifelong learning. It is the basis of early childhood learning to provide opportunities for all children to grow and develop, to attract a sense of curiosity about nature, to be at peace with nature and every part of nature, and to guide them to retain their passion for discovery throughout their life (Kahriman-Pamuk, 2019). In this context, it is expected that the research findings will be useful in future activities involving tree education, which plays an essential role in preschool children's environmental education.

According to the results of the research, suggestions for future research and applications in the field are presented below:

- The results of the research are limited to preschool teachers working in Ankara Province Etimesgut District and preschool children attending preschool education institutions. For this reason, it is advised to conduct research on tree education with different sampling methods and at different grade levels in terms of the generalizability of the results.

- It is thought that the activities developed according to active learning principles regarding the perception of nature and trees within the scope of the project contribute to the literature by considering the opinions of field specialists. Furthermore, it is believed that incorporating tree and nature activities into preschool activities is vital for developing environmental responsibility in children at a young age. Therefore, different activities linked to tree recognition and education can be developed and implemented in future studies.

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

Researchers' contribution rate

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| Research Article / Araştırma Makalesi|

Analysis of the Implementation Process for Socioscientific Issues In the Context of the Learning Experience

Sosyobilimsel Konulara İlişkin Uygulama Sürecinin Öğrenen Deneyimleri Açısından İncelenmesi[1]

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Abstract

Purpose: This research was carried out to determine the experiences and views of candidate science teachers (CSTs) participating in the applications dealing with socioscientific issues.

Design/Methodology/Approach: Phenomenological research design, a qualitative research method, was used in line with the purpose of the study. The study group consisted of third-year teacher candidates studying at the science department of a state university. Data were collected through student journals. Students who participated in the application were asked to write journals on a weekly basis. The goal was to evaluate the feelings and thoughts about socioscientific issues of the candidate teachers about the process through the journals. Data obtained from student journals were analyzed using the content analysis method.

Findings: Some of the research results can be listed as follows: Candidate teachers stated that they did not participate in practices based on socioscientific issues before, and therefore, they stated that they had difficulties in subjects such as participating in discussions, conducting discussions, and making claims, especially in the first few weeks. With subsequent applications, they indicated that they were able to actively participate in the process. Further, it was determined that research on socioscientific issues and having discussions during the lesson was considered entertaining and interesting

Highlights: Considering the results of this research, practices related to socioscientific issues can be used in situations where individuals want to participate actively in discussions and increase their motivation for discussions.

Öz

Çalışmanın amacı: Bu araştırma sosyobilimsel konuların temele alındığı uygulamalara katılan fen bilgisi öğretmen adayları (FBÖA)'nın yaşadıkları deneyimlerinin ve bu konulara ilişkin görüşlerinin belirlenmesi amacıyla gerçekleştirilmiştir

Materyal ve Yöntem: Araştırmada oluşturulan amaç doğrultusunda nitel araştırma yöntemlerinden olgubilim araştırma deseni kullanılmıştır. Çalışma grubunu bir devlet üniversitesinin fen bilgisi öğretmenliği bölümünde öğrenim gören 3.sınıf öğretmen adayları oluşturmaktadır. Veriler öğrenci günlükleri aracılığıyla toplamıştır. Uygulamaya katılan öğrencilerden haftalık olarak günlük yazmaları istenmiştir. Günlükler aracılığıyla öğretmen adaylarının sosyobilimsel konulara ilişkin duygu ve düşüncelerini neler olduğunun belirlenmesi amaçlanmıştır. Öğrenci günlüklerinden elde edilen veriler içerik analizi yöntemi kullanılarak analiz edilmiştir.

Bulgular: Araştırma sonuçlardan bazılarını şu şekilde sıralamak mümkündür: öğretmen adayları daha önceden sosyobilimsel konulara dayalı uygulamalara katılmadıklarını bu nedenle özellikle ilk haftalarda tartışmalara katılma, tartışmaları yürütme ve iddia oluşturma gibi konularda zorluklar yaşadıklarını ifade etmişlerdir. İlerleyen uygulamalarla birlikte ise, sürece aktif olarak katılabildiklerini belirtmişlerdir. Ayrıca, sosyobilimsel konulara ilişkin araştırma yapmanın ve ders esnasında tartışmalar gerçekleştirmenin kendilerine eğlenceli, ilgi çekici geldiği belirlenmiştir.

Önemli Vurgular: Bu araştırma sonuçları dikkate alındığında sosyobilimsel konulara ilişkin uygulamalar bireylerin tartışmalara aktif katılımı ve tartışmalara yönelik motivasyon arttırması istenilen durumlarda kullanılabilecek bir bağlamdır.

INTRODUCTION

The 21st century has been a period wherein developments in many areas, such as business, education, and daily life, have rapidly been introduced, making a difference (Türksever, Karışan Korucu & Yenmez Türkoğlu, 2020). Keeping up with the developing age has become important for all societies. One of the ways in which societies can adapt to innovations in the scientific field is by raising scientifically literate individuals who can comprehend scientific developments and carry out research in this context (Sicimoğlu, 2020). Socioscientific Issues (SSI), which are considered one of the new approaches in science education, provide a meaningful and strong framework for the development of students' and teachers' scientific literacy (Presley et al., 2013; Macalalag, Johnson & Lai, 2020).

Especially in recent years, the participation of individuals in discussions based on the SSI and making decisions on these issues has been a situation that has occupied the agenda of many countries around the world (Erkol & Gül, 2020). Sadler and Zeidler (2004b) have defined SSI, which has become an important context for science education and has seen an increase in the number of studies on it, as open-ended, open to discussions, and solution-pending issues that can be assessed from multiple perspectives. From a more detailed perspective, Ratcliffe and Grace (2003, p. 39) expressed SSI as a subject with local, national, and global dimensions from a social and political point of view, based on science, often in the form of scientific knowledge, involving making choices at a personal or social level, covering scientific evidence-based subjects, and have value and moral reasoning that conflict with each other.

Based on the definitions and characteristics made when examining the relevant literature, we can associate SSI with 10 titles: Scientific developments, social dilemmas, informal and socioscientific reasoning, argumentation, scientific modeling, nature of science, risk analysis, character education and identity, moral-cultural values and media (Topçu, 2017). Considering the content of the SSI, it is possible to say that these issues directly or indirectly affect the life of society in many respects (Türksever et al., 2020). Therefore, decisions on the SSI are of great importance for individuals, societies, and even the future of the world (Sakmen, Genç & Arsalan; 2020). Many institutions, organizations, and projects that carry out Science Education Studies in different countries that take into account all these situations suggest the need to discuss and analyze SSI by giving it a place in school programs (Presley et al., 2013; Durmaz & Seçkin Karaca, 2020). It is important to equip individuals in schools with the knowledge, skills, and tendency to understand these socioscientifically expressed issues and make evidence-based decisions (Dawson & Carson, 2020).

Another reason for the inclusion of the SSI in science education is the rich learning outputs that it will create when properly configured. When the relevant literature was examined, it was seen that SSI contributes to the development of different fields such as field knowledge of students (Yıldırım & Bakırcı, 2020; Özcan & Kaptan, 2020), argumentation skills (Sicimoğlu, 2020,) understanding of the nature of science (Khishfe, 2020). In addition, the SSI also supports the development of critical thinking skills of individuals (Gürbüzkol & Bakırcı, 2020). Apart from this, the increase in the level of knowledge related to the SSI has also positively affected the multiple reasoning forms of individuals (Durmaz & Seçkin Karaca, 2020). Also, SSI provides students with opportunities to learn what it means to be a democratic citizen by allowing the rights of various communities and individuals to be taken into account while accepting how scientific decisions affect various groups (Kinskey & Zeidler, 2020).

Based on all this information, it can be said that positive developments have emerged in classes where SSI is addressed and discussed, that is, used as a context in the learning environment. For this reason, the existence of individuals who can make assessments on these issues from different angles and knowing SSI is considered necessary for today's societies. To improve and enrich students' experiences and activities, their experiences and behaviors in the learning environments related to the SSI play an important role. Also, it is very important for candidate teachers who experience a learning environment based on SSI to experience these issues and their views on those experiences. Therefore, the main objective of this study was to reveal the experience of science teacher candidates towards the SSI and to reveal the relationship between those experiences.

METHOD

The research aimed to determine the opinions of the teacher candidates participating in the practices on which SSI is based. For this purpose, the research was designed as a case study. The study group consisted of 25 Science Department fourth-year students who took the course on the Nature of Science and the History of Science at a State University in Turkey. While determining the study group of the research, an easily accessible sampling method, which is one of the purposeful sampling methods, was used. An easily accessible sampling method gives speed and practicality to research. Because in this method, the researcher selects the situation that is close and easy to access (Yıldırım ve Şimşek, 2016; p. 123).

Data Collection Tool

Student journals were used to determine the opinions of prospective teachers regarding the practices on which the SSI is based. During the 7-week process in which the applications were carried out, students were asked to write a journal. In preparing the questions in the student journals, questions were included to allow one to identify a multifaceted and holistic situation related to the application process. In this context, questions about what they think about the discussions and what kind of changes these discussions have brought about them were included.

Preparation Process of Scenarios

After examining the researches in the literature (Demiral, 2014; Evren Yapıcıoğlu, 2016; Jho, Yoon & Kim, 2014; Kutluca, 2016; Sadler & Zeidler, 2004a; Tekbiyik, 2015), it was decided to conduct discussions based on SSI over scenarios. In the next stage, it was decided on which subjects the scenarios would be developed. At the decision-making point, the researcher paid attention to the fact that the chosen subject is interesting, causes a dilemma, can be discussed, has an up-to-date and ethical or moral aspect. The fact that the subjects included in the scope of the research have been accepted as SSI in the relevant literature has been another important factor. Then, scenarios were prepared by examining the studies containing scenario examples (Demiral, 2014; Evren Yapıcıoğlu, 2016; Jho et al., 2014; Kutluca, 2016; Sadler & Zeidler, 2004a; Tekbiyik, 2015), scientific journals (TÜBİTAK), news and scientific journals websites. To verify whether the scenarios prepared by the researcher were sufficient in terms of subject context and language and expression, three different experts who completed their doctorate in the field of SSI, and a language expert were consulted. After the feedback from the experts, the scenarios were finalized.

Implementation

The research was carried out in an environment where argumentation applications based on SSI were taken as the basis within the scope of the Nature of Science and History of Science courses. The research was planned for seven weeks. To show candidate teachers how the process will work, the preparatory stage "a mysterious event" activity was carried out with the whole class. First, the script text was distributed to all teacher candidates individually, and then the teacher candidates were asked to form groups of 4-5 people and put forward a claim by adhering to the text regarding the death of Mr. Yıldız in the script. Thus, it was tried to ensure that students understand the process and justify the question-claim-evidence triangle solidly. The process of discussions about the SSI, the final form of seven different topics given by the researcher after intensive field research and expert evaluations, started with the distribution. Teacher candidates were asked to read at least 3 articles on the topic to be discussed before coming to the class so that they would not have preliminary information about the topics discussed. Regarding the SSI's added to the scenarios, candidate teachers were asked to answer questions that would enable them to formulate their own claims, justify the claims, and refute the counter-situation arguments, and then they were allowed to participate in small and then large group discussions.

Data Analysis

In the analysis of the data, far beyond simple word counts, content analysis was used, which revealed trends and patterns and is a reliable method of coding as well as classification of data (Stemler, 2000).

Yıldırım & Şimşek (2016, p. 243) stated that content analysis is carried out in four steps. These steps are coding of data, finding themes, organizing codes and themes, defining and interpreting findings. In line with these steps, firstly, the coding of the opinions expressed by the candidate teachers in journals was made. Later, the accuracy of these encodings was reviewed. After making sure of the accuracy of the encodings, the first categories were formed under the main ideas. Finally, it has been switched from the created categories to themes. A second coding was carried out by the researcher sometime after the themes were created. Thus, content analysis reliability was achieved by coding the same text in the same way at different times by the same coder (Bilgin, 2016, p. 16).

Limitations

The results of this research are limited to the scenarios created by the researchers and created for the selected topics and the experiences and observations of the participants.

FINDINGS

Table 1. CST's Opinions on Animal Experiment Activity

What do you think about the lesson held today?	f
Ensuring new knowledge learning	10
Ensuring the ability to defend ideas	5
Endearing discussion	5
Presenting different perspectives	4
Endearing the course	4
Being interesting	3

When opinions on animal experiments activity were examined, about a third of teacher candidates stated that the event helped them learn new knowledge of the subject. At the same time, having an opinion about animal experiments has been another expressed view.

Student-6. "*I think that our class today has added a lot to me and that this course has been very productive for me. Having an opinion on a subject, I did not have an idea about making me happy. Seeing that this lesson contributed to our ability to express and to think positively enabled me to have a positive attitude towards the lesson.*"

Student-14. "*... We tried to explain and impose our ideas. It was a big discussion lesson. It was busy, and everyone defended their opinions.*

When student journals were examined, discussions about animal experiments in the context of the text created by the researcher allowed teacher candidates to learn new information about the subject, defend their ideas, and participate actively in the process.

Table 2. CST's Views on The Change Carried Out by Animal Experiments Activity

What changes did the lesson today make for you?	f
Being conscious	6
Noticing that animal experiments are harmful	5
Noticing that animal experiments are useful	3
Respect different ideas	3
To be able to create strong arguments	2
Understanding that mistakes can happen in science	1

In the context of this question, "*being conscious,*" "*realizing that animal experiments are harmful,*" and" *realizing that animal experiments are useful*" were the most repeated themes. Some of the candidate teachers' views on this situation are as follows:

Student-7 "*Now I am more conscious of animal experiments. There was no change in my thoughts on animal experiments. As long as it is beneficial to humans, it can be continued with the least harm to animals. In some cases, it can be used with alternative methods.*"

Student-3: "*Considering the suffering of animals, I want other methods to be found and animals not to be harmed. *"

Thanks to the discussions about animal experiments, the teacher candidates expressed their consciousness of animal experiments. Some teacher candidates stated that alternative ways should be produced instead of using animals in the studies to be carried out in the field of medicine, and some stated that the experiments on animals should continue within ethical limits for science to progress. The findings regarding the discussions on the hybrid embryo are given below.

Table 3. CST's Opinions on Hybrid Embryo Activity

What do you think about the lesson held today?	f
Ensuring the ability to learn new information	10
The inability to continue the discussion	8
Efficient	5
Being interesting	4
To be able to defend ideas	4
Ensuring meaningful-permanent learning	3
Ensuring empathy	3

The most expressed views by the candidate teachers were learning new information and being unable to continue the discussion. Statements regarding this situation are as follows:

Student-19: " *Some friends confused the lesson today with cloning, and that's why some arguments were inadequate. He wanted an atmosphere of discussion. But it did not happen. Because we didn't respect each other in class. Our goal was to defend the arguments we created and the decisions we reached, but we couldn't make it happen.*"

Student-18: "*The lesson today was about a subject I had never heard of until now. I was surprised when I read the hybrid embryo. I asked myself questions like how this happens and how it happens. I realized that I lacked in some scientific matters.*"

The candidate teachers stated that the activity carried out on the hybrid embryo topic enabled them to learn new information on the subject, while on the other hand, they stated that it created awareness that they did not have sufficient skills regarding discussion skills. Also, the teacher candidates stated that they could not manage the process of discussion about the hybrid embryo well.

Table 4. CST's Views Regarding the Change Carried Out by Hybrid Embryo Activity

What changes did the lesson today make for you?	f
Experiencing a change of mind	8
Being conscious	7
Recognizing different perspectives	3
Being curious	2
Uncertainty	2

When the opinions of the teacher candidates were examined, "being conscious" was a frequently expressed situation. Statements regarding the hybrid embryo are given as follows:

Student-14: *"I thought the hybrid embryo was cloning. Thanks to the discussions we held in this lesson, I learned that they are different methods. At first, I opposed the use of hybrid embryos, but after this lesson, I support the use of this method."*

Student-21: "*It has been a thought-provoking lesson in terms of whether I should approach things emotionally or logically on these types of issues."*

Teacher candidates stated that they had several incorrect information on the subject of the hybrid embryo, but thanks to this activity, they have accurate knowledge about the subject.

Findings of another scenario, "*technology from the future* CRISPR-Cas9", are presented in Tables 5 and 6.

Table 5. CST's Opinions on Technology from the future CRISPR-Cas9 Activity

What do you think about the lesson held today?	f
Ensuring new knowledge learning	16
Being interesting	8
Raising awareness of insufficient information	3
Efficient	2
Changing perspective	2
To be able to think creatively	2
Ability to think versatile	2

The theme "Ensuring the ability to learn new knowledge" was the opinion most frequently expressed by teacher candidates, while "being interesting" was the second most frequently repeated opinion.

Student-7: *"This lesson was related to the CRISPR/Cas9 system. This system was a topic I didn't know about before. That's why I started with more curiosity and excitement. This issue fascinated me. I was very surprised to know how advanced genetic engineering has reached. It also enabled me to have a positive attitude toward the lesson. The course was discussed with the method of discussion, and different aspects related to the topic were discussed. Creative thinking was useful in terms of empathy."*

Student-24: *"In general, I think that our ideas change as we discuss, and the exchange of information is carried out by discussing. Especially I had no idea what we discussed today. Thanks to this lesson, I learned."*

After the activity, the candidate teachers stated that they had information about the CRISPR-Cas9 system, which they did not know about before. Also, it was interesting for candidate teachers to have discussions on a subject they had not been informed about before.

Table 6.Technology from the Future - CST's Opinions Regarding the Change Carried Out by the Crispr Activity

What changes did the lesson today make for you?	f
Willingness to research	4
Being conscious	3

What changes did the lesson today make for you?	f
Being curious	3
Respect different ideas	3
Thinking that science is progressing	2
To be able to support claims with evidence	2

"Willingness to do research," "being conscious," "curiosity," and *"respecting different ideas"* were the most expressed themes by the teacher candidates. Opinions on this situation are as follows:

Student-8: *"I started doing research, thinking that there was such a system and that such systems should be known as a science teacher candidate. I also wondered why scientists feel the need to find such a system."*

Student-5: "*I realized I didn't have enough knowledge of this technology and decided that I should better investigate this issue."*

The discussions of the candidate teachers about CRISPR-Cas9 had a positive effect on their desire to research since they did not have an idea about this issue before. Also, this activity was among the opinions expressed that it enabled them to be aware of the innovations in technology and knowledge, that science is in continuous progress; that is, it was effective in raising awareness about the dynamic structure of science.

Findings regarding the benefit/loss balance GMO effectiveness are presented in Tables 7 and 8.

Table 7. CST's Views on the Benefit / Loss Balance GMO Effectiveness Activity

What do you think about the lesson held today?	f
Ensuring new knowledge learning	10
Performing effective discussions	10
Efficient	4
Entertaining	4
Ensuring empathy	4
Experiencing a change of mind	3
Provide discussion using reference	3

When the opinions of the candidate teachers about the lesson were examined after the lesson on GMO, it was seen that the most expressed theme was "ensuring new knowledge learning" and "having an effective discussion." Some of the opinions on this situation are as follows:

Student-2: *"The discussions we had within the scope of the course were very productive, as it enabled the discussion and information on a problem that has become a global problem."*

Student-19: *"It can be said that the discussions taking place in today's lesson have fully achieved their purpose. Discussions were made about GMOs. Discussions took place over how long it has been in our lives, what the consequences are, and whether to continue using it or not. Some groups said no. I attended a nice lesson and enjoyed it. "*

The candidate teachers stated that depending on the progress of the process, and they could adapt to the argumentation activities and have effective discussions on GMOs.

Table 8. CST's Opinions Regarding the Change Caused by the Effectiveness of the Benefit / Loss Balance GMO Activity

What changes did the lesson today make for you?	f
Being conscious	5
Experiencing a change of mind	5
To be able to support claims with evidence	3
Willingness to conduct research	2
Recognizing different perspectives	2
To be able to present evidence	1

"Being conscious" and "experiencing a change of opinion" were the most expressed themes by candidate teachers regarding the change that occurred in them at the end of the lesson.

Student-16: *"This lesson made me conscious. Because we have a garden, we used this kind of implementation. When we discussed the negative aspects of GMOs in the lesson, I could see more clearly that it is harmful*."

Student-7: "*I didn't know much about the benefits of GMO products. I just knew it was harmful, and I was too biased. Now, while having an idea about something in scientific matters, I will investigate topics from different sources. I will not think one-sided."*

The candidate teachers stated that they were more conscious about GMOs after the lesson and experienced a change of opinion about GMOs.

The analysis of the findings obtained for genetic replication technology is given below.

Table 9. CST's Views on Genetic Replication Technology Activity

What do you think about the lesson held today?	f
Ensuring the ability to learn new information	8
Entertaining	6
Productive	5
Providing an effective discussion environment	5
Providing a change of mind	4
Ensuring permanent learning	3

It is possible to express the views about the course conducted on genetic replication technology under 6 different titles. The statements of candidate teachers regarding some of these themes are given as follows.

Student-17: "*Our course was productive enough as it allowed me to learn all the mistakes I had about genetic replication technology. Having a discussion environment that leaves no question marks in my mind also made it a fun lesson."*

Student-20: "*The course that we have conducted today has led to differences in individual opinions, as well as differentiation as a group. The use of these practices has caused moral controversy. This method created a good discussion environment in the classroom and supported us for more permanent learning."*

The candidate teachers stated that the lesson on genetic replication enabled them to learn new information on the subject and found the lesson fun and efficient.

Table 10. FBOS's Views Regarding the Change Carried Out by Genetic Replication Technology Activity

What changes did the lesson today make for you?	f
Experiencing a change of mind	6
Being conscious	3
Recognizing different perspectives	3
Finding it not effective	2

Change of opinion on the subject has often been expressed. The opinions of the teacher candidates regarding this situation are as follows:

Student-21: "*While thinking about a topic, I decided to think more broadly, considering every possibility. I have noticed that if I approach issues with my personality, I will approach other opinions negatively."*

Student-14: "*I was opposed to genetic replication at first. But I opposed human cloning. However, my opinion has changed that if genetic replication is used for therapeutic purposes and not in the form of copying an individual, it should be done."*

The preservice teachers stated that they opposed this technology because they thought of genetic replication technology only as human cloning, but learning that genetic replication technology could be used for treatment purposes in the direction of the scenario caused them to experience a change of opinion on the subject.

The content analysis results of the findings for biofuels, which were carried out as one of the last two activities, are expressed as follows.

Table 11. CST's Opinions on the Activity "Are Biofuels Problems or Solutions"

What do you think about the lesson held today?	f
Ensuring the ability to learn new information	10
Providing an effective discussion environment	9
Entertaining	3
Productive	2
Ensuring the ability to defend ideas	1

"*Ensuring new knowledge learning*" and "*providing effective discussion environment*" were the most recurring themes, while the other three themes can be sorted as follows:" *entertaining,*" "*productive,*" and "*ensuring the ability to defend ideas.*"

Student8: "*In our lesson today, we discussed whether biofuels are problems or solutions in our lives. The atmosphere of discussion was provided very well. There was no bad argument because the groups respected each other.*"

Student-12: "*Thanks to the discussions on biofuels in the lecture, I learned different things I didn't know before. I also realized that we had a lot to learn.*"

Biofuels are another of the issues that is not known much about. For this reason, it was determined that the teacher candidates experienced knowledge acquisition on the subject in the biofuels course.

Table 12. CST's Opinions on the changes the Activity "Are Biofuels Problems or Solutions" brought

What changes did the lesson today make for you?	f
Being conscious	4
Ensure the ability to make inquiries	3
Not experiencing a change	3
Respect for different ideas	3
Increased interest	2
To be able to support claims with evidence	2
Uncertainty	2

It was found that "*being conscious*" was the most expressed theme by teacher candidates. Testimonials are as follows:

Student-4: "*I learned to listen to my groupmates and other groups, to look at things from different perspectives, and to respect the opinions of my other friends, even if I disagree.*"

Student-17: "*Our lesson has added a lot to our teaching field. It made me approach positively to biofuels, gain the knowledge that production could be in different areas, and have the opinion that the application area should increase. It also made us think deeply.* "

Being conscious about biofuels has been expressed as one of the changes occurring in discussions. Also, candidate teachers stated that they were more understanding about listening to the ideas of different groups.

The tables on the findings obtained from teacher candidates for the future use of CRISPR-CAS9 technology are presented below.

Table 13. CST's Opinions on Your Order Baby Ready-2030 Activity

What do you think about the lesson held today?	f
Ensuring the ability to learn new information	6
Providing an effective discussion environment	5
Being interesting	3
Ensuring versatile thinking	3
Uncertainty	2
Entertaining	2
Ensuring meaningful-permanent learning	1

"*Ensuring the ability to learn new knowledge*" and "*provide an effective discussion environment*" had been frequently expressed opinions by teacher candidates. Opinions on this situation are as follows:

Student-7: "*Today, we have debated a very interesting, surprising topic in the lesson. Everyone made his claim and presented their evidence so that we had permanent learning. An interesting topic has allowed many different ideas to be born. The debate made it possible to look at the issues from different perspectives. Thus, we developed different thinking skills.*"

Student-20: "*Today's lesson was pretty fun because we actively participated. Therefore, the discussion was duly conducted. The small number of people in the classroom was a factor in this. It was an environment where we respected each other's views and debated accordingly.*"

The scenario named "Your ordered baby is ready-2030" is a scenario that is about the future implementation of the CRISPR-Cas9 system. In this context, just as in the discussions on the CRISPR-CAS9 system, these discussions have been effective in learning new information about the subject. Also, it has been observed that discussions on the possibility of applying the subject in the future have an impact on the multidimensional thinking of the prospective teachers.

Table 14. Opinions of CST Regarding the Change Carried Out by the Activity "Your Ordered Baby is Ready-2030"

What changes did the lesson today make for you?	f
Ensuring the ability to learn new information	8
To understand the relationship between science and society	6
Recognizing that there is progress in science	6

As a result of the analyses regarding the scenario, your ordered baby is ready-2030, it was seen that the opinions of the teacher candidates were collected under three different themes. Views on these themes are as follows:

Student-1: "*I have seen that technology is advancing rapidly and that human beings can do even the things that are imagined to come true and thus always improve themselves. I have seen that science is always a progressive concept, it contains new information, and this situation will continue forever.*"

Student-17: "*In our lesson today, we learned that DNA could change with the CRISPR-CAS9 method by changing genetic codes. In this way, I learned that it is possible to have genetically modified babies in the future, and even bad genes that are inherited from people can change before babies are born. The waste of money and time can be avoided by this method, but I think this will lead to social problems as well as individual problems.*"

The candidate teachers' expressing that they have learned new information thanks to this activity has also been voiced in the previous weeks. It was stated that there was an awareness that a change in the field of science can affect society and, therefore, the individuals in society.

DISCUSSION and CONCLUSION

Within the scope of the study in which views on socioscientific practices are examined, candidate teachers stated that being involved in these practices led to several experiences. The first of these experiences is that the knowledge on the subject under discussion has been increased. The candidate teachers stated that they had changed their content knowledge, particularly because of the discussions on CRISPR-Cas9 and biofuels that they did not know about before, which was accepted as a reflection of this change. When the definitions made for SSI are examined, it is possible to state that it creates a change in the content knowledge of the subject that is discussed due to its nature, the fact that it is based on science (Sadler, 2004; Sadler & Zeidler 2004a; Kolstø, 2001; Dawson & Carson, 2020; Fang, et. al., 2019), often within scientific knowledge (Ratcliffe & Grace, 2003) and has a scientific basis. Increasing knowledge on the subject, being conscious, frequent expression of ideas about the benefit (advantage) and harm (disadvantage) can be shown as an example of the change in content knowledge. The results that the practices carried out based on the SSI affect the content information of individuals are similar to some studies in the relevant literature (Cetin, 2014; Venville & Dawson, 2010; Zohar & Nemet, 2002; Tekin, 2018).

Another experience that emerged as a result of the discussions based on SSI was related to the argument skills of the teacher candidates. Teacher candidates frequently stated that they did not participate in the discussion process on which SSI was based on and therefore had difficulties during implementation. The candidate teachers stated that they could not manage the discussions that took place in the first weeks and they were experiencing difficulties during the discussions, but as time passed, they were able to defend their ideas, present evidence, refute opposing ideas, and developed an awareness of the characteristics of evidence and claim. This can be explained by the impact of discussions in the relevant literature on the development of argument skills of teacher candidates, such as the ability to produce claims, justifications, evidence, opposing claims, and rebuttals (Kaya, 2005; Zengin, Keçeci & Kırılmazkaya, 2012). Also, over time, being able to actively participate in the process, researching topics they did not know before, expressing their thoughts comfortably, and defending their ideas resulted in having positive thoughts about SSI, such as its' being fun, efficient, and interesting. This had a positive effect on the participation of the individuals in the process and the comprehensibility of the lesson. A similar adaptation process emerged in the study carried out by Koçak (2014).

Candidate teachers stated that lessons became entertaining and provided meaningful and lasting learning by researching SSI before the debate, actively participating in the process, and being able to defend their claims on the topics they were interested in. This has been interpreted as developing a positive attitude towards the lesson, as well as an increase in motivation for the lesson. Teacher candidates are able to approach events from different perspectives, empathize, multifaceted thinking, respect for different ideas in the decision-making process of the SSI, express content information of decisions made regarding the SSI, as well as the old information that individuals have, personal experiences (Topçu, 2008), interest and emotion. It can be said that the factors (Sadler & Zeidler (2004b) are due to the fact that they are effective. A similar situation emerged in the results of the study conducted by Khishfe (2012) with eleventh-grade students. A study conducted by Khishfe (2012) found that as a result of discussions of 219 students studying in eleventh grade on GMO and water fluoridation, a correlation was found to be between their understanding of the nature of science and some components of the discussion. Khishfe (2012) stated that the experiences, previous knowledge, and personal interest that he included in contextual factors were effective in the argument formation process. Gürbüzkol & Bakırcı (2020) stated that SSI gave students characteristics such as decision making, interpretation, empathy, self-defense, critical thinking, changing opinions, and problem-solving.

This study aimed to present the experiences of the teacher candidates participating in SSI practices and the opinions formed within these experiences. When the process is evaluated from the perspective of teacher candidates, it can be said that they have positive opinions about SSI. However, it was determined that the teacher candidates experienced several difficulties in the discussion process regarding SSI. As the reasons for these difficulties, it can be said that candidate teachers did not experience the lessons in which such argumentation practices were previously based, and for the first time, encountered the context of SSI. Also, the passive attitude of teacher candidates in the debate on SSI, especially in the first weeks, may be due to their inability to structure the triangle of question-claim-evidence on the topics of discussion well. This is an important case that shows the necessity of thinking on the argumentation skills of candidate teachers. In this context, it can be said from the student journals that there has been an improvement in the candidate teachers' ability to make arguments. This suggests that for those who practice teaching, individuals can think of SSI as a context in acquiring the skills to manage and follow such discussions.

As teachers actively participate in the process, the level of motivation for the lesson with the SSI increased, and they tended to have a positive idea about the course they had. This has led to the multifaceted and detailed planning of their research on the SSI, where discussions will be carried out. Detailed research, on the other hand, explains the view of increasing knowledge provided by the SSI, which is often expressed by teacher candidates. This shows that SSI can be structured as a context for teachers in terms of supporting the increase in knowledge about SSI-based topics in the classroom environment and providing motivation for 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.

Ethics Committee Approval Information

The Ethics Committee approved this study in 2017 by the chairmanship of the Ethics Committee for non-interventional research of Firat University. The application number is defined as 208735.

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| Research Article / Araştırma Makalesi|

Learning Needs of Primary Schools Teachers about First Aid[1]

İlkokul Öğretmenlerinin İlk Yardım Konusundaki Öğrenme Gereksinimleri

Mukaddes ÖRS[2]

Abstract

Purpose: The aim of this research was to determine the knowledge of first aid and the learning needs surrounding first aid education of teachers working in public primary schools.

Design/Methodology/Approach: This descriptive study was undertaken through a sample of 214 teachers working in 15 public primary schools in Amasya City, Turkey. Data collection was achieved via a questionnaire consisting of items regarding teachers' characteristics and basic first aid knowledge. One point was given for each correct answer. The data were collected through face-to-face interviews. Statistical analyses were performed using descriptive statistics.

Findings: In total, 47.2% of the primary school teachers who participated stated that they had previous training on first aid, and 11.7% of teachers felt that their knowledge was sufficient about first aid knowledge and equipment. Overwhelmingly, 70.5% of teachers had been confronted with situations needing first aid at school. In this study, it was found that teachers had medium-level first aid knowledge scores. Most teachers answered questions incorrectly regarding foreign body punctures in the abdominal region and nosebleeds (%89.3, %83.2 respectively).

Highlights: It was revealed that the teachers have insufficient knowledge about first aid, and it was determined that teachers have learning needs relating to first aid. Accordingly, it is recommended that training is provided for teachers on first aid through in-service training programs. Moreover, the problem needs to be addressed, and the addition of first aid education in the teachers' training curriculum might be suggested.

Öz

Çalışmanın amacı: Kamu ilk okullarında çalışan öğretmenlerin ilk yardım konusunda öğrenme ihtiyaçlarının saptanmasıdır. .

Materyal ve Yöntem: Durum saptamaya yönelik betimsel bir çalışma olup tekil tarama modeli esas alınarak yürütülmüştür. Tanımlayıcı olan araştırmanın evrenini Amasya merkeze bağlı 15 ilkokulda çalışan 214 öğretmen oluşturmuştur. Bu araştırmada evrenin tamamına ulaşılması hedeflenmiştir. Veriler anket formu aracılığıyla yüz yüze görüşme yöntemi ile toplanmış ve SSPS programında analiz edilmiştir. .

Bulgular: Kamuya bağlı ilkullarda görev yapmakta olan öğretmenler üzerinde yapılan çalışmada, öğretmenlerin ilk yardım bilgi puanları orta düzeyde olarak belirlenirken, öğretmenlerin % 11.7'sinin ilk yardım bilgi ve donanımı ile ilgili olarak kendini yeterli bulduğu ve % 17.8'inin ilk yardımla ilgili herhangi bir eğitime katılmadığı belirlenmiştir. Araştırmaya katılan ilkokul öğretmenlerinin %47,2'si daha önce ilk yardım konusunda eğitim aldıklarını belirtmiştir. Katılımcıların %89.3'ü karın bölgesine yabancı cisim saplanması (epilepsi) ve % 83.2'si burun kanaması (epilepsi) ile ilgili sorulara yanlış cevap vermişlerdir.

Önemli Vurgular: Öğretmenlerin ilk yardım konusunda öğrenme ihtiyaçlarının olduğu tespit edilmiş ve öğretmenlere ilk yardım konusunda hizmetiçi eğitim verilmesi önerilmiştir. Ayrıca, öğretmen yetiştiren okulların eğitim müfredatına ilk yardım eğitiminin eklenmesi önerilebilir.

INTRODUCTION

The concept of need in education was first brought to the agenda by John Dewey, and his supporters suggested a student-centered approach in which the student is active. The concept of need is placed in a much more important place in adult education (Uysal, 2013). The characteristics of adults regarding learning, the need for lifelong learning, and adult education based on volunteering have increased the importance of the concept of "need" in adult education. The concept of need is used in the sense of the lack of anything in daily life. In other words, "need" is defined as a discrepancy existing between a present state and the desired state (Bülbül, 1991; Doğan, 1997; Kowalski, 1988; Uysal, 2013). The concept of need is defined in different ways in the literature. "Need" for an adult is the difference between the demanded and existing conditions (Igarashi, Suveges, & Moss, 2002, p. 60). Beatty (1981) described the concept of need as follows: "It is the measurable inconsistency that exists between a current situation and a demanded situation put forward by an authority or someone." Kaufman and Herman (1991) defined the concept of need as the difference between the existing competencies and the desired competencies of staff depending on the requirements of the job or service. Training programs are designed to narrow or close this gap (Mclean, 2000).

Correctly establishing the relationship between education and needs in adult education brings different types of needs into the agenda. One of the types of needs encountered in adult education is "felt needs." Since the felt needs (or demands) were determined only according to the individual, they were found insufficient in defining the educational goals. The second need term may correspond to a lack of knowledge, attitude and/or skill within a person. This concept is often referred to as "real need." The fact here showed that not only does an individual set their criteria, but so can an outside observer (Monette, 1977, pp. 117-122). Real need is defined as the lack of purpose in relation to the environment of the individual, group, institution, or society (Atwood & Ellis, 1971, cited by Soofi, 1984). Making the right decisions about the educational needs of adults makes systematic needs and determination processes one of the important components of program planning (Bülbül, 1991; Kowalski, 1988; Uysal, 2013).

The educational need is defined as the difference between the existing behavior and the required behavior; the existing competence and the required competence (Bülbül, 1991; Doğan, 1997; Kowalski, 1988; Uysal, 2013). Monette (1977) stated that educational needs could be defined either from an individual's perspective or an external perspective by objectively identifying the lack of knowledge, skills, and attitudes (p. 121). Kuh, Orbangh, and Byers (1981) stated that undermining the reliability of the results obtained showed the defects or weaknesses experienced in the educational need determination process.

Knowles (1996) asserted the three dimensions of needs in adult education: (1) the needs of the participants, (2) the needs of the institutions, and (3) the needs of the community. Both Knowles and other adult educators always prioritize the needs of the participants as a service ethic. If a program does not meet the needs of the participants, it will not attract the attention of the individuals, so participation in the program is low or expected from the training cannot be achieved (Jarvis, 1986, 63-64).

Apart from the educational needs of adults, the needs of the institution and society should also be taken into consideration during the needs determination phase. While an adult may need to learn to read, he/she may also have a need for increasing his/her productivity in the institution (educational needs, performance-related problems, new job opportunities, or technological developments) (Rand, 1976, p. 1). Needs assessments that are extremely comprehensive in issues such as employers' expectations and society expectations should also be taken into consideration (Caffarella, 1994, p. 68).

Conceptualizing and evaluating the needs of adult students is very important in designing learning environments. On the other hand, identifying individual needs helps adult learners to maintain their motivation in the learning process while helping them to perform learning activities designed to achieve their learning goals in the best way (Diep et al., 2019). Adult learners have unique educational needs that require attention from higher education institutions, facilitators, and the industry (Owusu-Agyeman, Fourie-Malherbe, & Frick, 2018).

The most important criticism of adult education programs is that they do not meet the needs of their learners. The main source of the problem is that adult educators' own predictions assume the need of a learning group and plans their programs accordingly, without consideration of the individual needs of the adult learners (Rauch, 1972, p. 113).

Needs assessments are basically research. This research can be carried out directly on potential participants or can be obtained from indirect sources. There is no single acceptable method on this subject, and planners can use one or more of them within their possibilities and needs; direct research techniques such as tests, survey, interview, Q-sort, nominal group technique, job analysis, community impression technique can all be used (Caffarella, 1994, p. 88).

The main approaches to identifying educational needs can be classified into four categories: differences approach, democratic approach, analytical approach, and description approach.

Differences approach: In this approach, educational needs are determined by revealing the difference between the existing and the desired or expected competencies in teachers. In this approach, firstly, competence areas and competencies are determined by experts, and then it is investigated which of these competencies exist in the teacher (Dillon, 1981, p. 69).

Democratic approach: In this approach, it is envisaged that participation in the needs assessment process includes everyone (teacher, student, school principal, parent, etc.) who will be affected by the results of the needs assessment study. Although the learning needs of teachers are determined by taking the opinions of all concerned, the opinions of teachers are of particular importance (Crocker, 1981, p. 29; Dillon, 1981, p. 70).

Analytical approach: This is the process of determining the learning needs of teachers based on possible potential situations that may arise (Gözütok, 1991, p. 13).

Description approach: It is the process of determining the needs based on the benefit of the existence of that experience with the damage caused by the absence of life. It is the examination of the situation that arises in cases of deprivation of certain things or educational experiences that meet the needs (Gözütok, 1995).

If adult education is to fulfill both educational and social goals, the needs of adult learners must be addressed first. To achieve these goals, "the creativity and energy of the instructional designers and course instructors" are critical factors (Diep et al., 2019). By first determining the learning needs, training courses can then be conducted, which can provide great benefits to both the teachers (adult learners) and the institution (Kaya, Küçük, & Cepni, 2004).

Recently, "first aid" knowledge and skills are among the human qualities that society needs. It is common that people may be exposed to accidents, natural disasters, and diseases, where people can die or may be permanently disabled. First aid is one of the most important issues in health education today.

The World Health Organization (WHO) (1998) aims to reduce accidents and violence-related deaths and injuries by at least 50% by 2020. To meet this goal, WHO has launched projects that offer widespread first aid training in Turkey and throughout the world. Within the framework of the WHO, the Ministry of National Health has prepared the First Aid Regulation (Resmi Gazete, 2004). The purpose of this Regulation is to increase basic health knowledge of individuals and society, teach first aid knowledge and skills to the society, keep first aiders in all public and private institutions/organizations according to the number of personnel and in this direction, and it aims to organize first aid training by authorized institutions.

First aid is described as the action exerted on some victim in the encounter of an emergency situation (Oliveira et al., 2015). As the arrival of healthcare professionals can generally take some time, these acts need to be initiated by people present at the place who witness the situation (Malta et al., 2012). Thus, it is essential that teachers, in its variety of contexts, be empowered to take the leading role of first aid acts (Galindo Neto et al., 2018).

The teacher and the teaching center have a crucial role in the improvement of health and prevention of accidents among children and adolescents while in school. The poorly of knowledge on the part of professionals can bring numerous problems such as improper handling of the victim or deficiency for psychological preparation to influentially handle an emergency situation. Therefore, first aid knowledge for teachers is essential and can potentially save a life (Oliveira, Lion Junior, & Borges, 2015). Some studies showed that 10% of deaths occur in the first five minutes of the accident and 50% in thirty minutes. In addition, it has been determined that death can be decreased by up to 38% through first aid application if it is performed within the first five minutes of the accident. Therefore, first aid response by a trained individual can be most influential, thanks to an adequate and timely response in the accident place (Singer, Gulla, Thode, & Cronin, 2004; Lingard, 2002). These studies showed that it is vital for people who witness accident situations to be knowledgeable about first aid. For this reason, teachers should have access to training and relevant information about first aid.

Teachers are the first to assist the student in an accident or injury at school. Therefore, teachers need to know basic first aid rules (Uskun, Alptekin, Öztürk, & Kişioğlu, 2008). In the literature, the results of research studies showed that the first aid knowledge of teachers working at schools is not sufficient at present (Al-Robaiaay, 2013; Al-Samghan, Al-Shahrani, & Al-Shahrani, 2015; Erkan & Göz, 2006; Hosapatna et al., 2020; Kaur & Kaur, 2017; Mohsen & Zahra, 2019; Nayir et al., 2011; Özpulat & Sivri, 2013; Pandey et al., 2017; Saruhan, Saruhan, Yıldırım, & Ovayolu, 2018; Sönmez, Uskun, & Pehlivan, 2014). These results suggested that teachers do not know the importance of first aid. In this context, it is thought that quantitative research should be carried out to determine the learning needs of primary school teachers who provide primary education to students, provide the first contact with the outside world, and refer them to research. In this way, it can be revealed which subjects teachers need to be informed and then studies can be initiated to eliminate the deficiencies identified. In light of this information, the examination of the learning needs about basic first aid of teachers who are working in public primary schools is the problem of this research.

Research Questions

The aim of this study was to determine the learning needs about first aid of teachers working in public primary schools. In line with this basic purpose, answers were sought for the following questions:

1) What are the socio-demographic characteristics of teachers?

2) What are the learning needs about first aid of teachers working in public primary schools?

METHOD/MATERIALS

The Model of the Study

This research is a descriptive study seeking to reveal the current situation and was conducted based on the scanning model. The quantitative research method was used in this study. A screening model is a research approach that aims to describe a situation or event as it exists in the past or present (Karasar, 2020, p.111).

Population and Sample

The scope of the research was composed of teachers working in various branches (N=250) in 15 public primary schools in the city of Amasya. The research sample consisted of all members of the population. The questionnaire was distributed to 250 teachers, 214 of whom consented to participate in the study by returning the completed questionnaire (97 classroom teachers, 117 branch teachers). A total of 214 completed questionnaires were returned (response rate=85.6%) and analyzed. Convenience sampling was used as a sampling technique in this research. Convenience sampling is a non-probability sampling method that involves conveniently available study participants. This sampling method is cost-effective and allowed for data collection from available population members (Grove, Burns, & Gray, 2013).

Before starting the research, a written consent form was obtained from the Amasya Provincial Directorate of National Education, and the participation of teachers was voluntary. Verbal consent was obtained by explaining the purpose of the research to the teachers at the data collection stage, and then the questionnaire was issued. The researchers went to the schools, the purpose of the research was explained, and the teachers were asked to voluntarily fill in the data collection tools.

Data Collection Tool

In this research, the "Scientific Survey Instrument" developed by Şahin (2011) was used. This questionnaire consisted of two parts. In the first part of the questionnaire, there were 12 questions to determine the demographic information of the teachers, and in the second part, 15 questions were designed to measure the first aid knowledge of the teachers. The survey instrument consisted of a total of 27 questions. Teachers' first aid knowledge score was calculated by giving 1 point for each correct answer of 15 multiple choice first aid knowledge questions with one correct answer. The lowest score that could be obtained from first aid knowledge questions is 0, and the highest score is 15. Cronbach Alpha value was calculated to determine the reliability of the scale. The Cronbach Alpha reliability coefficient was found to be 0.815 (Şahin, 2011). In this study, Cronbach's Alpha reliability coefficient of the scale was determined to be 0.93. Nunnally (1978) stated that the coefficient for the reliability measurement needs to be over 0.70. The results of all analyses showed that the survey is a valid and reliable scale in determining teachers' learning needs about basic first aid.

Statistical Analysis of Data

In the present study, the SPSS 22.0 Statistics package program (SSPS Inc. Chicago, II, USA) was used in the statistical analysis of the data obtained with the data collection tool. The descriptive statistics such as the mean, standard deviation, frequencies, and the minimum and maximum scores were computed.

FINDINGS

Table 1. Personel Characteristics of Teachers in the Study Sample

Variable		Frequency (n)	Percentage (%)
Gender	Female	105	49.1
	Male	109	50.9
	Total	214	100.0
Age (year)	20-25	12	5.6
	26-30	15	7.0
	31-35	40	18.7
	36-40	43	20.1
	41-45	34	15.9
	46-50	36	16.8
	51-55	16	7.5
	56+	18	8.4
	Total	214	100.0
Marital Status	Married	169	79.0
	Single	24	11.2
	Divorced	17	7.9
	Widowed	4	1.9
	Total	214	100.0
Education Level	Associate Degree	34	15.9
	Bachelor's Degree	168	78.5
	Master's Degree	9	4.2
	Other	3	1.4
	Total	214	100.0
Graduated Higher Education Institution	Faculty of Education	133	62.1
	Institute of Education	29	13.6
	Faculty of Science and Literature	20	9.3
	Other	32	15.0

Field of Study	Total	214	100.0
	Science/Mathematics	40	18.7
	Social/Turkish	52	24.3
	Visual Arts	8	3.7
	Foreign Language	17	7.9
	Other	97	45.3
	Total	214	100.0
Teaching Experience (years)	≤ 5	21	9.8
	6-10	35	16.4
	11-15	46	21.5
	16-20	31	14.5
	21-25	30	14.0
	≥ 26	51	23.8
	Total	214	100.0

In Table 1, 49.1% of the participants were female teachers, and 50.9% of them were male teachers. In addition, 20.1% of the teachers who participated in the study were between the ages of 36-40, 18.7% between the ages of 31-35, 16.08% between the ages of 46-50, and 15.9% between the ages of 41-45. 79% of the research participants were married, and 11.2% of them were single. The rate of divorced and widowed persons was 9.8%.

Table 1 shows that 18.7% of teachers had studied in the fields of Science-Mathematics, 24.3% Social-Turkish, 3.7% Visual Arts, 7.9% in the field of Foreign Language and 45.3 % in classroom teachers.

Table 1 shows that 23.8% of the teachers who participated in the study had a working experience of was 26 years or more. There were 21.5% of the participants who worked for 11-15 years. Around 16, 15, 14, and 10% of the participants had a teaching experience between 6-10, 16-20, 21-25, and 1-5 years, respectively.

Table 1. Personel Characteristics of Teachers in the Study Sample (Continue)

Variable		Frequency (n)	Percentage (%)
Having received first aid training	Yes	101	47.2
	Partially	75	35.0
	No	38	17.8
	Total	214	100.0
Self-sufficient about first aid knowledge equipment	Yes	25	11.7
	Partially	119	55.6
	No	70	32.7
	Total	214	100.0
Frequent encounters with situations that require first aid at school	Yes	27	12.6
	Partially	124	57.9
	No	63	29.4
	Total	214	100.0
Existing healthcare worker at school	Yes	4	1.9
	No	210	98.1
	Total	214	100.0
Existing first aid cabinet	Yes	176	82.2
	No	38	17.8
	Total	214	100.0

In Table 1, 47.2% of the teachers who participated in the research stated that they had received partial training about first aid before, whereas only 11.7% of teachers stated that they find themselves sufficient with first aid knowledge equipment. While 12.6% of the teachers stated that they frequently encountered situations requiring first aid at school, 57.9% of teachers stated that they partially encountered situations requiring first aid. 82.2% of teachers who participated in the research stated that there is a first aid cabinet at the school, while 98.1% of the participants stated that there is no health worker at the school.

Table 2. Teachers' Scores From First Aid Knowledge Questions

	n	Mean	Median	Minimum	Maximum	SD
First Aid Knowledge Total Score	214	7.60	8.00	1.00	11.00	1.90

In Table 2, descriptive statistics such as average, standard deviation, minimum and maximum value of the teachers who participated in the research regarding first aid knowledge questions are presented. The mean scores of first aid knowledge

questions were 7.60 (SD1.90), indicating that the first aid knowledge of teachers was medium level, and it was observed that the teachers got the lowest 1.00 and the highest 11.00 points from the first aid knowledge questions.

Table 3. Distribution of Teachers' First Aid Knowledge Scores

Item No.	Topic	Correct Answers		Incorrect Answers		Total	
		n	%	n	%	n	%
1	Definition of first aid	195	91.1	19	8.9	214	100.0
2	Who can practice first aid?	188	87.9	26	12.1	214	100.0
3	What should not be done to a student who has epistaxis?	36	16.8	178	83.2	214	100.0
4	What should not be done when a foreign body is stuck in the abdomen?	23	10.7	191	89.3	214	100.0
5	What should be done to a student who has an epileptic seizure?	131	61.2	83	38.8	214	100.0
6	Which of the following is wrong to do to a student who has an asthma attack?	116	54.2	98	45.8	214	100.0
7	What should not be done in burns caused by heat?	108	50.5	106	49.5	214	100.0
8	Knowing cardiac massage and artificial respiration	29	13.6	185	86.4	214	100.0
9	Performing cardiac massage and artificial respiration	15	7.0	199	93.0	214	100.0
10	Knowing the areas where the pulse is in the body	182	86.0	30	14.0	214	100.0
11	In how many minutes of cardiac arrest should be intervened ?	152	71.0	62	29.0	214	100.0
12	What kind of ground should the cardiac massage be applied?	185	86.4	29	13.6	214	100.0
13	What should not be done to a person who drinks acidic substances?	126	58.9	88	41.1	214	100.0
14	Pressure should be applied to the bleeding area to stop external bleeding	174	81.3	40	18.7	214	100.0
15	What should not be done to an unconscious person?	193	90.2	21	9.8	214	100.0

In Table 3, the percentage of correct answers to the first aid knowledge questions varied between be 10.7% and 91.1%. The least well-known questions were the knowledge that the foreign body should not be removed when the foreign body is stuck in the abdominal area (n=23, 10.7%) and what to do with a nose bleed (n=36, 16.8%). The definition of first aid and practitioners was known by the majority of the participants (91.1%, 87.9%, respectively).

The participants in the study gave wrong answers to questions related to 83.8% of epistaxis, 89.3% of foreign body stubs, 49.5% of burns, 45.8% of asthma. In the question, "Which of the following should not be done to a student who has epilepsy/epileptic seizures?" 38.8% of the participants incorrectly answered the question. In the question, "In how many minutes of cardiac arrest should be intervened?" 71.0% of the participants answered the question correctly. 86.4% of the participants correctly answered the question, "Cardiac massage should be applied on a hard surface." 41.1% of the teachers who participated in the research answered the question, "What should not be done to a person who drinks acidic substances?" answered incorrectly. 18.7% of the participants incorrectly answered the question, "Pressure should be applied on the bleeding place to stop external bleeding." 90.2% of the teachers correctly answered the question regarding what should not be done to an unconscious person (see Table 3).

86.4% of the teachers who participated in the study stated that they did not know how to apply cardiac massage and artificial respiration. According to these answers, it can be seen that most of the teachers participating in the research do not know how to perform cardiac massage and artificial respiration. 93% of teachers stated that they had not performed cardiac massage and artificial respiration. 86% of the teachers who participated in the research stated that they knew the body's regions where the pulse is. These responses show that most of the teachers participating in the study know the areas of the body that are pulsating (see Table 3).

Considering the rate of answering according to the topics they contain, the most correct answers were the questions about the definition of first aid and the practitioners and what to do with an unconscious person. The least correctly answered questions were about the approach to someone who drinks an acidic substance, what to do with a nosebleed, what should not be done when a foreign body is stuck in the abdomen, and performing cardiac massage and artificial respiration.

DISCUSSION

In the study aiming to determine the learning needs of teachers working in public primary schools in Amasya city center, Turkey, it was determined that more than half of the teachers participating in the study have never, or only partially, received first aid training in the past. Many studies can be found in the literature with similar results to the present study. Most respondents (53.0%) with no former training in first aid stated that they didn't receive any training because they had never considered it (Abelairas-Gómez et al., 2020). In a recent study in Iran, about 40% of school teachers who participated stated that they took former training on first aid (Mohsen & Zahra, 2019). Al Yahya et al. (2019) assessed the knowledge, attitude, and practice of first aid among male school teachers and administrators in Saudi Arabia. They reported that the majority of the participants (73%) had not attended seminars or training courses on first aid before. Joseph et al. (2015) surveyed 146 teachers, which showed that more than half (53%) of teachers had not taken first aid training before. In the research where Bozkurt, Özbar, Çekiç, and Yetgin (2015) investigated the knowledge levels of 72 different branch teachers working in secondary and primary schools affiliated to the

Ministry of National Education with regard to basic life support, 25% of the teachers did not have any knowledge about first aid and had not received any education. Another study on first aid practice among school teachers reported that 2.96% of teachers had taken first aid training. In a study conducted in the Dehradun district of Uttarakhand, about half of primary school teachers (n=50, 86%) had not attended any specific seminar or workshop relating to first aid management of minor injuries (Masih, Sharma, & Kumar, 2014). In a study conducted by Nayir et al. (2011) in the Isparta province, it was found that 61.5% of teachers had not received first aid training. This deficiency is also emphasized in Hırça's (2012) study. Dinçer, Atakurt, and Şimşek (2000) reported that teachers did not receive first aid education in the study examining the knowledge level of the teachers working in institutions. It can be said that these rates reveal the need for training about first aid of these teachers who are working directly in schools to increase their level of knowledge and improve the care provided to students. Teachers who spend most of their time with children in schools have the most effective educational role in preventing accidents (Avery & Jackson, 1993). These teachers in the school environment should receive special and continuous training with health professionals in order to be qualified in emergency situations (Calandrim et al., 2017). First aid should be a mandatory subject in school and teacher training curricula. It is necessary to establish "what the teachers know" in order to identify "what they need to learn" and determine "what" needs to be taught and "how."

In the present research, it was found that the majority of teachers working in primary schools considered themselves as insufficient about first aid information equipment. In the studies conducted in Isparta, Afyonkarahisar and Ankara, the rates of feeling sufficient about first aid were found to be low, similar to our study (15.5, 13.6, 16.7%, respectively) (Dinçer, Atakurt, & Şimşek, 2007; Sönmez, Uskun, & Pehlivan, 2014; Yürümez et al., 2007). Carter, Bannon, and Jones (1994) stated that very few teachers have sufficient knowledge and require first aid training to determine the role of teachers in preventing accidents. Nayir et al. (2011) reported that 86.0% of the teachers participating in the study had inadequate first aid knowledge, and 81.0% wanted to receive first aid education. The teachers' inappropriate knowledge of first aid will decrease the chance of students to receive proper and punctual first aid, which consequently may raise the risk of complications after an incident in the school environment. Therefore, the Ministry of National Education is responsible for planning and implementing first aid teaching programs for all school teachers, or at least for teachers selected from each school (Mohsen & Zahra, 2019). It can be thought that the competence of first aid knowledge of primary school teachers should be raised with qualified educational programs. To reach this goal, as recommended by WHO (1998), it is essential to train the teaching staff.

In the present research, the majority of teachers stated that they encountered situations requiring first aid at the place where they worked (in schools). This indicates the importance of teachers' knowledge about first aid. On the same line, in a study in Saudi Arabia, 45.4% of the total study had former experience in dealing with injured children in school (Al Yahya et al., 2019). Studies in Ankara, Brazil, Africa, and India have shown similar results for teachers facing accidents at school, acknowledging that they have limited knowledge to act correctly and feel insecure (Dinçer, Atakurt, & Şimşek, 2000; Galindo Neto et al., 2018; Ngayimbesha & Hatungimana, 2015; Oliveira, Silva, & Toledo, 2013). Nayir et al. (2011) stated that about half of the teachers encountered a situation requiring first aid in their workplace. The role of teachers is crucial especially in developing countries where school health services are often neglected. However, this role can only be properly achieved if teachers are equipped with the needed knowledge and skills (Al-Samghan, Al-Shahrani, & Al-Shahrani, 2015; Ganfure et al., 2018).

In the present research, the average score of teachers on first aid knowledge questions was found to be 7.60. In general, it can be said that they had a moderate level score of first aid knowledge, consistent with the results of other studies. In the studies conducted in India and Turkey, the rates of feeling sufficient about first aid were found to be moderate, similar to our study (Kaur & Kaur, 2017; Nayir et al., 2011; Sönmez, Uskun, & Pehlivan 2014; Yürümez et al., 2007). Similarly, Joseph et al. (2015) surveyed 146 teachers and reported that 87% of them had a moderate level score of first aid knowledge. A study in Brazil showed that 19.0% of the teachers interviewed had a good level of knowledge in emergency situations and 50.5% presented insufficient performance to act in emergency situations (Calandrim et al., 2017). A cross-sectional descriptive study has been carried out on teachers' first aid knowledge at public primary schools in the city of Abha, Kingdom of Saudi Arabia, where 187 teachers were included in the study, and it was determined that teachers' first aid knowledge levels were not sufficient according to the results of the study (Al-Samghan, Al-Shahrani, & Al-Shahrani, 2015). In a similar study, it was emphasized that teachers assigned in health had an average level of knowledge about first aid; therefore, the level of knowledge of teachers should be increased (Pandey et al., 2017). Amro and Otait (2017) conducted a first aid knowledge study with teachers selected for the purpose in schools selected by simple random sampling in the south city of El-Halil, Palestine, and the average first aid knowledge score level was determined as 71.41%. In the studies conducted in Iran and the Kingdom of Saudi Arabia, it was determined that teachers' first aid knowledge levels were not sufficient according to the results of the study (Al-Samghan, Al-Shahrani, & Al-Shahrani, 2015; Mohsen & Zahra, 2019). Similarly, Bildik et al. (2011) conducted a study in order to determine the first aid knowledge level of the students who are teacher candidates and the effectiveness of the first aid training. This study included 88 students at Gazi University, Faculty of Education (in Ankara). It was stated that the first aid knowledge among students at Education of Faculty was insufficient. Lack of knowledge among teachers may be associated with the absence of training or inadequate training. Esteves et al. (2015) stated that the lack of training, reflected in lack of preparation for teachers, contributes to the fact that the experiences are not constructive but rather traumatic and ones that are permeated by negative feelings. This study emphasized that these teachers in the school environment need to have specific and continuous training with health professionals to be qualified in emergencies at the schools. Determining the target and content for the training to be delivered in a meaningful and realistic manner in terms of the needs of the participants provides adults to tend to actively participate in educational activities (Synder & Wolfe, 1997).

Considering the response rates according to the topics, the most correct answers were the definition of first aid and questions related to first aid practitioners, which should not be done to an unconscious person, and knowledge that cardiac massage should not be done on a soft surface. The least correct answers were questions about the approach to someone with a foreign body stuck in the abdominal region and what to do with epistaxis. The teachers' lack of knowledge was attributed to the absence of first aid training in the educational curriculum. In many situations, the lack of knowledge leads to numerous problems, such as states of panic when a teacher sees the victim, teachers' incorrect handling, and unnecessary requests specialized in emergency aid (Oliveira et al., 2015). It is in this context that it becomes important knowledge about first aid among public primary school teachers.

In the present study, the definition of first aid and practitioners was known by the vast majority of the participants (91.1%, 87.9%, respectively). Our results contradict the study of Hosapatna et al. (2020), who conducted a study among teachers in India. A total of 5.7% of the teachers had heard of first aid, while 94.3% were unfamiliar with the concept of first aid. It can be said that the majority of school teachers in India had low knowledge of first aid management.

In the present study, few participants knew correctly that the head of a child with a bleeding nose should not be laid back. The rate of teachers responding to the question about first aid to be given to a person with nasal bleeding was found to be low. Our result matched Al Yahya's et al. (2019) result; they stated that when asked what you will do if a child has epistaxis, 62.2% answered incorrectly. Although it was about the position of the child when having a nose bleed which is one of the commonest incidences in primary school children, but still the old misconception of the right position has not changed, proving the lack of knowledge. The fact that most teachers can practice wrongly even in situations where they may be encountered frequently is thought. Moreover, in the study carried out in Isparta, 42.7% of the teachers had incorrectly known that the child's head should not be receded in epistaxis. It was concluded that 42.7% of the teachers incorrectly knew how to intervene in the case of nosebleeds, in which the pre-school teachers' first aid knowledge level was examined (Sönmez, Uskun, & Pehlivan, 2014). The fact that most teachers can practice wrongly even in situations where they may be encountered frequently is thought. In cases of nasal bleeding, the application of ice may be performed on the forehead and neck; use of a clean compress for direct pressure in cases of bleeding, with due care to wrap hands in impermeable material (such as a plastic bag) (Oliveira et al., 2015).

In the present research, most participants stated that they did not know how to perform cardiac massage and artificial respiration. Similar to a study conducted in the region of Galicia, Spain, only 4 participants were able to put in the correct order the steps of the basic life support sequence, and nobody answered all the questions about cardiopulmonary resuscitation correctly (Abelairas-Gómez et al., 2020). In a Brazilian study, it pointed out the lack of knowledge about first aid among teachers (Calandrim et al., 2017), as well as studies from Turkey, Nigeria, and China showed a parallel reality with teachers about cardiopulmonary resuscitation (Erkan & Göz, 2006; Hung et al., 2017; Onyeaso & Onyeaso, 2017). Regarding the feelings reported by the teachers, they corroborate qualitative research from Norway, which interviewed people who provided first aid for victims of cardiovascular collapse and whose results showed the presence of nervousness, fear, and anguish (Mathiesen, Bjørshol, Braut, & Søreide, 2016). Such feelings are commonplace in the face of the complexity of the situation and can be minimized if teachers feel more secure through being trained.

In the present study, about half of the participants knew correctly how to manage a case with drinks an acidic substance. In Isparta, 35.5% of teachers (Sönmez, Uskun, & Pehlivan, 2014) and 16.7% of preschool teachers in Ankara knew the first aid application in case of drinking acid substance (Dinçer, Atakurt, & Şimşek, 2007). Nayir et al. (2011) emphasized that teachers lacked knowledge about the approach to someone who drinks an acidic or basic substance (29.4%). The correct response rate to first aid applications was found to be quite low. It is a known fact that those who drink acidic substances should not be vomited (Ege, 1981)—considering the importance of not vomiting in approaching a person who drinks acidic substances, the importance of the training to be held on such important matters increases.

In the present study, 38.8% of teachers incorrectly answered the question regarding the first aid application to be made to a student with an epileptic seizure. Our result matched with many studies that demonstrated deficient knowledge about epilepsy among teachers (Al-Samghan, Al-Shahrani, & Al-Shahrani, 2015; Tahirovi'c & Toromanovic, 2006). In a study conducted on teachers about interventions and what should be done in the case of epilepsy disease in childhood in the USA, it was determined that the general level of knowledge of teachers about epilepsy disease was sufficient but insufficient in first aid interventions in the crisis (Bishop & Boag 2006). This problem can only be overcome with the planning of training studies on the subject. First aid training programs for teachers should be organized by healthcare professionals who know the subject in public education centers.

In the present research, most of the teachers knew correctly how to manage the loss of consciousness. On the same line, in another study in Saudi Arabia, 68.4% of teachers knew correctly (Al-Samghan, Al-Shahrani, & Al-Shahrani, 2015).

In the present study, about half of the teachers knew correctly how to manage a case with an asthma attack. On the same line, in another study in Turkey, 46.8% of teachers knew correctly (Şahin, 2011). In order to minimize the risk of accidents in schools, to save lives with simple first-aid applications in accidents that occur, First aid courses for teachers should be organized. The organized courses are often conducted without a needs analysis, and they cannot go beyond theoretical knowledge transfer. It is important to consider the demands and needs of teachers in the regulation of the content of first aid courses.

In the present study, 7.8% of the teachers who participated in the study stated insufficient existing a first-aid cabinet and 98.1% insufficient health workers. In comparison to another study in India, the schools that were visited during the study were not

equipped with any first aid facility or sick room to take care of students during medical emergencies (Hosapatna et al., 2020). In another study, about 44.4% of schools had no first aid kit (Joseph et al., 2015). It is also important to have first-aid kits in schools and trained personnel who can provide first aid in case of an accident. First aid facilities were found to need improvement at schools surveyed, including through the provision of fully equipped first aid kits, a separate sick room to handle medical emergencies, posters outlining standard first aid procedures for the management of medical emergencies, and videos illustrating first-aid practices. These measures will serve to make schools a safer environment for children. The topic first aid kit must be attached to the school curriculum in order to be assimilated by the teachers and students, creating good habits and attitudes (Rodrigues & Rodrigues, 2016).

As a result, they stated that the first aid knowledge scores of the teachers working in public primary schools were moderate, and the majority of them found themselves insufficient. Knowledge about first aid is not satisfactory among teachers of primary school in Amasya. This is largely due to a lack of knowledge and training. So, first aid education and training programs should be introduced at schools for early management injuries and emergencies. Moreover, first aid knowledge should be incorporated into educational curricula in school.

CONCLUSION AND RECOMMENDATIONS

The limitation of this study is related to the purposeful sampling of participants rather than random selection. It was conducted in public primary schools in a city. Hence, the findings of this study may have limited ability to be generalized. Furthermore, large and multi-center studies might be suggested to inquire the teachers' first aid knowledge across the country and assess their educational needs in this important issue. First aid educational curricula should include both teachers and parents.

According to the findings obtained from this study that we carried out with the aim of determining the learning needs of the teachers working in public primary schools, most of the teachers who participated in the present study had poorly first-aid knowledge. They mostly did not pass any training on first aid and expressed their educational needs. In many situations, the lack of knowledge bring about numerous problems, such as a state of panic. In this context, it is important knowledge about first aid among teachers of public primary schools. Therefore, urgent action seems necessary to be implemented by the professionals towards training teachers on first aid through in-service training programs. Furthermore, the problem needs to be addressed, and the addition of first aid education in the teachers' training curriculum might be suggested. These teachers in the school environment need to have specific and continuous training with health professionals to be qualified in emergencies in schools.

The schools which were visited during the time of study do not have a trained healthcare worker who can provide first aid in case of an accident. The Ministry of National Education has to be insisted compulsory school health services to all schools as well as recruitment of a school health nurse to each school.

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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 was conducted in accordance with all ethical rules. There is no financial or moral conflict of interest. Research data were collected before 2019. Therefore, ethics committee approval was not required.

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Pre-service Teachers' Views on Reading-Writing and Motivation of the Wikipedia Experience: A Qualitative Case Study

Öğretmen Adaylarının Vikipedi Deneyiminin Okuma-Yazmaya ve Motivasyonlarına İlişkin Görüşleri: Nitel Bir Durum Çalışması

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Abstract

Purpose: This research aimed to examine the opinions of pre-service teachers who experienced creating content in the application of Wikipedia, one of the Web 2.0 tools, on reading and writing experience and motivation.

Design/Methodology/Approach: Case study method within the qualitative research approach was used in the study. The study was carried out within the scope of the New Turkish Literature course in the spring semester of the 2019-2020 academic year. As a data collection tool, a semi-structured interview form prepared by the researchers by examining the related literature was used. The data were analyzed by the content analysis method. The pre-service teachers addressed the work they read by comparing the information contained in the Wikipedia application content from Web 2.0 tools, evaluating the deficiencies or excesses, made readings for this, and determined the deficiencies by writing (if not deleted on Wikipedia).

Findings: Wikipedia experience increased the motivation of Turkish pre-service teachers. It was found that their attitudes towards reading and writing were positive. The pre-service teachers stated that they found the application different, useful for understanding the book more, developing, beautiful, interesting, enjoyable, and sometimes challenging. The pre-service teachers stated that they gained different perspectives on the book; they saw different methods of examination, had the opportunity to make interpretations/develop content, learned the concepts they did not know, and what kind of information was included on Wikipedia about the book they were responsible for. In addition, the pre-service teachers determined that the evaluation of some books on Wikipedia was not sufficient.

Highlights: It examined the opinions of teacher candidates who have experience in creating content in the Wikipedia application about their literacy experience and motivation. Wikipedia experience increased the motivation of Turkish teacher candidates and improved their attitudes towards reading and writing in a positive way.

Öz

Çalışmanın amacı: Bu araştırma, Web 2.0 araçlarından Vikipedi uygulamasında içerik oluşturmayı deneyimleyen öğretmen adaylarının okuma ve yazma deneyimine ve motivasyonlarına ilişkin görüşlerini incelemeyi amaçlamaktadır.

Materyal ve Yöntem: Çalışmada nitel araştırma yaklaşımlarından durum çalışması kullanılmıştır. Çalışma 2019-2020 eğitim öğretim yılı bahar döneminde Yeni Türk Edebiyatı dersi kapsamında gerçekleştirilmiştir. Veri toplama aracı olarak, araştırmacı tarafından ilgili alanyazın incelenerek hazırlanmış yarı yapılandırılmış görüşme formu kullanılmıştır. Veriler içerik analizi yöntemi ile analiz edilmiştir. Öğretmen adayları okudukları eseri Web 2.0 araçlarından Vikipedi uygulaması içeriğinde yer alan bilgileri karşılaştırmak, eksiklik yahut fazlalıkları değerlendirmek yoluyla ele almış, eksiklikleri yazmak (Vikipedi'de silinmezse) yoluyla belirlemişlerdir.

Bulgular: Vikipedi deneyiminin Türkçe öğretmen adaylarının motivasyonlarını artırdığı; okumaya ve yazmaya ilişkin tutumlarının olumlu olduğu sonucu elde edilmiştir. Öğretmen adayları uygulamayı farklı, kitabı daha fazla anlamak için yararlı, geliştirici, güzel, dikkat ve ilgi çekici, keyifli, zaman zaman zorlayıcı bulduklarını ifade etmişlerdir. Öğretmen adayları kitaba ilişkin farklı bakış açıları kazandıklarını, farklı inceleme yöntemlerini gördüklerini, yorumlamalar yapma/içerik geliştirme fırsatı bulduklarını, bilmedikleri kavramları öğrendiklerini, sorumlu oldukları kitaba dair Vikipedi'de ne tür bilgilere yer verildiğini gördüklerini ifade etmişlerdir. Ayrıca öğretmen adayları Vikipedi'de bazı kitapların değerlendirmesinin yeterli olmadığını da belirlemişlerdir.

Önemli Vurgular: Vikipedi uygulamasında içerik oluşturma deneyimi yaşayan öğretmen adaylarının okuma yazma deneyimi ve motivasyonlarına ilişkin görüşleri incelemiştir. Vikipedi deneyimi Türkçe öğretmen adaylarının motivasyonlarını artırmakta, okuma ve yazmaya yönelik tutumlarının olumlu yönde geliştirmektedir.

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INTRODUCTION

Individuals enrich their lives and live by reading. Through reading, individuals; enrich their thinking, expand their knowledge, and get to know life from different aspects. An effective reading act has the feature of being the main source that feeds human thoughts. The individual's awareness of his individuality and the regulation of his relations with the society of which he is a member depends on gaining the power to read (Özdemir, 1991: 17-21). Students' reading comprehension power positively affects their academic success in the courses. It was stated that there is a correlation of 0.70 between reading comprehension level and literature lesson, 0.72 between mathematics lesson, and 0.62 between science lesson (Bloom, 1979: 48). Reading improves the ability to think fast and produce fast solutions. In this context, being a good reader is the basis of the correct evaluation of events and facts with a critical eye (Özdemir, 1997; Akyol, 2005).

Writing, a narrative skill, is as important as reading skills in terms of individual life. Communication styles and language activities that people have been in throughout their life have two main purposes. One of them is to understand any message that is read, listened to, or watched; the other is to explain what is seen, heard, and designed in the most clear and understandable way to those on the opposite side. There are two forms of narration, namely oral and written. Writing consists of explaining the messages to those on the opposite side using written language. Writing should also be considered in terms of the integrity of the courses, such as reading skills. Being able to express your thoughts correctly is also valid for lessons other than Turkish. Activities such as reporting an experiment in writing in Science lesson, preparing and summarizing a written homework on any subject in Social Studies lesson, and solving a problem in a written form in Mathematics lesson show that writing is a skill that should be used in all lessons (Temizkan, 2003: 6-7). Especially written expression is the basis of being successful in other lessons. Irregularity and disturbance in written expression generally cause problems in other lessons. For this reason, it is necessary to ensure that all students acquire a minimum of writing skills (Temizkan & Sallabaş, 2009).

Today, learning, teaching, and socialization are provided through digital media. Educational environments are designed where learners actively participate in learning, work in collaboration, and organize activities that develop critical and creative thinking skills(Karaman, Yıldırım, and Kaban 2008). The contributions of Web 2.0 tools to educational environments are as follows: Group work is a habit; it makes learning effective, develops thinking skills, provides information literacy, improves problem-solving ability, makes learning interesting, and contributes to personal development. Web 2.0 tools offers communication, interaction, information sharing and easy access to information, collaborative content creation, content storage and sharing, evaluation, visualization, etc. (Ajjan & Hartshorne, 2008; Altun, 2008). Wikipedia is one of the most popular featured among the Web 2.0 tools that increase students' motivation to learn(Pop, 2010) Wikipedia is "an open-source, free, nonprofit free encyclopedia whose content has been collaboratively prepared by volunteers from all over the world. Its content is written jointly by volunteers worldwide. In order to increase the know-how of Wikipedia, it makes changes to one hundred visits offers from around the world every day, and the proposal launches new articles. No special qualifications are required for visitors to contribute. People of all ages help with article writing on Wikipedia" (Wikipedia, 2021). Wikipedia is defined as the social use of the Web that allows people to collaborate, participate actively, generate information, and share information online (Grosseck, 2008). If we look at the educational functions of Wikipedia, it is a simple yet powerful Web-based collaborative authorization (or content management) system for organizing and creating content. It allows anyone to add a new post or modify an existing post via a Web browser. Its fundamental difference is that anyone can add anything. In a very short period, a large number of participants can contribute in different ways (Akar, 2010). According to Schwartz, Clark, Cossarin, and Rudolph (2004), Wikipedia enables teachers to present lesson information for students, prepare activities and lessons they can use during extracurricular times, create interactive activities, and create an environment where they can discuss their ideas. Teachers can follow their students' problem areas by watching their discussion on Wikipedia.

In the literature, it is possible to find studies related to Wikipedia in the field of education. In the study conducted by Chao and Chang Lo (2011), a Wiki-based collaborative writing application was implemented to improve the foreign language (English) writing skills of university students in Taiwan. At the end of the study, it was found that Wiki-based collaborative writing experience facilitated students' learning a foreign language, and students perceived Wiki positively. Wiki-based writing was given to 34 university students learning English as a foreign language (Warschauer and Grimes 2007). Students had positive experiences in using Wiki in writing in a foreign language and believed that their writing performance improved. In the study conducted by Wang (2015), a collaborative writing task was given via Wiki to improve Taiwanese students' English writing skills. Research results showed that the use of Wiki increased students' interest in language learning and the development of their writing competencies and improved the collaboration skills required for success in the workplace. A Wiki-based collaborative writing-based case study was conducted by Chu, Wu, Kwan, and Lai (2019) and revealed that while using the Chinese and English languages, the students showed similarities in the Wiki writing experience participation and cooperation activity patterns and showed that there were differences in the interaction patterns in the comment section. For native or foreign language educators, Wiki points to the need to effectively plan a collaborative writing experience.

Reading is one of the most effective tools in the formation of contemporary civilization values and their transmission from generation to generation. Therefore, it is important to instill in all students the awareness that making reading a habit is very important for their lives and raising them as individuals who are inclined to read (Temizkan & Sallabaş, 2009). As stated by Myette (2006), teachers are the most influential in students' acquisition of reading habits. In particular, teachers who will teach their

mother tongue are required to gain reading, reading comprehension, and writing skills. It is expected that pre-service teachers reinforce these skills during their education and gain them for their students when they start to practice their profession. Under today's conditions, it is possible to come across many abstracts and criticisms about the same book in internet sources, but its reliability cannot be questioned. However, content created by a large user base such as Wikipedia has a control mechanism. Content developed and contributed on Wikipedia, one of the Web 2.0 tools, can improve the motivation of individuals to read and write. Motivation is an important factor both in developing reading skills and making reading a habit. In this study, pre-service teachers evaluated the works they read within the scope of the New Turkish Literature II course. The pre-service teachers compared their evaluations with the information on the book on Wikipedia, identified the deficiencies or excesses in the content of Wikipedia, and expressed the detected deficiencies. Pre-service teachers also tried to contribute to an encyclopedia that is published on the internet and where everyone can contribute with the books they read. The aim of the study was to examine the opinions of pre-service teachers who have experienced creating content in Wikipedia about their reading and writing experience and motivation.

Depending on the purpose of the study, answers to the following questions were sought:

1. How do you evaluate your book review/reading and writing experience on Wikipedia?
2. What have you noticed/interested in during the process of reviewing the book you are responsible for by writing through Wikipedia?
3. How do you evaluate the appropriateness of conveying the findings of the book you are responsible for with Wikipedia?
4. How do you rate your confidence in practicing writing the book you are responsible for via Wikipedia?
5. What kind of feelings did you feel about browsing books on Wikipedia?

2. METHOD/MATERIALS

2.1. Research Design

This research is a descriptive study aimed to reveal the opinions of Turkish pre-service teachers who have experienced content creation in Wikipedia about their reading and writing experience and motivation. At the same time, this study can be qualified as a qualitative case study, as a single situation related to a certain student group in a university is examined in depth. Case study is a research design recommended by Shulman (1986, transmitting Campoy, 2005) to evaluate learning-teaching processes, especially in educational research, and defined by Stake (2000) as an in-depth analysis of a single situation.

2.2. Working group

The study group of the research was carried out with 29 pre-service teachers who were studying in the second grade of the Turkish Language Teaching Department in a state university in the Aegean Region and taking the New Turkish Literature II course. The research was carried out in the spring semester of the 2019-2020 academic year.

2.3. Research Limitations

Due to the Covid-19 epidemic of pre-service teachers who continued their formal learning process at the beginning of the semester, the Distance Education application started from the 5th week. The pre-service teachers continued their studies, which they started in computer classrooms, under home conditions. There were also limitations, such as the deletion of information written by pre-service teachers through Wikipedia.

2.4. Data Collection Instrument

In order to collect the data, a semi-structured interview form consisting of open-ended questions prepared by the researchers by examining the related literature was used.

2.4.1. Semi-Structured Interview Form

Within the scope of the qualitative dimension of the study, a semi-structured interview form consisting of five open-ended questions was prepared by the researchers in order to learn the opinions of the pre-service teachers about reading and writing and their motivation. Furthermore, in order to ensure the internal validity of these questions, the opinions of field experts who completed their doctorate in Turkish Language Literature Education and Computer and Instructional Technologies Education were considered, and necessary corrections were made.

1. How do you rate your book review/reading and writing experience on Wikipedia?
2. What have you noticed/interested in during the process of reviewing the book you are responsible for by writing through Wikipedia?
3. How do you evaluate the appropriateness of conveying the findings of the book you are responsible for with Wikipedia?
4. How do you rate your confidence in practicing writing the book you are responsible for via Wikipedia?

5. What kind of feelings did you feel about browsing books on Wikipedia?

The responses given to open-ended questions in the semi-structured interview form were examined by two researchers, and the similarity ratio of the data set was calculated. This similarity rate determines the reliability of the qualitative research. The reliability formula suggested by Miles and Huberman (1994) model was used. This similarity is called internal consistency and is conceptualized as the consensus between coders: Reliability = Consensus / (Consensus + Difference of opinion). The "consensus" and "disagreement" issues were discussed by the researchers, and the necessary arrangements were made (Baltacı, 2017). At the end of the calculation, the reliability of the study was .94 for the first question, 86 for the second question, .90 for the third question, .89 for the fourth question, and .94 for the fifth question. According to the coding control, which gives internal consistency, the consensus between coders is expected to be at least 80%. Therefore, the result obtained is considered reliable for the research.

2.5. Data Collection and Process Steps

Before the pre-service teachers examined and interpreted the works they were responsible for, resources such as articles, theses, and books were sent to the representatives of each group. Pre-service teachers were also expected to benefit from these sources during the review and interpretation phase after reading the book they were responsible for. Pre-service teachers have also been given a review/interpretation plan for the books they are responsible for. The issues expected to be emphasized during the review/interpretation process are as follows: First of all, knowing the author, his life, his works, and then knowing the heroes in work, expressing the characteristics of the heroes (physical and spiritual), determining and interpreting the effects of events on the heroes, welling on the relationship of the heroes with each other. Then, dwelling on the spaces, their features (wide and narrow space), the effect of space on events and heroes, their effect on the development of events, and the effect of spaces on heroes. In the novel, giving information about time (a chronological time or flow of consciousness, inner monologue etc.), the narrator's point of view (hero, observant, divine), language-narration, what is the main idea, why was this work written focusing on the headings and answering the questions are based. In addition to these, the works that pre-service teachers are responsible for; It has been determined within the main areas of national literature taste and understanding, the inner world of the individual, social realities, and modernism. To this end, students were held responsible for a work representing each group. Groups of six to seven pre-service teachers who were randomly determined for the application that included the whole class were formed. The groups and works under responsibility are as follows:

Table 1. Books That Pre-service teachers Are Responsible For

1st group Yakup Kadri Karaosmanoğlu: Yaban
2nd group Tarık Buğra: Küçük Ağa
3rd group Necati Cumalı: Zeliş
4th grup Peyami Safa: Yalnızız
5th group Kemal Tahir: Esir Şehrin İnsanları
6th group Sabahattin Ali: Kuyucaklı Yusuf
7th group Ahmet Hamdi Tanpınar: Saatleri Ayarlama Enstitüsü
8th group Adalet Ağaoğlu: Bir Düğün Gecesi
9th group Yusuf Atılgan: Anayurt Oteli
10th group Hasan Ali Toptaş: Gölgesizler

Table 2. Book Review Process Using Wikipedia Application

To inform pre-service teachers about the content of the study	20.03.2020-27.03.2020 (1 week)
Informing pre-service teachers about Wikipedia application/providing literacy experience	03.04.2020-10.04.2020 (1 week)
To inform pre-service teachers about the works they are responsible for	17.04.2020-24.04.2020 (1 week)
To determine the criteria by which the pre-service teachers will examine the work they are responsible for	27.04.2020-01.05.202 (1 week)
The process of reading and reviewing the works	04.05.2020- 01.06.2020 (4 weeks)
Evaluating the content created by the pre-service teachers on the Wikipedia application	08.06.2020-19.06.2020 (2 weeks)

2.7. Analysis of data

Qualitative data were analyzed using content analysis. Content analysis tries to define the data and reveal the facts that may be hidden in the data. The basic process in content analysis is to gather similar data within the framework of certain concepts and themes and to interpret them by organizing (Yıldırım & Şimşek, 2006). Sub-themes were created from the answers given by the pre-service teachers to the qualitative questions; tables were created in frequency by calculating the frequency of the sub-themes. Direct quotations were included in the interpretation of the findings; In direct quotations from participants, codings expressing the number of pre-service teachers were used. As an example, pre-service teacher number 1 is given in the form of S1.

3. FINDINGS

In this section, findings obtained from qualitative data are included. In addition, the responses given by the pre-service teachers to open-ended questions were analyzed by using the content analysis method.

First research question: "How do you evaluate your book review/reading and writing experience on Wikipedia?"

Table 5. "How do you evaluate your book review/reading and writing experience on Wikipedia?" Frequency Regarding the Question.

How do you evaluate your book review/reading and writing experience on Wikipedia?	F
It was the first time I had such an experience; it was an interesting, fun, beautiful, developer, and useful experience.	18
I think I understand the book better, thanks to the review. We did a versatile review.	5
I had the opportunity to look critically at the information on the Wikipedia page.	3
It is a good feeling to share the information we have and our views with everyone; I gained experience about Internet writing.	2
I did not find it useful.	1

As seen in the table above, "How do you evaluate your book review/reading and writing experience on Wikipedia?" The answers to the question stated that they had such an experience for the first time, they found it useful, and it was a positive experience. The developer made them happy to share the information, and it contributed to the book's understanding more. Examples of the responses of the pre-service teachers are as follows:

It was the first time I had such an experience; it was a very useful and positive experience. S3

I gained experience with Internet writing. S4

I think it was a nice experience. Because it is a nice feeling to share the information we have and our opinions with everyone. S7

I think I am not fully competent in reviewing the book, but I understand the book better, thanks to our review. S9

I had the opportunity to look critically at the information on the Wikipedia page. S11

I think it's nice and developer. S12

It was a systematic process. Therefore, I did not have any difficulties. Going step by step made the review process easier. And that's why it was such a good experience. S13

This is a very different experience to examine a book and to bring it to a platform accessible to everyone, to know that it will pay off for people to have information about that book in the light of your writing. S14

It was a bit difficult to show a bibliography or something because it was the first. S17

I think it was very enjoyable. Wikipedia is among the first sites that I go to when I want to learn something. As such, it made me happy to think that I would be a contributor to the Wiki. S21

It's a nice and fun start. S22

I found it nice because there is significant information on Wikipedia and the accessibility of the bibliography of the information given. S23

We had some systemic problems with Wikipedia, and Wikipedia did not save the information we wrote; it deleted it immediately. For this reason, my writing experience on Wikipedia was not very good, but I can say that my book review experience was a successful process. S25

Second research question: "What have you noticed/interested in during the process of reviewing the book you are responsible for by writing through Wikipedia?"

Table 6. "What were the things that caught your attention/interest in the process of reviewing the book you are responsible for by writing through Wikipedia?" Regarding the Question

What have you noticed/interested in during the process of reviewing the book you are responsible for by writing through Wikipedia?	F
It was the first time I created content for Wikipedia, and it was interesting to use Wikipedia as well.	12
I gained different points of view about the book. For the first time, I studied a book deeply, willingly, and fondly. I improved myself.	10
Learning how to use Wikipedia impressed my attention.	4
I found that writing on Wikipedia is not that difficult. Thus, we can both research and write and share this information with people.	2
I realized that I was having a hard time.	1

Also seen in the table above, "What caught your attention/interest in the process of reviewing the book you are responsible for by writing through Wikipedia?". I gained different perspectives on the answers to the question. I had the opportunity to improve myself. I did not know that we could make content on Wikipedia. I was very surprised when I learned this. it was interesting to use Wikipedia as well. Examples of pre-service teachers' responses are as follows:

It was the first time I studied a book deeply, willingly, and fondly. S2

It was the first time I created content for Wikipedia; it was interesting to use Wikipedia as well. S6

When we read the book normally and not examining it too much. I realized that we actually ignored very important parts of the book, but thanks to these reviews, we were able to address better the places that were not ignored or ignored in this way. S7

I realized I was having a hard time. S8

I had the opportunity to improve myself. S9

In addition to providing detailed information about the work and the author, I used different sources to slightly change the ordinariness. I did this via TRT Archive. Based on a program hosted by Tarık Buğra. Through this program, I had the opportunity to listen to and convey information about Tarık Buğra's life and literary personality personally. And this part caught my attention. S10

I didn't know we could make content for Wikipedia. I was so surprised when I found out. S11

It was interesting to look at the book from all sides. S14

The information about the author caught my attention. S15

Learning how to use Wikipedia impressed my attention. S16

I found that writing on Wikipedia is not that difficult. Thus, we can both research and write and share this information with people. S26S

Third research question: "How do you evaluate the appropriateness of conveying your findings of the book you are responsible for with Wikipedia?"

Table 7. "How do you evaluate the appropriateness of conveying your findings of the book you are responsible for with Wikipedia?" Regarding the Question

How do you evaluate the appropriateness of conveying your findings of the book you are responsible for with Wikipedia?	F
I find it convenient because people browse Wikipedia for information on any topic.	14
I think it is suitable for the content, and we provide information appropriate to the content. A different study compared to many assignments.	13
It is not available. I could not understand.	2

As seen in the table above, "How do you evaluate the appropriateness of conveying your findings of the book you are responsible for with Wikipedia?." It was enjoyable to research and share what I read with everyone and think that I was contributing to it; We found that this activity differs across many assignments. While we were so close to technology, such homework was good for us too. Examples of pre-service teachers' responses are as follows:

I think it is appropriate. I think we made the correct determinations. S3

I think it is a work that is suitable for the content and will increase the attention and interest in the subject. S5

I think it is appropriate to transfer the findings of the book to Wikipedia. S6

Suitable for sharing book review. S7

I find it convenient because people browse Wikipedia for information on any topic. S8

I think it is suitable for the content of the course because I think it is more effective to write via Wikipedia, rather than writing with pencil and paper, since it is the age of technology today. S9

I think it is appropriate, after all, everyone should know each other's opinions about the books. It would be more useful to know more than one person's opinion about a book. S11

I think it was a great experience. It was enjoyable to research, share what I read with everyone, and think that I contributed to it. S13

Good application in terms of spreading to the universal. S14

I think it was very convenient and good in terms of accessibility to bibliographies. S15

We found that this activity differs across many assignments. While we were so involved with technology, such homework was good for us too. Ö16

We tried to do it according to the content, and I think it is quite suitable. S20

Fourth research question: "How do you evaluate your confidence in practicing writing the book you are responsible for via Wikipedia?"

Table 8. "How do you evaluate your confidence in the practice of writing the book you are responsible for via Wikipedia?" Regarding the Question

How do you evaluate your confidence in writing the book you are responsible for with Wikipedia?	F
Although I initially thought I could not do it, I think my self-confidence increased with the advancement of writing practice. The feeling of accomplishing something is pretty reassuring. I was very afraid of giving false information but the more I researched, the more relieved.	25
I never had insecurity or a feeling that I couldn't. Nothing changed about trust in me. Ordinary.	4

As seen in the table above, "How do you evaluate your confidence in writing the book you are responsible for via Wikipedia?" The answers to the question show that although I think I cannot do it at the beginning, I think that my self-confidence increases with the progress of writing practice. Examples of the responses of pre-service teachers are as follows:

The feeling of accomplishing something is pretty reassuring. S1

Although I initially thought I could not do it, I think my self-confidence increased with the advancement of writing practice. S6

I am taking it well. Writing an article with the information we have acquired is a very confidence-building activity.S8

I never had insecurity or a feeling that I couldn't. S9

Nothing changed about trust in me. S11

It was a process that required reflection. This process was intriguing for me as I haven't written a post on Wikipedia before. I think you have successfully completed this process. That's why my confidence has risen. S12

When I saw the information on Wikipedia, I became more confident. S13

I can say it has increased my confidence. S14

I think it's going in a positive direction. I also think I broke the taboos about research. S15

I had full confidence in myself in this matter. I thought I could literally analyze a book. S16

I see positive self-esteem. S19

It was a difficult process and required a lot of attention to writing on such a platform. S20

Ordinary. S21

My self-confidence is as follows: I did the review of the book I was responsible for, so my self-confidence increased in this process. But I can say that I cannot build my confidence in this issue because I cannot write via Wikipedia. S27

I was very afraid of giving false information, but the more I researched, the more relieved. So I was worried at first, but when the work was over, I realized that all my anxiety was wasted. I think I did good work. S29

Fifth research question: "What kind of feelings did you have to browse through Wikipedia?"

Table 9. "What kind of feelings did you feel about looking at a book on Wikipedia?" Regarding the Question

What kind of feelings did you feel about browsing books on Wikipedia?	F
Interest, motivation, fun, curiosity, excitement, happiness, success, thinking of doing useful work, getting informed, excitement of learning new things, worry	27
Nothing	2

As seen in the table above, "What kind of feelings did you feel about looking at a book through Wikipedia?" The answers to the question are as follows: It is fun and they feel happiness, trust, sense of accomplishment. It is exciting andthey think they have done a useful job, and they have developed. The responsibility and anxiety-like feelings given by research and investigation are expressed. Examples of pre-service teachers' responses are as follows:

It was fun; I felt informed. S3

Honestly, I felt like I did a lot of great things. S6

It was exciting because it was the first time I did. S8

It made me read the book more carefully and meticulously. S11

Happiness, trust, sense of accomplishment. S14

It was exciting. S18

It aroused good feelings. It made me think I'm doing a useful job. S19

It was the first time I created content for Wikipedia, which I only used while researching. It was nice to learn new things and do some new work. S23

It was an intriguing process. S24

Before I read the information there, I was excited. When I read the information on Wikipedia, I became more confident, and I am glad. S26

Absolutely aroused good feelings were improving me. S28

4. DISCUSSION AND CONCLUSION

Teachers who can respond to the educational needs of the 21st century are expected to use information technologies, to have a command of the subject area, to be able to use teaching methods and techniques appropriate to the nature of the subject, to have technological, pedagogical and field knowledge competencies that can actively participate (İlhan, 2004). With the advancement of technology, it is possible for pre-service teachers to learn the use of Web 2.0 tools during their education. Web 2.0 tools help students improve their cooperative learning, research, inquiry and problem solving skills; It makes it easier for them to actively participate in learning, interact with teachers and content, and contribute to the content.

In this study, Turkish pre-service teachers evaluated the books they read within the scope of the New Turkish Literature II course, taking into account the given evaluation plan. The pre-service teachers read the post on Wikipedia about the book they were responsible for and compared the sharing with their own evaluations. If the pre-service teachers thought that the post on Wikipedia was incomplete or incorrect, they tried to write the content they developed themselves. Wikipedia provides students with the opportunity to create , manipulate , and control the content (Özmen, Aküzüm, Sünkür, & Baysal, 2011). If the content written on Wikipedia goes through the approval process, it has been published. The pre-service teachers made themselves happy to express their opinions and know that someone should have information on Wikipedia on a platform that is accessible to everyone regarding the book review/reading and writing experience; it is a useful, developer experience. They stated that it is interesting and fun. It can be said that the reading and writing experiences of Turkish pre-service teachers about Wikipedia are "positive." When we look at the studies on Wiki in the literature, there are study findings that it improves foreign language writing skills (Altay, 2018; Lee & Wang, 2013) and improves literacy skills (Chao & Chang Lo, 2011; Warschauer & Grimes, 2007; Chu, Wu, Kwan & Lai, 2019; Yılmaz, 2009). Turgut (2009) stated that writing activities carried out in cooperation with online help students improve themselves in writing.

In the process of examining the book they were responsible for by writing through Wikipedia, the pre-service teachers answered the question of what attracted their attention/interests as follows: The pre-service teachers gained a different perspective on the book they were responsible for; they wanted to see different methods of examination. They see that the evaluation of some books on Wikipedia is not sufficient; they have the opportunity to make comments/develop content, learn concepts they do not know, and see what kind of information is included on Wikipedia about the book they are responsible for.

The pre-service teachers answered the question of how they evaluate the compatibility of the book they are responsible for with the content of the course with Wikipedia: They find it appropriate to share the book reviews they are responsible for with others; it has been stated that people trust the accuracy of the information created on Wikipedia and are visited to get information on any subject. As stated by Gürgan (2012), which supports the results obtained, Web 2.0 environments, which are widely used today, are not only educational environments, but these environments where learners can develop social relationships and share can be considered as an environment that supports education. Another result that supports the result of the research was obtained in the study conducted by Yılmaz (2009), which was found that Wikipedia activities motivate learning foreign languages and increase students' self-confidence.

How do you rate your confidence in writing through Wikipedia? The question was answered as follows: Pre-service teachers are confident; they believe they can achieve although initially thought they could not do it, their self-confidence increased with the advancement of writing practice. But unfortunately, the writings of some pre-service teachers were not accepted on Wikipedia.

The pre-service teachers who examined the book with Wikipedia stated that they found the application different, useful for understanding the book more, developing, beautiful, attention and interesting, enjoyable, and sometimes challenging. They also stated that they find this process enjoyable, feel happy, and feel a sense of success and excitement. They further stated that the application makes them realize that they have done a useful job, develop themselves, increase their confidence, and taste the responsibility of research and investigation. Warschauer and Grimes (2007) found that educators found Wiki writing more motivating than traditional writing assignments; They stated that students worked in collaboration with strength, attention, and enthusiasm to complete and develop a dictionary of important terms and concepts. "Digital Natives" are students who can use information and communication technologies quite well. Students named as digital natives expect their teachers to make lessons effective and interesting by using information and communication technologies (Prensky, 2001). In this study, it was found that Wikipedia experience increased the motivation of Turkish pre-service teachers; It was found that their attitudes towards reading and writing were positive.

Based on the results obtained from the research, the following suggestions should be taken into account:

1. By using Wikipedia, one of the Web 2.0 tools, topics that will contribute to the development of Turkish pre-service teachers' reading and writing skills can be determined, and similar studies can be planned.

2. By using Wikipedia, which offers pre-service teachers the opportunity to work in collaboration, studies that will contribute to the development of reading and writing skills can be planned.

3. Since the development of pre-service teachers' skills related to rapid content development will positively affect the increase of qualified studies in the field of Turkish teaching, pre-service teachers in Education Faculties will have Web 2.0. It is thought that it would be beneficial to include practical lessons by using the tools.

4. Pre-service teachers can easily develop content from the books they read by using Web 2.0 tools such as Blog, Facebook, and Instagram. Reaching other readers with these tools can increase pre-service teachers' motivation. Can develop a positive attitude towards reading and writing.

5. Experimental studies using Web 2.0 tools can be planned to improve pre-service teachers' reading comprehension and writing skills and to be willing to read and write.

Examples of author contribution statements

Author 1 and 2 developed the problem situation of studies. The author conducted 1 detailed literature review. The author carried out 2 applications. Authors 1 and 2 analyzed the collected data, discussed the results, and wrote the report.

Researchers' contribution rate

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

Ethics Committee Approval Information

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed.

Ethics committee permission information

Name of the board conducting the ethical review = Kütahya Dumlupınar Üniversitesi Rektörlüğü, Sosyal ve Beşeri Bilimler Bilimsel Araştırma ve Yayın Etiği Kurulu

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|Araştırma Makalesi / Research Article|

Investigation of Planning Skills in Children and Adults with the Computerized 4-Disc Version of The Tower of London Test

4 Diskli Londra Kulesi Testinin Bilgisayarlı Versiyonu ile Çocuklarda ve Yetişkinlerde Planlama Becerisinin İncelenmesi

Elif GÜVEN DEMİR[1], **Yücel ÖKSÜZ**[2]

Abstract

Purpose: Planning ability is one of the core abilities and plays an essential role in problem-solving and decision-making processes. It is mainly critical in childhood to manage school-related demands and carry out daily activities at older ages. This study aimed to develop and apply a computerized version of the 4-disc Tower of London (TOL) test for planning skills.

Design: The research was conducted by three studies, including children, adults, and combined samples. The research consisted of children and adults who were 5-53 years old. Nonparametric tests were used, thereby that the research data had a non-normally distributed pattern.

Findings: Research results showed significant relationships between age and planning ability, the number of problems solved on the first trial, and the number of problems solved within three trials. Results showed that increasing planning ability and the number of problems solved on the first trial was associated with increasing age. The increasing number of problems solved within three trials was associated with decreasing age. There was no significant relationship between age and planning time.

Highlights: Research results showed that gender has an effect on planning time in the adult group. Results showed that TOL has an average medium difficulty level and good item discrimination level in the children sample. Besides, item difficulty and discrimination levels of TOL in the adult sample were acceptable. Results showed that the internal consistency level of TOL was acceptable. In this study, only item difficulty, discrimination, and internal consistency analysis were performed, and studies including detailed validity and reliability analysis can be conducted in future studies.

Öz

Çalışmanın Amacı: Planlama becerisi, problem çözme ve karar verme sürecinde önemli bir rol oynayan temel becerilerden biridir. Özellikle çocukluk döneminde okulla ilgili öğrenme süreçlerinin yönetilmesinde, ilerleyen yaşlarda ise günlük hayat aktivitelerinin yerine getirilmesinde önemli bir yere sahiptir. Bu çalışmanın amacı, planlama becerisini ölçen 4 diskli Londra Kulesi (TOL) testinin bilgisayarlı bir versiyonunu geliştirmek ve uygulamaktır.

Materyal ve Yöntem: Araştırma, çocukları, yetişkinleri ve her ikisini de içeren grupların yer aldığı üç aşamada gerçekleştirilmiştir. Araştırma, 5-53 yaş arası çocuk ve yetişkin bireylerin katılımıyla gerçekleştirilmiştir. Araştırma verilerinin normal dağılım göstermemesi sebebiyle verilerin analizinde parametrik olmayan testler kullanılmıştır.

Bulgular: Araştırma sonuçları, yaş ile planlama becerisi, ilk denemede çözülen soru sayısı, üç denemede çözülen soru sayısı arasında anlamlı ilişkiler olduğunu göstermektedir. Sonuçlar, artan planlama becerisinin ve ilk denemede çözülen sorun sayısının artan yaşla ilişkili olduğunu göstermektedir. Üç denemede çözülen soru sayısının yaşın azalmasıyla ilişkili olduğu, yaş ile planlama zamanı arasında anlamlı bir ilişkinin olmadığı tespit edilmiştir.

Önemli Vurgular: Araştırma sonuçları, yetişkin grupta cinsiyet değişkeninin zamanı planlamada etkili olduğunu göstermektedir. Sonuçlar TOL'un çocuk örnekleminde ortalama düzeyde zorluk ve iyi düzeyde de ayırıcılık düzeyine sahip olduğunu göstermektedir. Yetişkin örnekleminde ise TOL kabul edilebilir düzeyde ayırıcılık ve zorluk düzeyine sahip olduğu tespit edilmiştir. Sonuçlar TOL'un iç tutarlılık düzeyinin kabul edilebilir düzeyde olduğunu göstermektedir. Bu araştırmada yalnızca madde güçlük, ayırıcılık ve iç tutarlılık analizi gerçekleştirilmiş olup, ilerleyen araştırmalarda ayrıntılı geçerlik ve güvenirlik çalışmaları yapılabilir.

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INTRODUCTION

Planning ability is an essential cognitive skill as a part of executive functions. Executive function is an umbrella term that refers to multiple processes and includes complex cognitive skills and their relationship to adjust target-oriented behavior. Hughes (2002) described executive functions as a complex cognitive process and flexible target-oriented behaviors, including planning, inhibition control, flexibility in attention, and working memory. In addition, there are particular core abilities; planning, focusing, and sustaining attention, temporal organization, executing target-oriented behaviors, blocking inappropriate responses, being fluent and flexible in thought and action, monitoring behaviors, and using feedback to regulate behavior (Tunstall, 1999; Fossati, Ergis & Allilaire, 2002).

There is a debate about whether planning ability is a specific executive function (Rönmark, 2014). Asato, Sweeney, & Luna (2006) suggested that planning is a complex cognitive process that requires integrating core cognitive components, including response inhibition and working memory. McCormack & Atance (2011) mentioned three claims about planning and executive function ability. The first claim suggests that planning develops as part of a general, unfractionated executive function ability. The second claim is that planning itself develops as a relatively separate sub-component of executive functions (Levin & Hanten, 2005; Welsh, Pennington, & Grossier, 1991; as cited McCormack & Atance, 2011). The third claim is that children's performance on planning tasks improves due to developmental changes in the subcomponents of executive functions (McCormack & Atance, 2011). The complex structure and subcomponents of executive functions may require planning ability in different ways. Rönmark (2014) suggested that planning is seen as a possible combination of different executive functions.

Planning is a complex form of action that consists of a consciously predetermined sequence of actions that will be adequate for achieving a task (Pea, 1982). Owen (1997) described planning ability as "thinking ahead," which is a central element of many aspects of complex behavior and is a basic necessity of many cognitive and motor tasks. At the core of diversified definitions of planning involves the mental representation and/or behavioral execution of actions to achieve a future goal (Tunstall, 1999). Harlow (1869) can be considered the ancestor of the concept of planning ability in the anatomic structure. Owen (1997) mentions that Harlow (1869) argued that frontal lobe lesions in humans result in a loss of "planning skill." Besides, Luria (1966) distinguished three functional units in the brain where each unit has the planning role. The prefrontal cortex has a central function in cognitive control in arranging thought and action in accordance with internal goals (Miller & Cohen, 2001). Dockery, Hueckel-Weng, Birbaumer & Plewnia (2009) indicated that planning abilities are preconditions for successful problem solving and effective behavior, and patients with frontal lobe pathology as schizophrenia, depression, and lesions, commonly show executive function impairment.

Diverse definitions of planning bring along the differentiation of naming and thoughts at the point of exit. Some researchers consider that planning occurs only before the commencement of the action, although most consider that planning occurs both prior to and during the action (Scholnick & Friedman, 1987, as cited by Tunstall, 1999). Pea (1982) mentioned that the planning process comprises four steps. The first step represents the planning problem situation, a task that requires the planner to define the seal state, define the problem state, note the differences between the problem and goal states, and determine planning constraints (Pea, 1982). The following steps are plan construction, which includes requiring the formulation of a plan to eliminate the differences between the problem and the goal state, plan execution, and planning process is remembering. Besides, planning was distinguished within three different levels: activity planning, action planning, and operation planning in activity theory (Leontjev 1978; as cited by Das & Georgiou, 2016). Grafman (1989) and Shalice (1982) suggested that planning can be described as a double-level process: (1) The formulation level relies on the ability to mentally develop a logical strategy to predetermine the course of action aimed at achieving a specific goal. (2) The execution level is concerned with the competence of monitoring and guiding the execution of the plan towards a successful conclusion (as cited in Allain et al., 2005).

The planning ability emerges early and has a long developmental course associated with the prefrontal cortex's development, which continues to develop through adolescence and early adulthood (Wilding, Munir, & Cornish, 2001 as cited in Less, 2008). Planning ability is widely regarded as an important developmental achievement (McCormack & Atance, 2011). Particularly in childhood, planning ability is critical for social and cognitive development, such as managing school-related demands and balancing various activities (Blair, 2002; as cited in Less, 2008). In addition, planning ability is a higher-level cognitive process and plays a vital role in problem-solving and decision making (Mahapatra, 2016).

The planning ability is involved in a range of important life skills such as cooking, shopping, and various occupational tasks (Phillips, Kliegel & Martin, 2006). Cahn-Weiner, Malloy, Boyle, Marran & Salloway (2000) claimed that planning ability as an executive function is a better predictor of the ability to carry out daily activities in old age than more computerized cognitive measures such as intelligence and memory (Phillips et al., 2006).

The two distinct approaches investigating the planning ability are observing the planning ability in the natural environment while performing daily life tasks and measuring the planning ability with the standard test in a clinical or laboratory environment (Tunstall, 1999). Both approaches have advantages and disadvantages in terms of investigating the planning process properly. Lack of control on variables that may affect the planning process in daily life and lack of contact with daily life tasks are disadvantages of each approach. However, the potential of controlling environmental and task variables provides an advantage to the standard tests to investigate daily life planning ability (Tunstall, 1999).

Tower task tests have been popular in measuring planning and problem-solving ability. The initial tower test, the Tower of Hanoi, was invented by the French mathematician Edouard Lucas and marketed as a toy in 1883 (Gardner, 1959; as cited by Rönnlund, Lövden & Nilsson, 2001). Simon (1975) used the Tower of Hanoi to measure problem-solving skills to show that even in simple problem environments, numerous distinct solution strategies are available, and different subjects may learn different strategies. The Tower of Hanoi consists of three pegs and several disks of varying sizes (Goel & Grafman, 1995). Given a start state, in which the disks are stacked on one or more pegs, the task is to reach a goal state in which the disks are stacked in descending order on a specified peg (Goel & Grafman, 1995). The Tower of Hanoi is traditionally administered so that the puzzles require an increasing number of moves for a solution, and the task is scored as the number of puzzles solved or the highest level (number of steps to solution) reached (Kopecky, Chang, Klorman, Thatcher, & Borgstedt, 2005). Shallice (1982) aimed to develop an instrument with gradual difficulty levels providing a greater variety of qualitatively different problems than the Tower of Hanoi (Unterrainer, Rahm, Halsband, & Kaller, 2005). Although the Tower of Hanoi test offers several advantages as it is portable, visually stimulating, less threatening than many problem-solving tests, and is easy to apply from early ages to old ages, there are doubts about its ability to measure planning (Tunstall,1999; Goel & Grafman, 1995). Shallice (1982) claimed that the Tower of Hanoi test did not have the potential to have several quantitatively different versions of comparable difficulty (Shallice & Burgess, 1991, as cited by Tunstall, 1999). Shallice (1982) has developed the Tower of London test (TOL) based on the Tower of Hanoi test in artificial intelligence studies as a planning task.

The Tower of London test has many variations. The original TOL has three discs, colored red, green, and blue, and three poles in increasing heights (see figure 1). Respondents must rearrange the discs to match a target arrangement and do so in a specified number of moves (Andrews, Halford, Chappell, Maujean, & Shum, 2014).

Initial Position   Target Position
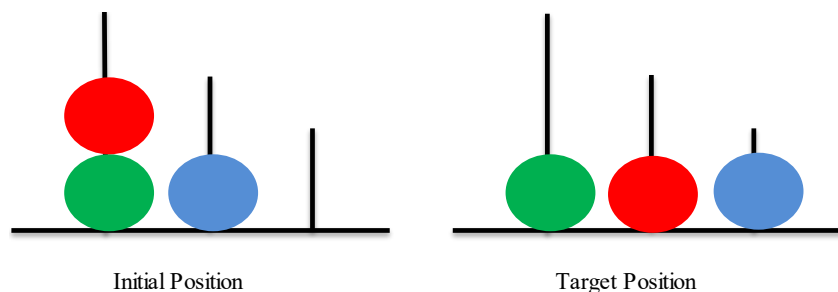
Figure 1: A subproblem of the Tower of London Test. The initial position is the same for all problems.

Ward & Allport (1997) have claimed that the original version of TOL may be useful with special populations, but it is too simple for investigating normal subjects' planning ability. The variations of TOL have been developed and differed according to problem sets, number, and colors of discs, task instructions (Tunstall, 1999). There are 3-, 4- and 5-disc versions of TOL (Shallice,1982; Kafer & Hunter, 1997; Ward & Allport, 1997). Besides time limits and rule breaks, the variables that were altered affect test scores in different versions of TOL. Tunstall (1999) mentioned several limits of TOL with different variations. These are;

- The time limit applied in some versions causes confusion about measuring the planning ability or planning speed.
- The unstated rationale for problem selection.
- The ability to discriminate colors affects test performance.

Tunstall (1999) aimed to eliminate the limitations listed above by developing the 4-disc version of TOL. Tunstall (1999) increased the number of discs from 3 to 4 to overcome a commonly observed ceiling effect in the original version (Shum, Ungvari, Tang & Leung, 2004). In addition, Tunstall (1999) altered discs' colors, enabling individuals with color vision deficiencies to discriminate the discs (see figure 2).

Initial Position   Target Position

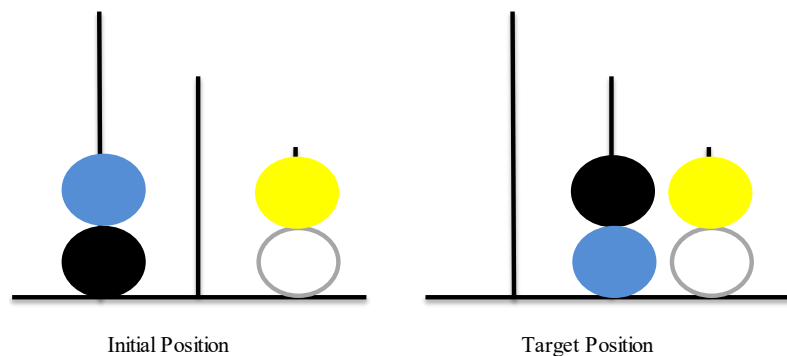**Figure 2: A subproblem of the 4 disc TOL. The initial position is the same for all problems.**

The features of 4-disc TOL, which eliminated the ability of color discriminating, increased level of test difficulty, its improved scoring method, and its promising psychometric properties are the reasons to be preferred by this study and others (Shum et al., 2009; Andrews et al., 2014).

Atalay & Cinan (2007) conducted a reliability and validity study of the Drexel version of the Tower of London test (three pegs, red, green, and blue) for adult groups in Turkish society. However, the features of the 4-disc TOL mentioned above provide advantages for use in diverse groups. The 4-disc TOL was used by Cinan & Ünsal (2011) to investigate the impact of the performance of the perceptual properties of the beads on planning performance in Turkish society. In this study, the computerized version of the 4-disc TOL was developed and applied in Turkish society.

Computers provide the advantage of more precise measurement, timings, and presentation speeds that can be controlled precisely, especially when complex cognitive skills are being assessed (Singleton, Horne & Simmons, 2009). Computerized measurements might represent potential cost savings, not only with regards to materials and supplies but also the time that the test administrator needs (Wild, Howieson, Webbe, Seelye & Kaye, 2008). Assessing older children and adults can be generally self-administered, and results can be obtained immediately; both these factors help reduce administrative workload and avoid retardation (Singleton, Horne & Simmons, 2009). Reduced need for administration by trained personnel provides cost savings and scheduling flexibility as benefits of computerized testing (Wild et al., 2008). Besides, the subjective judgment of the test administrator does not affect the test results and reliability of measurement (Singleton, Horne & Simmons, 2009).

Singleton, Horne & Simmons (2009) claimed that adults, as well as children, often prefer computerized assessment to traditional assessment, and participants often find traditional assessment by another person stressful and anxiety-provoking, particularly when the assessor is perceived as 'teacher' or some equivalent professional. Results of research carried out by Fillit, Simon, Doniger & Cummings (2008) about the practicality of the computerized system for cognitive assessment showed that patients have found the computerized assessment easy to use and understand. Computerized measures to investigate planning ability certainly have practical advantages, such as the precise timing of stimulus presentation and automatic recording of behavioral responses (Tecwyn, Thorpe, & Chappell, 2013).

Despite the advantages mentioned above, there are a limited number of computerized assessments and planning ability measurements in Turkish literature. Cinan (2015) developed Istanbul 5 Cube Planning Tower measuring the planning ability and computerized version. However, long-standing literature accumulation and clinical studies provide advantages in measuring planning skills with TOL.

In this study, a computerized version was developed and gathered data on child samples differently from Cinan & Ünsal (2011). At this point, the current study provides advantages to be used in further studies and extensive samples. The study aimed to determine item discrimination, difficulty, reliability levels of a computerized version of 4-disc TOL and measure planning skills in different age groups and gender.

METHOD

Research Design

The current study was designed as a quantitative general screening model.

Research Sample

The current study was comprised of three studies that have different participants described below in the procedure section. TOL was transformed into a computerized test form, but it was not applied via an online platform; instead, it was applied offline in the environment created by researchers in study 1. Since the research was conducted in a wide age range, more participants were needed in each age group. For this reason, the computerized test has been moved to the online platform. Thus, study 2 with a children sample and study 3 with an adult sample were conducted online. Due to the elapsed time and different test presentations, the data collected later were not combined with the first collected data but were planned as separate studies. Table 1 is presented to express the sample's distribution in different phases of the study more clearly.

Table 1. Study sample

Phases	Age		Gender	
	5-14	15-53	Female	Male
Study 1 (combined sample)	82	170	129	123
Study 2 (children sample)	88	-	41	47
Study 3 (adult sample)	-	244	134	110
Total	170	414	304	280

The total number of participants in the study was 584. Participants aged 5-14 years attend primary school (N:127) and secondary school (N:43) in the 2016-2017 academic year in Samsun. The education level of participants aged 15-53 years were

high school (N:100), graduate school (N:292), and postgraduate (N:22). The detailed demographic data about the participants were reported in each study below.

Research Instruments and Procedures

4-disc version of the Tower of London was developed by Tunstall (1999). Besides, reliability and validity studies of TOL for clinical use were conducted by Tunstall, O'gorman & Shum (2016). Developing a new version of TOL was conducted with three experiment processes by Tunstall (1999). Tunstall initially created a large pool of possible items that varied in the number of moves required to solve, and the most sensitive items were selected from the pool regarding item difficulty and discriminating psychometric criteria (Shum et al., 2009). The internal consistency level of 4-disc TOL was compared with 3-disc TOL and was found better. The test-retest reliability level of the test was found acceptable. Besides, provided normative data towards ages 5 – 53 within a heterogeneous group, reliability and validity study results showed that 4-disc TOL measures planning ability properly. Tunstall used Krikorian, Bartok & Gay's (1994) scoring method on 4-disc TOL, which involves removing possible speed and accuracy confusions and giving the maximum potential for discrimination by including three trials per item (Shum et al., 2009). 4-disc TOL consists of 10 items that are split in half as "simple" problems require 2 to 5 moves, and "complex" problems require 6 to 9 moves (Shum et al., 2009). TOL includes a total score, the number of problems solved on the first trial, the number of problems solved within three trials, and planning time (Tunstall, 1999).

The total score consists of total points in which three points were awarded for solving a problem on the first trial, two points on the second trial, one point on the third trial, and zero if the problem was not solved within three trials (Tunstall, 1999). The total score can be obtained from the 4-disc TOL ranging from 0 to 30. The score of the number of problems solved on the first trial measures the accuracy of initial plans, which means accuracy runs fairly straightforward through the planning process (Tunstall, 1999). The score of the number of problems solved within three trials measures the ability to monitor actions, use feedback to modify incorrect plans, and adjust plans (Tunstall, 1999). Planning time was calculated as the average time from the commencement of the trial until the first disc was released and summed across the first trials of all tried problems (Tunstall, 1999). Planning time score measures patterning abilities such as conceptualization, generation of visuospatial patterns, possible solutions, analysis, and inhibiting inappropriate responses (Tunstall, 1999).

The computerized version of 4-disc TOL was developed by using the Adobe Flash Professional CS6 program. The introduction of the test was made via a video record showing test rules, sample problems, and solutions. Data about participants' responses, such as the number of solved problems, movements, and movement time, were saved via the used online platform automatically. The problems in the original version developed by Tunstall (1999) were used in the computerized version, and any new planning problem was not constructed in this study. The validity and reliability study of the 4-disc TOL was conducted by Tunstall (1999). In this study, there was no need for a validity study other than item analysis since no new items were added and there were no cultural elements in the items. Item discrimination, difficulty, and internal consistency levels of 4-disc TOL in this research are presented in the Results section.

Research data had been collected in two phases. In the first phase, the computerized version of the 4-disc TOL was developed and applied to participants aged 5-53 years (N:252). We communicated with children sample through primary schools and applied tests in state primary and secondary schools. The data towards the adult sample also were gathered in state schools and a university in Samsun. Six months later, in the second phase, the computerized version of 4-disc was published on the website at oyna.biliminrenklidunyasi.com to collect more data. This website was not open to access, and it was just used to collect data. At this phase, participants were asked to use the test via the website. In the second phase, 88 children (aged 5-14 years) and 244 adults (15-53) participated. Participants were asked to indicate where they live in the online form attached to the TOL. Thus, participants who live in Samsun were included in the study. Research data were evaluated as in three studies because of the varying data collection method in two phases.

Data Analysis

The normality of study data was tested primarily. Kolmogorov Smirnov normality test was used to determine if study data sets were well-modeled by a normal distribution. Test results showed that TOL scores were not distributed normally within age and gender groups (p<.05). In addition, transformations did not make the distribution acceptably normal. Thus, the Kruskal- Wallis H test as a nonparametric test was used to compare TOL scores according to age groups. In order to assess the effects of age on planning skills properly, research samples were divided into age groups. Age groups were designated based upon reliability and validity studies about TOL (Boccia et al., 2017; Tunstall, 1999; Tunstall et al., 2016) and to ensure that the number of participants in the groups was suitable for group comparison. Age groups were 5-9, 10-14, 15-17, 18-25, 26-35, 36-53 years in combined and adult samples. However, in order to assess in detail age group was designated in a smaller range 5-6, 7-8, and 9-14 years in the children sample similar to the validity study of TOL by Tunstall (1999).

Mann Whitney U with Bonferroni Correction was used to find out the group, which caused significant differences between age groups. The critical p-value was divided by the number of comparisons made (α/k) for Bonferroni correction. The statistical results of the tests were then calculated based on these modified p values. Mann-Whitney U test was used to compare TOL scores according to the gender variable. The effect size was calculated for statistically significant test results. Cohen (1988) has provided benchmarks to define small ($\eta 2 = 0.01$; d=.2), medium ($\eta 2 = 0.06$; d=.5) and large ($\eta 2 = 0.14$; d=.8) effects. Item difficulty and item discrimination indexes were compared with the Z test, and Cohen's h was calculated for statistically significant results.

RESULTS

Study 1

In this study, it was aimed to compare the TOL measures according to age and gender variables in a sample comprised of children and adults. The combined sample comprised 252 participants (Female:129, Male:123) aged between 5-9 years, 10-14 years, 15-17 years, 18-25 years, 26-35 years, 36-53 years.

Table 2. Descriptive statistics towards TOL scores according to age

Age	N	Total Score		Planning Time		FT		TT	
		$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
5-9 years	47	16.7	4.2	1.7	1.2	4.4	1.4	2.1	1.3
10-14 years	35	17.8	4.3	1.7	0.8	4.6	1.6	2.2	1.1
15-17 years	41	20.8	2.9	1.7	0.9	5.8	1.2	2.1	1.2
18-25 years	39	20	4.7	1.9	1.9	5.6	1.2	1.9	0.9
26-35 years	44	22.5	2.5	2.5	3.4	6.6	1.3	1.6	1.3
36-53 years	46	20.6	4	2	1.9	6	1.6	1.5	1.1

FT: Number of problems solved on the first trial

TT: Number of problems solved within three trials

Table 3. Correlation between TOL scores and age

	N	Total Score			Planning Time			FT			TT		
		r	p	r^2	r	p	r^2	r	p	r^2	r	p	r^2
Age	252	.357**	.000	.12	.002	.979	-	.389**	.000	.15	-.194**	.002	.03

**p<.01

Spearman's rank-order correlation test showed that there was a statistically significant relationship between the total score and age variable (r=.357, p<.01), which indicates a moderate positive correlation (Cohen, 1988). The age variable explained 12% of the variation in the total score. There was no statistically significant relationship between planning time and age variable (r=.002, p>.01). There was a statistically significant relationship between FT and age variable (r=.389, p<.01), which indicates a moderate positive correlation with the age variable explaining 15% of the variation in FT score. There was a statistically significant relationship between TT and the age variable (r=-.194, p<.01), which indicates a small negative correlation (Cohen,1988). The age variable explained 3% of the variation in TT score.

Table 4. Comparison of TOL scores according to the age

	Age	N	Mean Rank	df	χ^2	p	Effect Size η^2	Effect Size d_{cohen}	Bonferroni	p	Effect Size η^2	Effect Size d_{cohen}
Total Scoree	5-9 years (1)	47	73.4	5	56.15	.000*	.20	1	1-3	.000**	.26	1.18
	10-14 years (2)	35	92.6						1-4	.001**	.13	.78
	15-17 years (3)	41	142.1						1-5	.000**	.46	1.8
	18-25 years (4)	39	135.4						1-6	.000**	.19	.96
	26-35 years (5)	44	175.2						2-3	.002**	.12	.76
	36-53 years (6)	46	138.2						2-5	.000**	.34	1.4
Planning Time	5-9 years (1)	47	124.2	5	1.543	.908						
	10-14 years (2)	35	137.7									
	15-17 years (3)	41	125.9									
	18-25 years (4)	39	118									
	26-35 years (5)	44	130.1									
	36-53 years (6)	46	124.4									
FT	5-9 years (1)	47	76.9	5	57.6	.000*	.21	1	1-3	.000**	.21	1
	10-14 years (2)	35	87.3						1-4	.001**	.13	.78
	15-17 years (3)	41	136.9						1-5	.000**	.40	1.6
	18-25 years (4)	39	132.4						1-6	.000**	.22	1
	26-35 years (5)	44	174.9						2-3	.001**	.14	.81
	36-53 years (6)	46	146.2						2-5	.000**	.31	1.3
									2-6	.000**	.15	.86
TT	5-9 years (1)	47	138.6	5	12.96	.024*	.03	.36				
	10-14 years (2)	35	144.1						1-6	.033		
	15-17 years (3)	41	137.7						2-6	.009		
	18-25 years (4)	39	132.6						3-6	.022		

26-35 years (5)	44	107.8			1-5	.054
36-53 years (6)	46	103.2			2-5	.024

*p<.05,**p<0.008

Kruskal-Wallis H test showed that there was a statistically significant difference in the total score between the age groups and the age variable has a large effect size on total score variance $\chi^2(5)$ = 56.15, p = .000, η^2=.20, Cohen's d= 1. Mann Whitney U with Bonferroni Correction was made to find out the group that caused significant differences between age groups. Mann Whitney U with Bonferroni Correction test result showed that there were significant differences in total score between age groups that 5-9 and 15-17 years U=390.5, p=.000; 5-9 and 18-25 years U=525, p=.001; 5-9 and 26-35 years U=211, p=.000; 5-9 and 36-53 years U= 534, p=.000; 10-14 and 15-17 years U= 417.5, p;=.002, 10-14 and 26-35 years U=242.5, p=.000. Kruskal-Wallis H test showed that there was no statistically significant difference in planning time between the age groups $\chi^2(5)$ = 1.543, p = .908.

Kruskal-Wallis H test showed that there was a statistically significant difference in FT between the age groups and age variable has large effect size on FT variance $\chi^2(5)$ = 57.6, p = .000, η^2=.21, Cohen's d= 1. Mann Whitney U with Bonferroni Correction test result showed that there were significant differences in FT between age groups that 5-9 and 15-17 years U= 446.5, p=.000, 5-9 and 18-25 years U= 525.5, p= .001; 5-9 and 26-35 years U= 274, p=.000; 5-9 and 36-53 years U= 482.5, p=.000; 10-14 and 15-17 years U= 403.5, p=.001; 10-14 and 26-35 years U= 263.5, p=.000; 10-14 and 36-53 years U= 429, p=.000.

Kruskal-Wallis H test showed that there was a statistically significant difference in TT between the age groups, and the age variable has a small effect size on TT variance $\chi^2(5)$ = 12.96, p = .024, η^2=.03, Cohen's d=0.36. Although the Kruskal- Wallis H test result, there was no significant difference in TT between age groups when compared with Mann-Whitney U with Bonferroni Correction test, p>.008.

Table 5. Comparison of TOL scores according to gender

	Gender	N	Mean Rank	Sum of Rank	U	z	p	Effect Size	
								η^2	d_{cohen}
Total Score	Female	129	123.3	15915.5	7330.5	-.699			
	Male	123	129.3	15962.5			.484	-	
Planning Time	Female	129	116.2	14995	6610	-2.288			
	Male	123	137.2	16883			.022*	.02	.29
FT	Female	129	125.7	16223.5	7838.5	-.167			
	Male	123	127.2	15654.5			.867	-	
TT	Female	129	124.7	16012.5	7627.5	-.546			
	Male	123	128.9	15865.5			.585	-	

p<.05

Mann-Whitney U test result showed that there was no significant difference in total score, FT, and TT between female and male participants (U=7330, p>.05). Besides, it was found that there was a significant difference in planning time between female and male participants (U=6610, p<.05), and gender had a small effect size on planning time variance. Moreover, male participants had a higher planning time mean rank than female participants.

Study 2

In this study, it was aimed to compare the TOL measures according to age and gender variables in the children sample. The sample comprised 88 children (girl:41, boy:47) aged between 5-14 years (8.6±2.5).

Table 6. Descriptive statistics towards TOL scores according to age

		Total Score		Planning Time		FT		TT	
Age	N	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
5-6 years	20	16.2	4.3	1.9	1	4.4	1.4	1.7	1
7-8 years	32	17.1	4.4	1.8	1.5	4.4	1.5	2.2	1.4
9-14 years	36	18	4.4	1.8	0.8	4.7	1.7	2.1	1.1
Total	88	17.3	4.4	1.8	1.1	4.5	1.5	2.1	1.2

Table 7. Comparison of TOL scores according to age

	Age	N	Mean Rank	df	χ^2	p
Total Score	5-6 ages	20	38.6	2	2.795	.247
	7-8 ages	32	42.3			
	9-14 ages	36	49.6			
Planning Time	5-6 ages	20	47.8	2	.985	.611
	7-8 ages	32	41.1			
	9-14 ages	36	45.6			
FT	5-6 ages	20	42.2	2	.566	.753

	7-8 ages	32	43.2				
	9-14 ages	36	46.8				
TT	5-6 ages	20	38.1	2	1.783	.410	
	7-8 ages	32	47.3				
	9-14 ages	36	45.5				

p<.05

A Kruskal-Wallis H tests results showed that there was no statistically significant difference between the age groups according to total score $\chi^2(2)$= 2.795, p=.247, planning time $\chi^2(2)$ = .985, p = .611; number of problems solved on the first trial $\chi^2(2)$ = .566, p = .753; number of problems solved within three trials $\chi^2(2)$ = 1.783, p = .410.

Table 8. Descriptive statistics towards TOL scores according to gender

			Total Score		Planning Time		FT		TT	
	Gender	N	x̄	SD	x̄	SD	x̄	SD	x̄	SD
Children Sample	Girl	41	18	3.9	1.7	0.9	4.5	1.5	2	1.1
	Boy	47	16.6	4.7	1.8	1.3	4.3	1.6	2.1	1.3
Total		88								

Table 9. Comparison of TOL scores according to gender

		Gender	N	Mean Rank	Sum of Rank	U	z	p
Total Score	5-6 years	Girl	11	11.18	123	42	-.573	.566
		Boy	9	9.67	87			
	7-8 years	Girl	7	19.57	137	66	-.988	.323
		Boy	25	15.64	391			
	9-14 years	Girl	23	18.98	436.5	138.5	-.365	.715
		Boy	13	17.65	229.5			
Planning Time	5-6 years	Girl	11	10.23	112.5	46.5	-.228	.820
		Boy	9	10.83	97.5			
	7-8 years	Girl	7	17.21	120.5	82.5	-.228	.820
		Boy	25	16.30	407.5			
	9-14 years	Girl	23	17.26	397	121	-.939	.347
		Boy	13	20.69	269			
FT	5-6 years	Girl	11	11.32	124.5	40.5	-.697	.486
		Boy	9	9.50	85.5			
	7-8 years	Girl	7	19.36	135.5	67.5	-.937	.349
		Boy	25	15.70	392.5			
	9-14 years	Girl	23	18.96	436	139	-.351	.726
		Boy	13	17.69	230			
TT	5-6 years	Girl	11	10.14	111.5	45.5	-.318	.750
		Boy	9	10.94	98.5			
	7-8 years	Girl	7	17.50	122.5	80.5	-.327	.744
		Boy	25	16.22	405.5			
	9-14 years	Girl	23	17.89	411.5	135.5	-.478	.633
		Boy	13	19.58	254.5			

p<.05

Mann-Whitney U test results showed that there was no statistically significant difference between girls and boys according to total score, planning time, the number of problems solved on the first trial, and the number of problems solved within three trials.

Study 3

In this study, it was aimed to compare the TOL measures according to age and gender variables in the adults sample. The sample comprised 244 adults (Female:134, Male:110) aged between 15-53 years (28.1±12.3).

Table 10. Descriptive statistics towards TOL scores according to age

		Total Score		Planning Time		FT		TT	
Age	N	x̄	SD	x̄	SD	x̄	SD	x̄	SD
15-17 years	59	19.6	3.4	1.6	0.8	5.3	1.4	2.2	1.2
18-25 years	76	20.8	4.1	1.7	1.5	5.9	1.6	1.8	1.1
26-35 years	57	22.1	2.5	2.3	3	6.5	1.3	1.6	1.3
36-53 years	52	20.4	4	2.1	1.9	5.9	1.6	1.6	1.1

Table 11. Comparison of TOL scores according to age

	Age	N	Mean Rank	df	χ²	p	Effect Size		Bonferroni	p	Effect Size	
							η²	d_cohen			η²	d_cohen
Total Score	15-17 years (1)	59	98.7	3	14.46	.002*	.04	.44	1-3		0.12	0.76
	18-25 years (2)	76	128							.002**		
	26-35 years (3)	57	146.5									
	36-53 years (4)	52	114.9									
Planning Time	15-17 years (1)	59	121.3	3	1.198	.756						
	18-25 years (2)	76	117.4									
	26-35 years (3)	57	122.4									
	36-53 years (4)	52	131.1									
FT	15-17 years (1)	59	96.7	3	16.852	.001*						
	18-25 years (2)	76	123.6				.05	.49				
	26-35 years (3)	57	149.3						1-3	.000**	0.14	0.83
	36-53 years (4)	52	120.6									
TT	15-17 years (1)	59	141.1	3	9.602	.022*	.02	.33				
	18-25 years (2)	76	127.8						1-3	.009**	0.05	0.48
	26-35 years (3)	57	107									
	36-53 years (4)	52	110.1									

*p<.05, **p<0.0125

Kruskal-Wallis H test showed that there was a statistically significant difference in a total score between the age groups χ2(3) = 14.460, p = .002, η2=.04, Cohen' d=.44, and the age variable have a small effect size on total score variance. Mann Whitney U with Bonferroni Correction test result showed a significant difference in a total score between 15-17 years and 26-35 years age groups U=982, p=.002. Results showed that the total score mean rank of adults who are 26-35 years old was higher than the total score mean rank of adults who are 15-17 years old.

Kruskal-Wallis H test showed no statistically significant difference in planning time between the age groups χ2(3) = 1.198, p = .756.

Kruskal-Wallis H test showed a statistically significant difference in the number of problems solved on the first trial between the age groups χ2(3) = 16.852, p = .001, η2=.05, Cohen' d=.49, and the age variable have a small effect size on FT variance. Mann Whitney U with Bonferroni Correction test results showed a significant difference in the number of problems solved on the first trial between 15-17 years and 26-35 years U=931.5, p=.000. Results showed that the FT score mean rank of adults who are 26-35 years old was higher than the FT score mean rank of adults 15-17 years old.

Kruskal-Wallis H test showed a statistically significant difference in the number of problems solved within three trials (TT) between the age groups χ2(3) = 9.602, p = .022, η2=.02, Cohen' d=.33, and the age variable have a small effect size on TT variance. Mann Whitney U with Bonferroni Correction test results showed that there was a significant difference in TT score between 15-17 years and 26-35 years U=1223, p=.009. Results showed that the TT score mean rank of adults who are 15-17 years old was higher than the TT score mean rank of adults 26-35 years old.

Table 12. Descriptive statistics towards TOL scores according to gender

			Total Score		Planning Time		FT		TT	
Age Groups	Gender	N	x̄	SD	x̄	SD	x̄	SD	x̄	SD
15-17 years	Female	38	19.5	3.6	1.5	0.7	5.3	1.6	2.1	1.2
	Male	21	19.8	3	1.7	1	5.3	1.2	2.3	1.2
18-25 years	Female	40	20.5	4	1.5	1.6	5.7	1.5	1.9	1.1
	Male	36	21.2	4.2	1.9	1.5	6	1.7	1.7	1.1
26-35 years	Female	29	22.1	2.4	2	3	6.5	1.1	1.6	1.5
	Male	28	22.2	2.7	2.5	3.1	6.5	1.5	1.5	1.2
36 -53 years	Female	27	19.4	3.3	1.8	2.1	5.5	1.3	1.7	1.1
	Male	25	21.4	4.6	2.3	1.6	6.4	1.8	1.4	1.1

Table 13. Comparison of TOL scores according to gender

		Gender	N	Mean Rank	Sum of Rank	U	z	p	Effect Size	
									η²	d_cohen
Total Score	15-17 years	Female	38	29.37	1116	375	-.382	.703		
		Male	21	31.14	654					
	18-25 years	Female	40	35.25	1410	590	-1.359	.174		
		Male	36	42.11	1516					
	26-35 years	Female	29	28.29	820.5	385.5	-.330	.741		
		Male	28	29.73	832.5					
	36-53 years	Female	27	22.09	596.5	218.5	-2.189	.029*	.09	.63

Planning Time		Male	25	31.26	781.5				
	15-17 years	Female	38	29.41	1117.50	376.5	-.356	.722	
		Male	21	31.07	652.50				
	18-25 years	Female	40	33.28	1331	511	-2.175	.030*	.06	.51
		Male	36	44.31	1595				
	26-35 years	Female	29	25.52	740	305	-1.612	.107	
		Male	28	32.61	913				
	36-53 years	Female	27	23.43	632.5	254.5	-1.521	.128	
		Male	25	29.82	745.5				
FT	15-17 years	Female	38	29.96	1138.5	397.5	-.024	.981	
		Male	21	30.07	631.5				
	18-25 years	Female	40	35.78	1431	611	-1.159	.246	
		Male	36	41.53	1495				
	26-35 years	Female	29	28.43	824.5	389.5	-.273	.785	
		Male	28	29.59	828.5				
	36-53 years	Female	27	22.46	606.5	228.5	-2.037	.042*	.07	.57
		Male	25	30.86	771.5				
TT	15-17 years	Female	38	28.86	1096.5	355.5	-.710	.478	
		Male	21	32.07	673.5				
	18-25 years	Female	40	39.78	1591	669	-.553	.580	
		Male	36	37.08	1335				
	26-35 years	Female	29	29.36	851.5	395.5	-.173	.862	
		Male	28	28.63	801.5				
	36-53 years	Female	27	29.04	784	269	-1.306	.191	
		Male	25	23.76	594				

p<.05

Mann-Whitney U test results showed that there was a significant difference between the total score of participants who are 36-53 years old according to gender variable U=218.5, p=.029, η2=.09, Cohen's d=.63. Total mean rank score of male participants is higher than female participants in the 36-53 years age group, and the gender variable has a medium effect size on the total score in that age group. Mann-Whitney U test results showed a significant difference between the planning time of participants who are 18-25 years old according to gender variable U=511, p=.030, η2=.06, Cohen's d=.51. Mean rank planning time of male participants is higher than female participants in the 18-25 years age group, and the gender variable has a medium effect size on planning time in that age group. Mann-Whitney U test results showed that there was a significant difference in FT of participants who are 36-53 years old according to gender variable U=228.5, p=.042, η2=.07, Cohen's d=.57. Mean rank FT of male participants are higher than female participants in the 36-53 years age group, and the gender variable has a medium effect size on FT in that age group. Mann-Whitney U test results showed that there was no significant difference between TT of participants according to gender variable.

Table 14. Comparison of item difficulty and item discrimination levels of children and adult data

Item No	p_j^1	p_j^2	Z	Cohen h	r_{jx}^1	r_{jx}^2	Z	Cohen h
1	0.94	0.95	-0.382	-	0.12	0.07	1.52	-
2	0.73	0.86	-2.88*	0.30	0.44	0.24	3.72*	0.44
3	0.84	0.93	-2.57*	0.25	0.20	0.13	1.66	-
4	0.84	0.93	-2.57*	0.25	0.27	0.15	2.62*	0.28
5	0.65	0.84	-3.92*	0.44	0.34	0.33	0.18	-
6	0.70	0.84	-2.97*	0.34	0.55	0.29	4.61*	0.56
7	0.61	0.83	-4.40*	0.50	0.65	0.34	5.36*	0.62
8	0.32	0.55	-3.95*	0.48	0.56	0.73	-3.11*	0.36
9	0.07	0.10	-0.90	-	0.08	0.21	-2.99*	0.36
10	0.08	0.14	-1.58	-	0.13	0.32	-3.74*	0.46
Average	0.58	0.70	-2.17*	0.22	0.33	0.28	0.94	-

p_j^1, r_{jx}^1: Children Data, p_j^2, r_{jx}^2: Adult Data, p<.05

According to Table 14, items of TOL represent a range of difficulty from .08 to .94 for the children sample. According to Güler (2017), the item difficulty index ranges from 0 to 1, and .50 is mid-range. Besides, it is concerned that items difficulty index less than .20: too difficult, .40 - .60: excellent, and more than .90: too easy (Quaigrain & Arhin, 2017). Accordingly, TOL has an average medium difficulty level in children's data. Besides, items of TOL represent a range of difficulty from .10 to .95 and have an easy item difficulty level for the adult sample. Z test results towards a comparison of difficulty indexes showed that the average item difficulty level for the adult sample was significantly higher than the children sample average item difficulty. It means that TOL was easier for the adult sample than the children sample, and the sample variable has a small effect size on TOL item difficulty. It is possible to see the same results within other items.

Table 14 shows that items of TOL represent a range of discrimination from .08 to .65 for the children sample. It is concerned that item discrimination .40 and more: very good, .30 - .39: good, .20-.29: fairly good, .19 and less: poor (Ebel; 1979,

cited by Quaigrain & Arhin, 2017). Accordingly, TOL's average item discrimination level is good for the children sample. Besides, TOL represents a range of discrimination from .07 to .73 for the adult sample, and the average item discrimination index level is fairly good. Z test results towards a comparison of item discrimination indexes showed that there was no significant difference between the two sample's item discrimination levels. The items with 2nd, 4th, sixth, and seventh numbered have higher item discrimination levels in the children sample than the adult sample. However, the 8th, 9th, and 10th numbered items have higher item discrimination levels in the adult sample than the children sample.

Table 15. Internal consistency reliability of TOL

N	Cronbach Alpha	Split Half
252	.60	.62

p<.05

Table 15 shows that the internal reliability Cronbach Alpha coefficient of TOL was .60, and split-half reliability was found .62. Flynn, Schroeder & Sakakibara (1994) stated that a Cronbach's alpha of 0.60 and above was considered an acceptable reliability level (as cited in Ringim, Razalli, & Hasnan; 2012). Besides, Anastasi & Urbina (1997) suggested using split-half reliability in case of increasing difficulty between items.

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

Results of the first study conducted with a combined sample showed that there were significant relationships between TOL scores (total score, FT, and TT) and the age variable. However, there was no significant relationship between planning time and age. Besides, there were significant differences between age groups regarding total score, FT, and TT. No significant difference was found between the total score, FT, and TT of female and male participants. However, there was a significant difference in planning time regarding the gender variable in the combined sample.

Results of the second study conducted with children sample showed that there was no significant difference between age groups regarding each TOL score. Besides, there was a significant difference between TOL scores according to the gender variable.

Results of the third study conducted with adult samples showed that there were significant differences between age groups regarding total score, FT, and TT. No significant difference was found between age groups by planning time. Besides, there were significant differences between the total score, planning time, and FT of female and male participants. There was no significant difference between TT scores of adults by gender.

Research results were interpreted by combining the results of three studies. Firstly, TOL score results according to the age and gender variables were interpreted. Secondly, item analysis and internal consistency results were mentioned.

Research results showed that there was a significant positive relationship between total score and age. It is possible to interpret this result as increasing age variable was associated with an increasing total score or decreasing age was associated with decreasing the total score. In other words, the planning ability changes depending on age. In literature, it was stated that the planning develops until the individual reaches adulthood (Becker et al., 1987; Dreher & Oerter, 1987; Welsh et al., 1991 as cited by Mahapatra, 2016). Oku & Aihara (2008) stated that the prefrontal cortex is involved in many complex cognitive functions such as problem-solving, planning, reasoning, and decision-making. The age-related developments in executive functions have been associated with the maturation of the prefrontal cortex (Diamond, 2002). Besides, planning ability may be relevant to the ability to keep information in mind. Planning ability in TOL requires keeping in mind the following peg to be moved. Case et al. (1982) found that people could keep in mind more words by age (as cited by Diamond, 2002). The metanalysis study of frontal functioning showed that age is an important predictor of variations in frontal functions such as planning ability (Romine & Reynolds, 2005). The current study finding is compatible with previous researches investigated planning ability according to the age variable. Krikorian et al. (1999) found that total score improved in a linear progression from younger to older age groups. Besides, previous research result showed statistically significant linear and quadratic trends in TOL scores with increasing age (Albert & Steinberg, 2011). Similarly, Tunstall (1999) had found that the 4-disc TOL total score increased by age. Phillips, Kliegel, & Martin (2006) had reached a similar result with the study finding on the age-related increase in planning ability. There are studies reporting that performance on the TOL improved with age (Albert & Steinberg, 2011; Asato, Sweeney, & Luna, 2006; Malloy-Diniz et al., 2008).

Research results showed a statistically significant difference between total scores according to the age groups, and the age variable has a large effect size on planning ability variance. There were significant differences in planning ability levels of participants between 5-9 and 15-17 years; 5-9 and 18-25 years; 5-9 and 26-35 years; 5-9 and 36-53 years; 10-14 and 15-17 years; and 10-14 and 26-35 years. Mean rank planning ability scores of children who were 5-9 years old were significantly lower than older ages, excluding 10-14 ages. Besides, planning ability scores in 10-14 ages were significantly lower than in older ages. Similarly, research results showed that there was a statistically significant positive relationship between the number of problems solved on the first trial score and the age variable and a significant difference between the age groups. It was found that the age variable has a large effect size on FT variance. There were significant differences in the number of problems solved on the first trial score between age groups that 5-9 and 15-17 years; 5-9 and 18-25 years; 5-9 and 26-35 years; 5-9 and 36-53 years; 10-14 and 15-17 years; 10-14 and 26-35 years; and 10-14 and 36-53 years. Mean rank FT scores of children who were 5-9 years old were significantly lower than older ages, excluding 10-14 ages. Besides, FT scores in 10-14 ages were significantly lower than in older ages. Also,

when compared with age-related changes in the children sample, there was no significant difference in planning ability and FT between small age ranges.

These results may be based on the ongoing improvement process of planning ability until the last stages of childhood. The prefrontal cortex, associated with cognitive skills like planning ability, is the last brain region to mature with full maturation, which is not reached until 16 years of age (Fuster,1999; Tunstall, 1999). These findings show a similarity with the findings of the study of Luciana, Collins, Olson, & Schissel (2009). When compared with age-related changes in planning ability in the adult sample, results showed that the total score mean rank of adults in the 26-35 years old age group was higher than adults in the 15-17 years old age group. This is consistent with a rapidly advancing capacity for planning during the childhood years that reaches a peak in early adulthood (Tunstall, O'gorman, & Shum, 2016). Research results are compatible with the previous result that TOL performance improves with age but levels out in the adult years reported by Albert and Steinberg (2011).

Research results showed that there was no significant relationship between planning time and age. Besides, there was no statistically significant difference in planning time between the age groups. Also, no significant difference was found in planning time according to age compared to children and adult samples separately. Although they were not significant statistically, compared mean rank results showed that the middle age group took shorter planning time than younger and older age groups. Tunstall (1999) indicated that slowing in planning time occurs at around 20 years. The younger and older age groups took equal planning time. Similarly, Tunstall (1999) had reported that planning time decreased from childhood to adolescence but increased for adults. Besides, planning time leveled off at 10-14 years. Similarly, Luciana et al. (2009) reported that TOL planning times leveled off at age 15.

Research results showed a significant negative relationship between the number of problems solved within three trials score and age. Besides, there was a statistically significant difference in the number of problems solved within three trials scores between the age groups, and the age variable has a small effect size on variance. However, there was no significant difference when compared with age groups in the combined sample. This result may be based on the fact that Narum (2006) stated that Bonferroni correction may be too conservative and results in greatly diminished power to detect differentiation among pairs of sample collections. No significant difference was found in the children sample by age, too. However, when compared separately, there were statistically significant differences between the number of problems solved within three trials scores of adults according to the age group variable.

The number of problems solved within three trials score of adults in 15-17 years age group was higher than 26-35 years age group. This finding showed consistency with the result of a negative relationship between age and the number of problems solved within three trials score. The youngest age group in the adult sample had a higher number of problems solved within three trials score than older groups. Results showed that the number of problems solved within three trials scores increased with decreasing age. In other words, younger adults had more tendency to use feedback, monitoring actions than older adults. Older adults are often worse than younger adults at adapting to changing situational demands, and this difference is commonly attributed to an age-related decline in acquiring and updating information (Wilson, Nusbaum, Whitney, & Hinson, 2017).

Research results showed no significant difference in planning ability, in the number of problems solved on the first trial score, in the number of problems solved within three trials score between male and female participants. Researchers reported no significant difference in TOL scores between males and females (Krikorian et al., 1994; Atalay & Cinan, 2007; Masson, Dagnan, & Evans, 2010). However, when compared with age groups in the adult sample, there was a significant difference between the total score and the number of problems solved on the first trial scores of participants who are 36-53 years old according to gender variable. Total mean rank score and the number of problems solved on the first trial scores of male participants were higher than female participants in 36-53 years age group. Boccia et al. (2017) indicated that there were gender differences in performing TOL. While males showed higher precuneus activity, suggesting that they relied on visuospatial abilities, females showed higher activity in the dorsolateral prefrontal cortex, suggesting that they relied more on executive processing (Boghi et al., 2006). Asato et al. (2006) reported that there were gender differences in TOL4 performance, and males performed better than females in the adult group.

In the present study, there was no significant difference in planning ability, planning time, the number of problems solved on the first trial scores, the number of problems solved within three trials scores between boys and girls in the children sample. Asato et al. (2006) claimed that this gender effect was not present at younger ages indicating that this bias may be established after adolescence. There are researches reporting that there was no significant difference between performances of the children by gender (Culbertson & Zillmer; 1998; Asato et al., 2006).

In the present study, there was a significant difference in planning time between male and female participants. Male participants took more time than female participants while planning. When the source of significant difference is searched, it was found that there was a significant difference between the planning time of participants who are 18-25 years old according to the gender variable in the adult sample. Mean rank planning time of male participants was higher than female participants in the 18-25 years age group. Boccia et al. (2017) reported that there was a significant difference in planning time by gender, suggesting that by the age of 26, there is an overturn in the gender differences in the speed of planning. There was no significant difference between the TT of participants according to the gender variable.

Item analysis results showed that difficulty and discrimination levels of items increase based upon increasing moves. This result is similar to the findings of the study conducted by Tunstall (1999). Kaller, Unterrainer & Stahl (2012) reported a clear and nearly perfect linear increase in task difficulty by moves. Item reliability analysis showed that Cronbach's Alpha and split-half reliability coefficients are higher than the initial study of developing 4-disc TOL by Tunstall (1999).

Research results showed that planning ability is correlated with increasing age. In further studies, planning skills in daily life activities that stand out in individuals in diverse age groups who have different levels of planning skills can be investigated. Research results showed that male participants' planning ability and the number of problems solved on the first trial scores were higher than female participants in 36-53 age groups. In connection with this result, gender roles that may affect the planning ability with increasing age may be investigated in next studies. In further studies, TOL might be used within diverse and extended samples. In this study, only item difficulty, discrimination, and internal consistency analysis were performed, and studies including detailed validity and reliability analysis can be conducted in future studies.

Limitations

The ability and predisposition of elderly participants to point with mouse and touchpad should be considered as a limitation as a criterion not excluded in the study.

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. E.G.D conceived of the presented idea and developed the theory, and performed the computations. Y.Ö. encouraged E.G.D to investigate the research topic and supervised the findings of this work. 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 obtained from Ondokuz Mayıs University Social and Human Sciences Ethics Committee with the protocol number 2016/97 and dated 15/07/2016.

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| Research Article / Araştırma Makalesi|

Opinions of School Administrators about the Educational Impact of the COVID-19 Pandemic

COVID-19 Salgınının Eğitime Etkisiyle İlgili Okul Yöneticilerinin Görüşleri[1]

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Abstract

Purpose: This research aimed to reveal the views of school administrators regarding the transformation of the COVID-19 pandemic on the basic concepts of education.

Methodology: This research was designed according to the descriptive phenomenological pattern, which is a type of qualitative research approach. The study group of the research consisted of 43 primary and secondary school administrators. These were school administrators who attended distance education for at least 6 months during the spring 2019-2020 and fall 2020-2021 outbreak during the COVID-19 outbreak.

Conclusions: Data were collected with a semi-structured interview form. The obtained data were analyzed with the descriptive and content analysis technique. These themes were the transforming school consisted of the main themes from the traditional classroom to a digital classroom, changing student, teacher competencies, changing course material. As a result of the research, it was concluded that the concepts of school and classroom ceased to be a physical space after COVID-19, that the teacher will not lose its importance in education after COVID-19, and even gained more importance, and the digital material in education was more technological.

Suggestions: According to the findings obtained as a result of the research, the changes COVID-19 has made in education can persist after the pandemic. For this reason, while it is important to gain the competencies that will be necessary for teachers and schools to keep up with this change, continuous development and transformation should be the basic roadmap.

Öz

Çalışmanın Amacı: Bu araştırma, COVID-19 salgınının eğitimin temel kavramları üzerindeki dönüşümüyle ilgili okul yöneticilerinim görüşlerini ortaya koymayı amaçlamaktadır.

Yöntem: Araştırmada nitel araştırma yaklaşımının bir türü olan betimleyici fenomenolojik desene göre tasarlanmıştır. Araştırmanın çalışma grubu 43 ilkokul ve ortaokul yöneticisinden oluşmaktadır. Bu kişiler, 2019-2020 bahar döneminde ve 2020-2021 güz döneminde COVID-19 salgını süresince en az 6 ay boyunca uzaktan eğitime devam eden okul yöneticileridir. Veriler yarı yapılandırılmış bir görüşme formu ile toplanmıştır. Elde edilen veriler betimsel ve içerik analizi tekniği ile analiz edilmiştir.

Sonuçlar: Bulguların analizi sonucunda sırasıyla; dönüşen okul, geleneksel sınıftan dijital sınıfa, değişen öğrenci, öğretmen yetkinlikleri, değişen ders materyali ana temalarına ulaşılmıştır. Araştırma sonucunda COVID-19 salgını sonrasında okul ve sınıf kavramlarının fiziksel bir mekân olmaktan çıktığı, öğretmenin COVID-19 salgını sonrası da eğitimdeki önemini kaybetmeyeceği hatta daha çok önem kazanacağı, eğitimde digital ve teknolojik materyalin daha çok kullanıldığı sonuçlarına ulaşılmıştır.

Öneriler: Araştırma sonucunda elde edilen bulgulara göre; COVID-19 salgınının eğitimde yaptığı değişikliklerin bazıları salgın sonrasında da kalıcı olabilir. Bu nedenle öğretmenlerin ve okulların bu değişime ayak uydurmasına gerekli olacak yetkinliklerin kazandırılması önem arz ederken sürekli gelişim ve dönüşüm temel yol haritası olmalıdır.
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INTRODUCTION

With the introduction of COVID-19 into our lives, rapid change and transformation have taken place in all areas of our lives. This change and transformation have led to the formation of a new order in the world.

This new order necessitates different transformations and changes in the field of education. This is because of the basic concepts related to education; new competencies, responsibilities, and skills have been added to the content of school, classroom, teacher, student, and course material concepts with the pandemic. The COVID-19 pandemic has given us the opportunity to adopt online learning and technologies, as education systems need to adapt quickly to emerging changes.

After the COVID-19 pandemic, education had to be online, as in all areas of life. COVID-19 pandemic can be considered as an opportunity for teachers to change their classroom practices, prepare them to participate effectively in online learning, and improve their knowledge and skills. Developing countries, in particular, need to collectively make more effort to help teachers tackle the issues of "digital literacy," "digital justice," and "equality" in their professional development (Khlaif et al., 2020).

This digitized revolution can enrich by combining educational goals and interests of digital addicted students (Ali, 2020). The five key lessons learned during the COVID-19 pandemic, a mandatory experience for many, are: Technology cannot replace a teacher's job, participation is as important as content, design matters, what the student does between classes is as important as what they do in the classroom. In fact, student-student interaction and self-study are more important than synchronized learning, which often involves an instructor (Murgatroyd, 2020a).

While it is observed that the COVID-19 pandemic rapidly affects every part of society, it is also noteworthy that a lot of research has started on this issue. In the field of education, there are many studies that investigate the effects of the COVID-19 pandemic and offer various solutions. These studies can be grouped under three headings as: "a) Inequalities caused by COVID-19 pandemic, b) problems encountered, and c) efforts of schools and their stakeholders to cope with the problems."

Distance education has made inequalities aggravated and visible in a multidimensional way. One of the studies that clearly revealed these inequalities was structured in June and August 2020 with 150 teachers, students, teachers association representatives, and parents working in primary and secondary education in five EU states (Belgium, Estonia, Greece, Italy and Poland). According to the results of this research, the barriers that caused inequalities were young age, lack of knowledge, learning autonomy, simultaneous use of digital technologies by family members (e.g., parent wire work), lack of technicality, lack of sufficient space or privacy to work at home, special education needs, low inequalities that often affect students with a socio-economic background or low socio-economic background were children with an immigrant background (especially ethnic minorities and refugees), and lack of study rooms or inadequate parental support. Also, a high-quality, fast and stable broadband connection can be added that not every student has equal access to digital education, especially in rural areas (Carretero- Gomez et al., 2020).

The limited or no internet access of families with low socio-economic status in rural areas has also affected students' readiness to learn (Alipio, 2020). This process has not only deepened inequalities. Schools, administrators, teachers, and students faced various problems. In this process, a new school leadership order without standards emerged. School administrators in the process; Preparation or improvement programs have had to lead their schools without an audit framework, key performance indicators, benchmarks, precedent, and a binding or helpful plan (Harris & Jones, 2020). The problems faced by the managers were lack of communication and knowledge, indifference of teachers, lack of planning, and technical inadequacy (Külekçi- Akyavuz & Çakın, 2020). On the other hand, the problems faced by teachers were communication, student learning, and issues with parents (Çakın & Külekçi-Akyavuz; 2020). In addition, during the COVID-19 pandemic, teachers were subjected to excessive communication load (Dilekçi, Limon, 2020). For teachers working in rural areas, the internet and technology had been limiting factors for distance education (Hamilton et al., 2020). In the study conducted by Khalif et al. (2020), it was stated that teachers were left alone in this process and had a lot of difficulties in this process, while they were not prepared for the planning of the lessons and they tried to find solutions by consulting each other and sharing their experiences. It is also emphasized that they did a lot of research on the internet to improve themselves and be more beneficial to their students, and it was seen that the COVID-19 pandemic process has deeply affected the education system. Students, on the other hand, experienced symptoms of malnutrition due to lack of access to school meals as well as anxiety due to the COVID-19 pandemic and symptoms of post-traumatic stress disorder for some students. After the schools closed, the mental and physical health of the students was greatly affected. Students needed support in the transition to "normal life" (OECD, 2020). The collected studies about the problems encountered in distance education are: the weakness of the online education infrastructure, the inexperience of teachers and the knowledge and technical deficiencies in preparing materials for students, the complex environment at home, the lack of suitable environment at home, and technological insufficiency (Murgatroyd, 2020b). Regarding the work done by the school stakeholders in this process, Ünal and Bulunuz (2020) conducted a research with science teachers and reported that teachers used Education Information Network (EIN) actively during the COVID-19 pandemic process and that distance education became more efficient with the widespread use of "live lessons." In another study, it was determined that teachers carried out supportive studies in classes in order to motivate their students to distance education during the distance education process, supported them to be hopeful for the future, made them feel the school was continuing, gave health exercises and encouraged them with good words (Çakın & Külekçi-Akyavuz; 2020). According to the results of the research conducted by Bozkurt (2020b), it has been found that the COVID-19 pandemic affects education both

directly and indirectly, and those radical improvements and strategic planning are necessary to ensure continuity in education regardless of the conditions.

In the above-mentioned research and literature review, researchers have been asked about a single component among the components that make up the school regarding the effect of the COVID-19 pandemic on education. This research was based on the basic concepts of education in the COVID-19 pandemic. It aimed to determine the opinions of primary and secondary school administrators about the meanings of the concepts of "school," "classroom," "teacher," "student," and "course material." Findings obtained from this research is expected to guide policymakers, practitioners, and researchers.

The main purpose of this research was to reveal the views of school administrators regarding the transformation of the COVID-19 pandemic on the basic concepts of education. This basic goal has been tried to be reached with the following questions.

1. What are the opinions of school administrators about the concept of "school" transformed by the COVID-19 pandemic?

2. What are the opinions of school administrators about the concept of "classroom" transformed by the COVID-19 pandemic?

3. What are the opinions of school administrators about the concept of "teacher" transformed by the COVID-19 pandemic?

4. What are the opinions of school administrators about the concept of "student" transformed by the COVID-19 pandemic?

5. What are the opinions of school administrators regarding the concept of "course material" transformed by the COVID-19 pandemic?

METHOD

Research Model

This research was designed according to the descriptive phenomenological pattern, which is a type of qualitative research approach. The main purpose of the descriptive phenomenological design is to describe the perceptions and experiences of people (Saban & Ersoy, 2016, 59). This research was based on the basic concepts of education transformed by the COVID-19 pandemic. Schools, teachers, class, students, school administrators with the perception of their experience with the course material was designed to study in-depth and in accordance with the conditions of Turkey and in the context of schools.

Working group

Which school administrators to choose in the study were decided according to the maximum diversity and criterion sampling method among purposeful sampling methods. Purposeful sampling is important in increasing transferability in qualitative research. Criterion sampling is the study of situations that meet a predetermined criterion (Yıldırım & Şimşek, 2012). The study group of the study was determined on the basis of the primary and secondary school administrators who participated in distance education in the spring period of 2019-2020 and during the autumn period of 2020-2021 COVID-19 pandemic period and were administrators in schools where simultaneous or asynchronous education was conducted in the distance education system for at least 6 months.

Within the scope of the research, 43 primary and secondary school administrators from Ankara, Hatay, Malatya, Mardin, Sakarya, Gaziantep, and Batman provinces were reached. 27.1% (f=13) of the administrators who participated in the study were secondary school administrators, and 72.1% (f=30) were primary school administrators. The managers who participated in the research were 22.9% (f=15) female and 77.1% (f=28) male. Female administrators were mostly primary school administrators.

Data Collection and Measurement Tool

In the study, a semi-structured interview form called "the views of school administrators on the educational impact of the COVID-19 pandemic", which consists of open-ended questions developed by the researcher was used to collect the data. Before preparing the semi-structured interview form, the literature was reviewed by the researchers, and the questions that were thought to be included in the interview form were determined by the researchers. The prepared interview form was presented to two researchers and one assessment expert in the field of educational sciences, and after the necessary feedback was obtained, it was checked by a linguist to check the comprehensibility of the questions. Before applying the prepared form, it was applied to four primary school administrators and two middle school administrators. The final check was made to see if the questions were clear and understandable. After all these evaluations, the semi-structured interview form was finalized. Before the data collection tool was implemented, the participants were informed, their personal consent was obtained, and it was stated that the participation was voluntary. There were three questions in the interview form that indicated the personal characteristics of the manager participants. The data were collected via "Google forms," gathered between 16-21 December 2020.

Data Analysis

Interview texts were obtained by transferring the data obtained from the participants with the semi-structured interview form to the computer environment by the researchers. Managerial interviews recorded by the researchers were analyzed by two researchers and turned into a written text. Interview texts were analyzed using descriptive and content analysis techniques. While analyzing the interview texts, four steps were followed: bracketing, phenomenological reduction, imaginary diversification, and synthesizing meaning and essences (Giorgi, 2009) (cited in Yılmaz & Şahin, 2016). The following steps suggested to be used in the analysis of the data were followed in the study:

1- Naming/labelling
2- Sorting (screening and refining)
3- Reorganizing and compiling, and developing categories
4- Providing validity and reliability steps (Saban , Koçbeker, and Saban, 2007)

Content analysis technique was used in the analysis of the data obtained through the interview forms. Internal reliability was provided by direct quotations of the participants' expressions. In the research, firstly, themes and sub-themes were formed by combining similarity and different expressions. In order to ensure the reliability of the study, the opinions of 4 researchers working in the field of educational sciences were consulted in determining the themes and sub-themes. The managers whose opinions were consulted in the analysis of data have been given code numbers such as (İYE-K; OYE-K..1.2.) In order to ensure internal reliability, the findings were given through direct quotations without comment. For reliability in the study, the themes obtained as a result of the research data and analysis process were compared with the expert opinion and findings of the literature. The responses of the administrators to the interview questions were coded by the researchers. Three academicians who are experts in this field created coding and the consistency between the coders, who filled the interview code key for each interview form.

The codes with "consensus" and "difference of opinion" were determined by the coders. The reliability formula proposed by Miles and Huberman (1994) was used in calculating the reliability of the coding. In order to ensure internal consistency, the agreement rate between coders for each theme is expected to be at least 70% (Miles & Huberman, 1994; Patton, 2002). In the study, the data obtained in the research "*at the stage of providing validity and reliability were given in detail without any comments*" (Creswell, 1998; Merriam, 1998; Miles & Huberman, 1994).

FINDINGS

As a result of the analysis of the obtained data, five main themes were reached. These themes were respectively, "transforming the school, traditional classroom to digital classroom, changing student, teacher competencies, changing course material." Sub-themes and main themes related to the main themes are given in Table 1.

Table1. Main and Sub Themes

Main Themes	SubThemes
"Transforming school"	Perspective before the pandemic
	Post-pandemic perspective
"From traditional classroom to digital classroom"	Perspective before the pandemic
	Post-pandemic perspective
"Changing student"	Perspective before the pandemic
	Post-pandemic perspective
"Teacher competencies"	Pre-pandemic duties and responsibilities
	Post-pandemic duties and responsibilities
"Changing course material"	Pre-pandemic course materials
	Post-pandemic course materials

Transforming School Main Theme

This main theme is divided into two sub-themes: The pre-pandemic perspective and the post-pandemic perspective. Administrators who participated in the research stated that the pre-COVID-19 pandemic school existed spatially, and then this situation disappeared, and the school thought lost its characteristic spatially. Direct quotations expressing the thoughts of the managers are as follows.

OYE6 "Post-COVID-19 school (open) physical area where hygiene, cleanliness, and mask rules are applied without exception. However, there is no school concept in the distance education process, unfortunately. "

İYE12 "The educational institution where the planned education is done face to face, the educational institution where the planned education is followed by the institution and made online."

IYE30 "The school, which was a spatial teaching home before, later turned out that thoughts about the place of learning were gradually demolished and learning separately from space was possible.

İYK42" The concept of school does not mean before or after COVID-19 for me. School is an institution where education and training continue. "

İYK 35" Although there were deficiencies in the education system, teacher and student were integrated under the roof of the school before the pandemic, and the curriculum of the courses was implemented in that atmosphere. After the pandemic, the concept of school was lifted. Most of the students and parents could not be disciplined. School atmosphere, unfortunately, did not occur.

"OYE32 "Before the school is the living organism, and then after it is a soulless body."

Administrators stated that before the COVID-19 pandemic, the concept of school was more of a physical space, that all activities of education and training took place in this space, and that the concept of school comes to mind first when it comes to learning and education. In summary, School before the pandemic is a concrete concept. It was stated that after the COVID-19 pandemic, it was understood that the concept of school ceased to be a physical place and that education and training could take place without being dependent on a physical location. In summary, After the pandemic, the concept of school has started to become a virtual concept.

From Traditional Classroom to Digital Classroom Main Theme

This main theme is divided into: The pre-pandemic positive/negative perspective and post-pandemic positive/negative perspectives. Administrators who participated in the research revealed that the concept of class was not spatial, as revealed by COVID-19. It can be stated that the concept of class was viewed more positively before COVID-19. Direct quotations expressing the thoughts of the managers are as follows.

İYE12 "The place where face-to-face training takes place online after COVID-19."
İYK14 "The concept of class is not spatial."
İYE19 "Before dreams were shaped, an area where hopes flourish. Next is the dead city, emptiness, and hollowness. "
IYE25 " Classroom "= A room in the school, before the COVID-19 pandemic, "Classroom" = Phone, Tablet, computer after the COVID-19 pandemic.
İYK41 "Everywhere is a classroom."
OYK31 "The classroom is a physical place and can be everywhere, but it is something that has a soul for the child."
İYE20 "The beautiful place where we have a free interaction with our children, we enjoy the most, sometimes smiles and sometimes burst into laughter. It is the place where we make chestnuts at the stove, the constant sharing, and where we dream of opening up to new worlds and fit many things in them. I, unfortunately, continue to continue all these beauties with distance education."

Administrators stated that before the COVID-19 pandemic, the managers defined the concept of the classroom more as a physical space with interaction and spirit. However, after the COVID-19 pandemic, it was stated that the classroom was transformed from being a physical space to a digital environment with interaction and spirit.

Changing Student Main Theme

This main theme is divided into: The pre-pandemic perspective and post-pandemic perspective subthemes. Administrators who participated in the research viewied the student concept negatively after COVID-19. They stated that the student had difficulty. Direct quotations expressing the thoughts of the managers are as follows.

OYE7 "The student is a demand in the old term. Student: It is the person who demands something and wants to learn. This process has increased students' responsibilities. Our children who follow their programs and work daily will be real students. "
İYE13 "While students were who came to the classroom before COVID-19, but there were those who wanted to learn afterward."
İYK16 "The generation that learns to adapt."
İYE19 "The joy of the school, little people hungry for learning. Then he lost hope, a ball of problems. "
İYE20 "Our children, with whom we shared instant feedback before COVID-19 are unfortunately on the screen nowadays. Of course, it makes us happy that they are good, but unfortunately, the students of this generation will probably get the most negative effect in distance education.
İYE25 " student "= individual willing to learn "pre-COVID-19 outbreak" student " = unwilling to learn."
İYE32 "Before, he lived in school, that he is an individual and that he is an important value. After the pandemic, he cannot breathe."
OYE31 student is being talked not learning about as the only after the child who attends school, but not going to school."

İYE35" Before the pandemic, students were coming to their school wearing their school uniforms, sitting on their desks, attending classes, getting better discipline in the classroom atmosphere, and adapting better to education. Technological impossibilities after the pandemic, lack of attendance required to attend a live lecture, lack of attendance, monotony of being in front of the

screen for a long time, a decrease in the classroom dominance of the teacher, no anxiety about grades caused the students to behave more comfortably, and the responsibility of the student decreased."

Before the COVID-19 pandemic, the administrators defined the student as the individual who was willing to learn more, better disciplined, and the joy of the school. After the COVID-19 pandemic, the administrators defined the student as the individual whose responsibility was reduced, who could not benefit from education due to technological or different impossibilities, and who realized the learning with his own will and self-control.

Teacher Competencies Main Theme

This main theme is divided into two sub-themes, these were: Pre-pandemic duties and responsibilities and post-pandemic duties and responsibilities. Administrators who participated in the research stated that the concept of the teacher was talked about more after COVID-19, and the teacher should give more places to learn technology. Direct quotations expressing the thoughts of the managers are as follows.

İYE27" During the process, more concepts, knowledge, and technology words entered our lives. I understood that the major stakeholder of post and pre-process education is again the teacher. "

OYK31 "The teacher is everything, including a babysitter after the teaching role, but if you do not know technology, you are in trouble."

İYE32. "Giving his competencies directly and efficiently, after the pandemic, those who cannot reach the desired efficiency and professional satisfaction."

İYE34 "The necessity to follow technological developments in education has become more prominent. I think that learning should be made simpler and more understandable, and now the education model should be discussed with small groups rather than large groups. "

İYK39 "The teacher had no difficulties in demonstrating his talents by focusing before COVID-19. After COVID-19, when his own life anxiety was added to everything else, he changed to distance education with fear. "

OYE15 "The teacher, who is at the center of learning, lost this position with this process. "

iYE13 "While pre-COVID-19 teachers mostly adhere to classical and familiar methods, they have sought or developed new methods and techniques that will facilitate learning afterward."

According to administrators, before the COVID-19 pandemic, the teacher was the individual who felt more at the center of learning, professional satisfaction, and efficiency. After the COVID-19 pandemic, the teacher was an individual who needed to know technological techniques and methods, was still at the center of education, but could not sufficiently felt professional satisfaction and efficiency.

Changing course material Main Theme

This main theme is divided into two sub-themes: Pre-pandemic course materials and post-pandemic course materials. Administrators who participated in the research stated that the concept of course material was digital material after COVID-19. Direct quotations expressing the thoughts of the managers are as follows.

OYE7 "In fact, all kinds of materials that affect learning and education are indispensable that should be used whenever the place and time comes. The use of different materials has brought new perspectives to our teachers and students. "

OYK17 "While 3D materials were important before, now the importance of digital materials has increased."

İYE3 "Previously, emotional education was a part of us. Afterward, it became the technology is part of our life. "

İYE13 "While the course material was available in the school pre-COVID-19, afterward everything that facilitates learning has been material."

İYK16 "Materials that keep up with changing events."

İYE11 "It is a good education with sufficient materials beforehand, and it's like a patchy built house afterward."

According to administrators, more course materials were materials that can be used within the school before the COVID-19 outbreak. The materials used after the COVID-19 pandemic were mostly technological and digital materials.

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

In this study, which aimed to reveal the views of school administrators regarding the transformation caused by the impact of the COVID-19 pandemic on the basic concepts of education, five main themes were formed based on the findings. These themes were "the transforming school, " "traditional classroom to digital classroom," "changing student," "teacher competencies," and "changing course material." Based on these main themes, the sub-themes were the pre-pandemic perspective, post-pandemic perspective, pre-pandemic duties and responsibilities, post-pandemic duties and responsibilities, perspective of pre-pandemic course materials, and post-pandemic course materials. The findings of the main themes are:

"The transforming school" and "traditional classroom to digital classroom"

The concept of school and classroom that existed spatially before COVID-19 in the main theme of the transforming school and traditional classroom to a digital classroom, after COVID-19, it has been concluded that everywhere can be schools and

classrooms than spatially. This result is consistent with Zhao's (2020) study, which stated that COVID-19 is an opportunity to rethink education findings. Rethinking should not be about improving the school; it was stated that post-COVID-19 schools and education should be reshaped with the questions of "what," "how," and "where" to learn. Because COVID-19 broke the taboo that the concept of school and classroom is a spatial place. Your school and classroom have shown the whole world that there can be any place where students and teachers interact. COVID-19 introduced the necessity of redefining the concepts of school and classroom. In addition, with a changing leadership order in this process, the school management has assumed a collective unifying role to sustain everything and everyone, based on distributed collaboration and without networked national standards (Harris, 2020b).

In summary, each component that makes up the school has been under the influence of this transformation with the change made by the COVID-19 pandemic.

"Changing student"

It has been concluded that students who came to school before and after COVID-19, children who want to learn and who can adapt. Also, findings showed that there were many problems the students have faced.

At the beginning of these problems, the students had to spend most of the day in front of the screen. Unfortunately, students who have not developed self-control may not have learned. Therefore, COVID-19 has been an opportunity for students who can realize learning.

A 13-year-old student who spoke to the New York Times newspaper made statements supporting this finding. According to Mintz (2020), a 13-year-old student has attended distance education lessons since March -23- 2020 and learned more in distance education than the lessons given in the classroom. Because this student stated that *"there were no distracting students and teachers who could not manage the classroom "* in the classroom. The student further stated that the distance education process improved his weaknesses and strengths, communicated with other learners online, and improved himself by watching the subjects he could not learn on a recorded basis. Some students stated that distance education gave them the freedom to move, fewer distractions than the classroom, and they could focus more on the lesson (Carretero Gomez et al., 2021).

In the COVID-19 pandemic, the entire responsibility of learning belongs to the student (Bozkurt, 2020b). The COVID-19 outbreak has shown that students' digital competencies were not sufficient (Deshmukh, 2020). Another study (Alipio, 2020) determined that Filipino students did not have the basic skills to operate computers and were not ready for online learning. These results have highlighted three concepts that COVID-19 should have in students. The student who has these concepts of "self-control," "flexibility," and "willingness to learn" has fulfilled all its responsibilities. Thanks to the desire to learn and the flexibility provided by distance education, and the student's self-control, learning continued outside of online hours.

"Teacher competencies"

It was found that the teacher should not lose its importance in education before and after COVID-19 and should use technology very well with new methods and techniques after the pandemic, and the technological competencies of teachers are not sufficient. Deshmukh (2020) and Bozkurt (2020b) concluded that during the COVID-19 pandemic, the digital competencies of teachers were not sufficient and that schools and teachers are not ready to adapt to the transition from traditional face-to-face learning to online learning (Beng, Wardle, Collie 2020). Hutinger, Robinson. and Schneider (2004) stated that individuals using technology are as important as technology in distance education. They underlined that successful technology use depends on teachers' wealth level and technology knowledge and that technology will not have an impact on curriculum and learning when teachers are uncomfortable with technology and its use. This pandemic process may indicate that even the latest technology in education cannot replace the teacher.

The COVID-19 pandemic has made new competencies mandatory for teachers. These are excellent domain knowledge, competent computer knowledge, communication skills, clarity of expression, emotional connection with students, other skills required to deal with the demands of online platforms, ability to solve minor problems during and after online, virtual classroom experience, patience, empathy, attentiveness to students, excellent presentation skills addressing a specific subject, and proper use of existing teaching-learning tools with user-friendly features are additional skills found to manage the online teaching process. These are critical strategies involved in motivating students, collaborating and team teaching, and creating an online classroom (Mishra, Gupta, Shree, 2020). In short, COVID-19 is a digital transformation that requires teachers to acquire new skills and competencies(Beng, Wardle, and Collie, 2020). In summary, the COVID-19 pandemic has proven once again that teachers are the foundation of education, as well as being a digital transformation that requires teachers to acquire new skills and competencies.

"Changing course material"

Pre-COVID-19 materials were usually created in school teaching materials. Afterward, it was found that digital tools and all kinds of materials that facilitate learning were used. This result fits with the finding that distance education cannot be achieved without the necessary tools and technology (Ascough, 2002). Adopting an online learning environment is not just a technical

issue. It is pedagogical. Therefore, adequate preparation of teaching materials and curriculum and assessment knowledge in online education is very important. Technology is just a means of transfer to the learner and requires closure. Therefore, in online education, Cross collaboration between teaching, content, and technology teams is required. It is a pedagogical transformation that requires rapid mobilization for students and teachers outside the classroom (CoSN, 2020). Course materials are not only concrete technologies, i.e., computers, smartphones. It also consists of educational theories, approaches, and strategies, which are abstract technologies for the use of technological materials. Therefore, one of the points to be considered after the COVID-19 pandemic is the use of the invisible side of educational technologies, that is, abstract technologies, in education together with concrete technology (Bozkurt, 2020a). After the COVID-19 pandemic, the change in teaching materials has transformed teaching methods and techniques. The success of concrete materials will depend on the effective application of abstract technologies.

After the COVID-19 pandemic, it became clear that new competencies were introduced where the concepts of "teachers," "students," "schools," "classrooms," and "lesson material" changed, everywhere could be schools and classrooms, but in this spirit that school function requires a soul, which is made up of student and teacher interaction. While using more technological materials as course material, preparing these materials and directing students to these materials are among the competencies of teachers. Crisis management with technology has been placed at the top of teaching competencies. The teacher should be competent to use technology well and make correct and clear decisions according to the situation. In addition, it is thought that distance education will be permanent after COVID-19. As we gradually emerge from COVID-19, most will remain the same, but many more distance education gains will probably change permanently (Bates, 2020). Online learning can become a financial imperative for sustainability (Murgatroyd, 2020c). Therefore, the gains gained as a result of the transformation of the changes brought by the COVID-19 pandemic to education should be clearly developed. Innovation and technological developments in education should be followed by teachers, and necessary in-service training should be given by the Ministry of National Education. Students and teachers should be supported technologically and psychologically in this process, teachers and students should be taken out of certain platforms, and non-governmental organizations should be included in education in order for distance education to be a truly live lesson. Policies should be developed to reduce inequalities in education and to prevent children from being left behind in education. As a result, some of the changes the COVID-19 pandemic has made in education may also be permanent after the pandemic. Continuous development and transformation should be a basic roadmap in order to gain the competencies that will enable teachers and schools to adapt to this change. In this study, the transformation of the COVID-19 pandemic on school, classroom, teacher, student, and the course material was examined through the opinions of school administrators. Researchers can study these concepts with different stakeholders of the school and with different working methods.

EIN (Educational Information Network): An online social education platform developed by the Ministry of National Education. This platform and EIN TV were used in distance education

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| Research Article / Araştırma Makalesi|

Characteristics of Projects in the 5th Grade English Textbook

5. Sınıf İngilizce Ders Kitabı *İngilizce 5*'te Yer Alan Projelerin Özellikleri

Ahmet Acar[1]

Abstract

This article aimed to investigate the action-oriented approach (AoA) in the English textbook *İngilizce 5* used in the 5th grades of public secondary schools in Turkey by means of analyzing the characteristics of the so-called project presented at the end of unit 5 *Health*. It is argued that the unit objectives of the textbook are stated in terms of functional-notional objectives rather than action objectives and that the so-called project presented at the end of unit 5 does not carry the characteristics of a pedagogical project. Further to this, it is misleadingly conceptualized as an individual assignment by the authors of the textbook, it lacks the process dimension and it functions only as a pretext for reusing the language content of the unit. The attempt to employ pre-programmed projects at the end of each unit of the textbook *İngilizce 5* is subject to criticism. By proposing an alternative mini-project that meets the minimum characteristics that can be expected of a project, the article illustrated how to make this textbook action-oriented.

Öz

Bu makale, 5. ünitenin sonunda sunulan sözde projenin özelliklerini analiz ederek Türkiye'deki devlet ortaokullarının 5. sınıflarında kullanılan *İngilizce 5* İngilizce ders kitabındaki eylem odaklı yaklaşımı (EoY) incelemeyi amaçlamıştır. Ders kitabının ünite hedeflerinin eylem hedeflerinden ziyade işlevsel-kavramsal hedefler açısından ifade edildiği ve 5. ünitenin sonunda sunulan sözde projenin pedagojik bir projenin özelliklerini taşımadığı iddia edilmektedir. Buna ek olarak, ders kitabının yazarları tarafından yanıltıcı bir şekilde bireysel bir ödev olarak kavramsallaştırılmıştır, süreç boyutundan yoksundur ve yalnızca ünitenin dil içeriğini yeniden kullanmak için bir vasıta işlevi görür. *İngilizce 5* ders kitabının her ünitesinin sonunda önceden programlanmış projeleri kullanma girişimi eleştiriye tabidir. Makale, bir projeden beklenebilecek minimum özellikleri karşılayan alternatif bir mini proje önererek, bu ders kitabının nasıl eylem odaklı yapılacağını göstermektedir.

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INTRODUCTION

Since the goal of the communicative approach (CA) and task-based language teaching (TBLT) (Ellis, 2003; Estaire & Zanon, 1994; Nunan, 1989; Willis, 1996) is to train successful communicators, linguistic action (speech acts) in both CA and TBLT is the reference action, which will enable the students to be involved in intercultural dialogues successfully in short term contact situations or tourist trip situations as referred to in Van Ek's (1975) *The Threshold Level in a European-Unit/Credit System for Modern Language Learning by Adults*. The goal of training successful communicators has been replaced with a much more challenging goal in the two other subsequent Council of Europe documents, the Common European Framework of Reference for Languages (CEFR, 2001) and the Common European Framework of Reference for Languages Companion Volume (CEFRCV, 2018), that of the goal of training social actors. The natural implication of setting such a goal for language learners is that the reference action is no longer the speech action (linguistic action) but the social action, which is defined as acting with the others by Puren (2004). For this reason, the action-oriented approach (AoA) is used in this article to refer to social action-based learning (SABL) as used in Puren (2020) and Acar (2020a, 2020b). CEFR (2001, p.9), in the following quote, considered speech actions at the service of social action:

> The approach adopted here, generally speaking, is an action-oriented one in so far as it views users and learners of a language primarily as 'social agents', i.e. members of society who have tasks (not exclusively language-related) to accomplish in a given set of circumstances, in a specific environment and within a particular field of action. While acts of speech occur within language activities, these activities form part of a wider social context, which alone is able to give them their full meaning. We speak of 'tasks' in so far as the actions are performed by one or more individuals strategically using their own specific competences to achieve a given result.

Considering learners as social actors (social agents), in the above quote, implies a paradigm change from training communicators (as in the Threshold Level document) to training social actors who can live and work together in their democratic society. It should be noted that communication in the AoA does not disappear but its status changes: it is no longer both the means and the goal but just a means at the service of social action.

The Characteristics of Mini-projects in Language Textbooks

The new reference goal (training social actors) and its reference action (social action) are what require finding practical ways of implementing the AoA (or SABL) in and/or outside the classroom, in language curricula as well as language textbooks. Puren (2008b, 2009, 2014a, 2014b, 2016, 2017, 2018, 2019a, 2019b) argued that the most effective way of implementing the AoA is in the form of project pedagogy since the project is the best model of social action and it is the reference learning action to train social actors in their real mini-society (classroom). More specifically, he argued that the students can be involved in pedagogical projects that they choose, design, implement and evaluate as autonomously as possible (with the help of the teacher).

Mini-projects, on the other hand, are pre-programmed by curriculum developers or textbook writers, but they also reflect the characteristics of pedagogical projects as much as possible though not fully. Mini-projects differ from pedagogical projects in two respects: (1) They are limited by the timeframe of the textbook unit (2) They may not integrate all the characteristics of pedagogical projects, in particular, they offer limited autonomy compared to the pedagogical projects, the production of a mini-project is generally not used in the following units repeatedly, and they require the students to reuse the language and cultural content of the textbook unit (actional situation of reuse). It should be noted that although mini-projects offer reuse situations, they always have an educational dimension besides it, and this is what mainly differentiates a mini-project from both the final task of TBLT and communicative situations of CA. This means that a mini-project always has (alongside its linguistic objective) an educational objective, that is, educating students as critical but responsible, autonomous but supportive citizens (Puren, 2014b, 2017).

There are also other characteristics of mini-projects that make them different from the basic activities of both TBLT and CA. The presence of the design stage of the mini-project is an important characteristic of mini-projects. The design defines the action and sets the objective of the action, presents the plan of the action (action scenario), leads the students to search and select the information necessary to carry out the mini-project (research and work on resources) (what Horton (2007) calls information literacy or what Puren (2008a) calls informational competence), specifies the final linguistic product, sets the necessary evaluation criteria to evaluate the product and process. In selecting the social action of the mini-project, the priority is given to the real action though the use of realistic simulations is also possible (Puren, 2009; Maurer & Puren, 2019). In the AoA/SABL, communication is not the ultimate goal of any mini-project, but just a means for realizing the mini-project, contrary to CA, in which communication is both the means and the goal. Thus, in the action-oriented textbooks, the unit is the unit of action, whereas, in the communicative textbooks, it is the unit of communication.

The design stage of the mini-project also reflects the other characteristics of mini-projects, such as autonomy and collectivity. Although autonomy given to the students in a mini-project is not as high as in the pedagogical projects (since mini-projects are specified by the textbook authors or curriculum developers), still a certain level of autonomy is given to the students in the action scenario of the mini-projects by offering mini-choices to the students in these steps or by offering the students at least two mini-

projects, which are variants of the same social action, at the end of the textbook unit (Acar, 2020a). Regarding the collective dimension, the objective of the action as well as the steps of the action scenario and the evaluation stages of the mini-projects should integrate the collective dimension since social action is by nature a collective action.

As can be observed from this analysis, a mini-project design does not only focus on the product (like *making a poster*) but also has a process dimension (action scenario), in other words, a single instruction focusing on just the product such as *Make a poster* does not make it a mini-project since it lacks the process dimension of the mini-project. It should be noted that what is most important from the point of view of the training of a social actor is the process dimension of a mini-project, although what is most important from the point of view of the learning of the foreign language is the work of collective preparation and realization of the final language production.

All these characteristics of mini-projects relate to complexity. A mini-project can be more or less complex depending on its total preprogramming by the teacher, the textbook or curriculum or its total non-directivity. In other words, if the mini-project is chosen, designed and implemented by the students (social actors) in full autonomy (under the guidance of the teacher) without imposition from an outside authority, it will no longer be a mini-project but a pedagogical project, it will be more complex for the teacher and the students to implement it. For this reason, Puren (2009, 2014a, 2016, 2019b) rightly puts forward that mini-projects are the best way of training social actors by means of language textbooks; in other words, "mini-projects should be the main action units in textbooks prepared in accordance with social-action-based learning (SABL)" (Acar, 2020a, p. 29).

METHOD

This section presents information about the research design, study group, data collection tools, and data analysis.

Research Design

This study used document analysis as a qualitative research method to analyze the activity named as a project at the end of unit 5 of the English textbook *İngilizce 5* used in the 5th grades of public secondary schools in Turkey.

Study Group

The activity named as a project at the end of unit 5, which was selected randomly among all the units of the English textbook *İngilizce 5,* was chosen for the analysis since the analysis of each project in each unit will exceed the page limitation.

Data Collection Tools

According to Bowen (2009, p. 27), document analysis is "a systematic procedure for reviewing or evaluating documents - both printed and electronic (computer-based and Internet-transmitted) material."

Data Analysis

The activity named as a project at the end of unit 5 was analyzed to investigate whether it carries the characteristics of mini-projects. Thus, the research question that this study aimed to reply is: Does the activity named as a *project* at the end of unit 5 carry the characteristics of a mini-project as a form of the application of the AoA in language textbooks?

FINDINGS

An Analysis of the 5th Grade ELT Textbook *İngilizce 5* in terms of the AoA

İngilizce 5 is used in the 5th grades of public secondary schools in Turkey by students at the average age of 11 in Turkey. The textbook contains 10 units built around topics, and at the end of each unit, there is a section titled as *project,* which the textbook introduces as "Project reinforcement assignment" (Yalçın, Genç, Orhon, & Şahin, 2019, p. 9) in the section *introduction of the book*. However, the attempt to employ pre-programmed projects at the end of each unit is problematic in terms of the AoA since according to Puren (2009, 2014a, 2016, 2019b) the maximum a language textbook can employ in a pre-programmed manner is a mini-project. Projects, on the other hand, are chosen, designed, and implemented by the social actors (with the help of the teacher) with maximum autonomy and hence can not be presented in a pre-determined manner by a textbook or curriculum.

Unit objectives in the textbook *İngilizce 5* are stated in terms of functions and notions. At the beginning of Unit 5 *Health*, for example, objectives of the unit are given as "In this unit, we name illnesses and express our needs and feelings. We make suggestions about illnesses" (Yalçın et al., 2019, p. 76). This is also problematic in terms of the AoA since unit objectives in action-oriented textbooks are not stated in terms of functions and notions but in terms of actions (Acar, 2020a). This is actually one of

the differences between the communicative textbooks, in which the unit is the communication unit, and action-oriented textbooks, in which the unit is the unit of action. Thus, the functional-notional unit objectives of *İngilizce 5* naturally make the textbook communicative rather than action-oriented. The functional-notional objectives of each unit also clarify the sole function given to the so-called projects at the end of each unit: putting the students in a reuse situation, in which the students can reuse the language content of the unit. The action objectives of each unit and the mini-projects in the action-oriented textbooks, on the other hand, have a very important characteristic, which is educating social actors, and this educational dimension of mini-projects is what mainly differentiates between mini-projects and communicative tasks of TBLT or simulated situations of communication in CA.

The Analysis of the Proposed Project in Unit 5

The so-called project proposed at the end of unit five *Health* is "Make a poster. Give suggestions for a healthy life" (Yalçın et al., 2019, p. 87). However, this so-called project lacks a design stage, in which even the objective of the action is not defined clearly (what is the aim of the poster?) along with the recipient of the message and the rationale for preparing the poster: To whom and for what reason will the students give suggestions for a healthy life on the poster? Where will the poster be displayed? The function of this poster, thus, can even be criticized from a communicative point of view since there is no requirement for interaction among the students in the design.

There is no action scenario in the design. The students immediately embark on preparing a poster to give suggestions for a healthy life to unknown recipients; in other words, the so-called project just focuses on the product, and the process dimension is absent, which is even enough to prove that the so-called project cannot be considered as a project. There is not instruction to guide the students in searching and selecting the necessary information, which relates to informational competence (Puren, 2008a), to prepare the poster, neither is there any evaluation criteria to evaluate the product and process dimension of the so-called project. The action is a real action since the students will prepare a poster; however, since the objectives of this unit are stated in terms of functional-notional objectives, the unit is not an action unit but a communication unit, and the poster functions only as a pretext for reusing language content (notions and functions) of the unit. Besides, in the AoA, the mini-projects always have an educational dimension besides its linguistic dimension. It is, however, difficult to talk about the educational dimension of this co-called project since the objective targeted is only a linguistic objective (reusing the language content of the unit).

Since the design stage of the so-called project *Make a poster. Give suggestions for a healthy life* is absent; important characteristics of design such as autonomy and the collective dimension are also absent in this so-called project. The students are not given choices in the action scenario. Indeed there is neither action scenario nor design in the proposed project. Such being the case, it is impossible to talk about the collective dimension as reflected in the design stage. Even the final production (poster) does not reflect the collective dimension since it is not stated whether the students will prepare the poster in pairs, groups, or as a whole class. From the instruction, it is understood that each student will prepare his or her own poster. Since there is no evaluation stage in the so-called project, it is also impossible to talk about the collectivity in the evaluation. There is a section named *Reflect on your English* placed just below the project section of the unit, but the aim of this section is the self-assessment of the language performance of the students in terms of communicative can-do statements, and this evaluation does not reflect action-oriented criteria.

Since the proposed project does not carry the characteristics of pedagogical projects and since its only function is to allow the learners to reuse the language content of the unit, it can be concluded that the so-called project of this unit is neither a project nor a mini-project. Therefore, I propose the following mini-project design to illustrate how to make this unit a real action unit:

> A: As a whole class, you will organize a class health day and celebrate it in your class or school hall, or any place you choose.
> B: As a whole class, decide on a motto for your class health day (you can discuss it in your native language and then translate it into English with the help of your teacher) (e.g., Be healthy live long!) As a whole class, decide on the date, time, and place of your celebration.
> C: As a whole class, decide on whom you will invite to your health day celebration (friends from other classes, your parents, other teachers in your school, etc.) and how to invite them (invitation card/ face to face/ on the phone). Prepare an invitation card, first, in your native language and then translate it into English with the help of your teacher or talk to the guests in your native language on the phone or invite them face to face in your native language.
> D: As a whole class, first, discuss the different possible formats for your posters, then, each group will decide on their choice (dividing the poster into 3 or 4 or more parts, and each part will explain an item etc. or any other format you choose)
> E: Decide, as a whole class, on the criteria for evaluating your posters (visual quality, the relevance of the arguments, originality, effective use of the newly learned language content of the unit etc.) (You can discuss these criteria with each other as well as your teacher in your native language).

F: With the help of your teacher, decide, in groups, on what each poster will display for a healthy life (a poster for healthy eating, a poster for physical activity, a poster for hygiene, or any other you choose). Each group will prepare a poster (by considering their target audience that they decided on in step C) to display on your health day.

G: Each group will consult their parents at home and/or their elders and/or their teacher at school to get ideas and suggestions about their topic and then translate with your teacher those ideas and suggestions into English.

H: Make your posters in groups.

I: Each group will present its posters in the classroom. The other classmates will listen to you, ask questions, and evaluate your poster according to the format you developed collectively (e.g. not ok, ok, excellent). They will also make suggestions for the presenters (you can use your native language).

J: Invite your friends and/or other teachers and/or parents to your celebration.

K: Celebrate your health day and present your posters to the audience.

L: Get the reactions of your guests (in the target language or your native language) about the health day you organized. What do they think about your event? What are the effects of your celebration on them? Do they think that it raised their consciousness about some health issues? How do they evaluate your poster when they compare it to the existing official posters?

M: Make a collective self-evaluation of the organization and realization of your celebration in your native language. What went well, what could have been done to make it better. Why? How?

The design stage of this mini-project reflects the important characteristics of pedagogical projects such as autonomy and the collective dimension. The students (social actors) are given choices in the steps of the mini-project, which gives them a certain level of autonomy. The collective dimension is also present in the design, and it is reflected not only in the objective of the action but also in the steps of the design, final social action as well as the evaluation stage. It should be noted that the teacher reserves the evaluation of the language in the final productions, but for the choice of evaluation criteria, the social actors (students) have a margin of autonomy, so certain criteria will be used in evaluation by the teacher, others in self-evaluation. The presence of the design with a certain level of autonomy and the collective dimension as well as the collective evaluation stage contribute to the educational dimension of the mini-project: educating social actors. Thus, the sole function of this mini-project is not resuing the language content of the unit but it also has an educational dimension. The presence of the action scenario and the final social action also indicates that the mini-project includes not only the product/performance component but also the process dimension, which is the most important dimension contributing to the educational goal of training social actors. Announcing the objective of the action, which is a real social action rather than simulated action, at the beginning of the unit as is required from an action unit of an action-oriented textbook will also indicate that the unit is not a communication unit but an action-oriented unit with an educational dimension. It is also important to note that this mini-project has the potential to form a class identity since it is the social actors' (learners) own health day designed and celebrated collectively. Since the students are led to seek and manage information at step G, the informational competence is addressed in the design. Finally, the presence of the design, which carries the characteristics of mini-projects, makes this mini-project a complex social action while it is difficult to talk about complexity in the proposed project of the textbook *Make a poster. Give suggestions for a healthy life,* which lacks such a design.

CONCLUSION AND RECOMMENDATIONS

The English textbook *İngilizce 5* used in the 5th grades of public secondary schools in Turkey gives place to a section titled as a *project* at the end of its units*,* which the textbook introduces as *Project reinforcement assignment*. It is understood that both the authors and the editors of this textbook view project as an assignment, which is problematic in terms of the AoA, which views the classroom as an authentic mini-society where the social actors (students) collectively take decisions, are involved in actions and make evaluations not only outside of the class but also inside of the class. Thus, in the AoA, a project is not viewed as an individual assignment to be carried out at home. It is a complex social action designed, realized (in steps) and evaluated with a certain level of autonomy and collectivity, a complex social action which not only has a linguistic dimension but an educational dimension and in which the social actors are required to use their informational competence and communication is put at the service of social action. The so-called project of the textbook *Make a poster. Give suggestions for a healthy life* does not meet the characteristics of mini-projects. Besides, the textbook authors' unsuccessful attempt to give place to pre-programmed projects at the end of each unit is also problematic in terms of the AoA. Puren (2009, 2014a, 2016, 2019b) argued that the maximum a language textbook can include in a pre-programmed manner is a mini-project since projects are chosen, designed and realized by the social actors (under the guidance of the teacher) with maximum autonomy. One reason for the misconceptualization of projects by the authors and editors of the English textbook *İngilizce 5* might be the misunderstanding of the AoA in the Turkish ELT curriculum for the primary and secondary schools of Turkey (MoNE, 2018), on the basis of which this textbook was written. The curriculum states that:

> As no single language teaching methodology was seen as flexible enough to meet the needs of learners at various stages and to address a wide range of learning styles, an eclectic mix of instructional techniques has been adopted, drawing on an action-oriented approach in order to allow learners to experience English as a means of communication, rather than focusing on the language as a topic of study (p. 3).

The curriculum sets communication as the ultimate goal of the AoA, which is certainly not true since communication in the AoA is only a means at the service of social action, and the goal of the AoA is to train social actors. Acar's (2020c, 2020d, 2020e) analyses of three English textbooks, *İngilizce 7* and *Let's Learn English* used in the seventh grades of public secondary schools in Turkey and *Count Me In* used in the twelfth grades of public high schools in Turkey, also indicated that these textbooks did not reflect the principles of the AoA just like *İngilizce 5* analyzed in this article. The English textbook *İngilizce 5* makes several mistakes that should be corrected in the future action-oriented English textbooks: Projects, in these textbooks, should not be conceptualized as individual assignments. Rather than attempting to give place to pre-programmed projects at the end of the units, the textbook units should give place to at least two mini-projects, which are variants of the same social action and which carry the characteristics of pedagogical projects as much as possible. By only focusing on final production as *İngilizce 5* did in the so-called project presented in unit 5, *Make a poster*, the textbooks should not ignore the process dimension of mini-projects. The unit objectives should not be stated only in terms of functional-notional objectives since, in the AoA, the unit is the unit of action so the primary objectives of the units should be stated in terms of social actions. The educational dimension, in mini-projects, should be reflected in the mini-project design since the mini-projects have an educational dimension besides offering situations of actional reutilization of the language contents of the textbook unit. It should be borne in mind that evaluation criteria may change depending on the mini-project, and certain criteria will be used in evaluation by the teacher, others in self-evaluation. The teacher is responsible for the evaluation of the language in the final collective productions as well as the students' participation in the project. These suggestions are relevant not only to textbook writers who intend to write action-oriented textbooks but also to curriculum developers who intend to develop English curricula based on the AoA.

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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|

Conversation Analytic Examination of Inquiry-Based Science Classrooms

Sorgulama Dayalı Fen Sınıflarının Etkileşimsel Çözümlemesi[1]

Gökhan Kaya[2], **Gültekin Çakmakçı**[3]

Abstract

Purpose: Recent policy and reform documents in education have promoted inquiry-based learning, which is seen as an effective way of teaching science. However, there are few studies evaluating the teacher-student interactional structure of inquiry-based science (IBS) classes. Although the class is a social place, where learners are in the process of social interaction as a co-construction process, this lack of research limits our understanding of the nature of interaction in IBS classes. The lack of understanding of this interactive structure causes teachers to provide the desired answers to the theoretical questions that are asked outside the classroom, but the results in the classroom are not at the desired level.

Design/Methodology/Approach: On this basis, this study examines IBS classroom interaction by the micro-analytic *conversation analysis* (CA) method to reveal the interactional phenomena within the classroom. The study was conducted with two science teachers and their 56 fifth-grade students. A database of 12 hours of IBS interactions was examined line-by-line and turn-by-turn using CA.

Findings: Findings show that there are interactionally different phases in the practice of IBS classes and that teacher-student interactions also change according to context. These stages were named (1) initiating the inquiry, (2) focusing on the investigation, and (3) sharing understanding. Within these different phases of a science lesson, the pedagogical aims of the teachers and the interactive tools are found to differ.

Highlights: This has important implications for the study of the subjects and the class, which are dealt with in depth in terms of science education under a different conceptual framework. In addition, this study presents a contribution to CA research in terms of examining the interactional characteristics of science classes.

Öz

Çalışmanın amacı: Eğitimdeki son politika ve reform belgeleri, fen öğretiminin etkili bir yolu olarak görülen sorgulamaya dayalı öğrenmeyi teşvik etmektedir. Ancak, sorgulamaya dayalı fen sınıflarındaki öğretmen-öğrenci etkileşimlerinin yapısını değerlendiren az sayıda çalışma bulunmaktadır. Sınıf, öğrenciler ile öğretmenlerin etkileşim sürecinde olduğu sosyal bir yer olmasına rağmen, bu araştırma eksikliği sorgulamaya dayalı fen sınıflarındaki etkileşimin doğasına ilişkin anlaşılmasını engellemektedir.

Materyal ve Yöntem: Bu temelde, bu çalışma, sınıf içindeki etkileşimsel yapıları ortaya çıkarmak için mikro-analitik konuşma çözümlemesi yöntemiyle sorgulamaya dayalı fen sınıf etkileşimini incelemektedir. Araştırma iki fen bilgisi öğretmeni ve 56 5. sınıf öğrencisi ile yürütülmüştür. 12 saatlik sorgulamaya dayalı fen sınıfı etkileşimlerinden oluşan bir veri tabanı, konuşma çözümlenmesi kullanılarak satır satır ve adım adım incelenmiştir.

Bulgular: Bulgular, sorgulamaya dayalı fen uygulamalarında etkileşimsel olarak farklı aşamaların olduğunu ve öğretmen-öğrenci etkileşimlerinin bağlama göre değiştiğini göstermektedir. Dersin etkileşimsel olarak farklılaşan bu aşamalarında, öğretmenlerin pedagojik amaçları ve etkileşimli araçların farklılık gösterdiği tespit edilmiştir.

Önemli Vurgular: Bu çalışma fen sınıflarındaki etkileşimsel yapıların ortaya çıkartılmasına ve fen derslerinin etkileşimsel özelliklerinin incelenmesi açısından konuşma çözümlemesi araştırmalarına katkı sunmaktadır.

INTRODUCTION

Contemporary science education curricula aim to promote students' use of inquiry to adapt to continually changing and developing information bases (Finlayson et al., 2015; NRC, 2000). Some reports, policy and reform documents have been affecting science education curricula and teaching objectives throughout history. For example, the Sputnik crisis, Beyond 2000 (Millar & Osborne, 1999), National Research Council Reports (NRC, 1996; 2000) and the Next Generation Science Standards (NGSS Lead State, 2013) have influenced science education perspectives. NRC reports (1996; 2000) have a significant impact concerning science education standards and, in all reports, the relation between inquiry and teaching and learning of science is highlighted. Rocard et al. (2007) also prepared a report for the European Commission which is related to the present and the future of science education. This report acted as a stimulus for inquiry-based science education (IBSE) research and projects, mapping the science education framework and requirements in the modern world. At the end of the report, the authors suggested that inquiry is the focal point of science education.

Accordingly, there is much research (e.g., Abd-El-Khalick et al., 2004; Crawford, 2007; Finlayson et al., 2015; Author 2016; Minner et al., 2010; Sadeh & Zion, 2009) in this field to investigate different ways to increase practicality in the science classroom. However, despite the significant number of studies, practicality of inquiry remains a challenge as teachers and prospective teachers experience difficulties applying this approach in the classroom (Abraham & Millar, 2008). Research shows that teachers can respond to the questions regarding the inquiry-based learning approach with appropriate answers 'outside the classroom'; however, they fail to reflect their ideas in their classrooms (Darling-Hammond et al., 2020; Author, 2016). This situation refers to some troubles seen 'in the classroom', which points to a need to investigate them there. Such an investigation can potentially provide rich feedback oriented to bringing new insights into classroom activities, teacher-student interaction, teacher talks, and various classroom-contextual components, especially for understanding what is happening in the classroom. Therefore, this study focuses on teacher-student interaction, mainly through investigating teacher talk and teaching activities in the IBS classrooms. The study's purpose is to conduct a micro-analytic conversation analysis of an IBS classroom to unpack the interactional structure of science classrooms. Furthermore, in line with the general purpose, the paper sets out to propose an interactional definition of IBSE by describing the interactional unfolding of lesson phases and identifying interactional tools and pedagogical aims in a micro-moment context.

Classroom Interaction and IBSE

According to the social constructivist approach, the development of the learner cannot be fully explained only by individual efforts. Vygotsky (1978) stated that two individuals with the same level of Intelligent Quotient (IQ) would have a different degree of learning because of the impact of different social environments on their developments. Therefore, some scholars have focused on classroom interaction to understand meaning-making processes. For instance, Edwards and Mercer's (1987) pioneering research in science education looked at the relationship between the context of lessons and practical activities while talking. Lemke's (1990) seminal work also claims that learning science involves learning to talk science, and he focuses on how students get to talk about science during classroom discourse. Another example is Rocard et al. (2007), who pioneered research on inquiry-based learning and established inquiry-based learning as a contemporary research framework and stated that communication is a skill which learners should develop. The increasing research interest in science classrooms shows that the invisible nature of science classroom talk has become more crucial, and there is a need to conduct more research to unpack it.

Classroom interaction is increasingly gaining importance in science education as well as the social sciences. Research in the roles of teachers and students in a socio-cultural environment within the classroom is of utmost importance to improve an understanding of the applicability of the inquiry-based approach (Kelly, 2007; Oliveira, 2010; Windschitl, 2004). Investigating and improving a socio-cultural structure within the classroom is possible through conversation analytic examinations of teacher-student (Zemel & Koschmann, 2011) and student-student interactions (Mortimer & Scott, 2003) in order to reveal their discourse patterns (Lemke, 1990; Mehan, 1979) and analyze the interaction (contact) between participants (Mortimer & Scott, 2003). Many researchers state that the quality of interaction and discourse in the classroom should be improved to teach science literacy and IBSE (Kelly, 2007, 2014; Lemke, 1990; Mortimer & Scott, 2003; Oliveira, 2010; Tang, 2016). For this reason, teacher educators suggest some frameworks for teachers, since they are the prominent figures in classroom interaction and discourse. For instance, Mortimer and Scott (2003) suggest a communicative approach that aligns with teachers' purposes, and can also be used for teacher interventions. On the other hand, Walsh (2006) suggests another framework that is oriented towards language classrooms but is often used in other educational disciplines, namely self-evaluation teacher talk (SETT) which emphasizes the notion of classroom interactional competence (CIC). The reflection on teachers' interaction is the central place of the SETT framework

The first influential science classroom discourse research was conducted by Edwards and Mercer (1987). They examined the relationship between the content of science lessons and the practical activities through teacher-student talk. The second high-impact study was Lemke's study (1990) which draws on discourse analysis. According to Lemke (1990), scientific discourse is not merely talking about science, it also means doing science through the language. Thus, it also refers to observing, describing, comparing, classifying, analyzing, discussing, hypothesizing, theorizing, questioning, challenging, arguing, designing experiments, following procedures, judging, evaluating, deciding, concluding, generalizing, reporting, writing, lecturing, and teaching in and

through the language of science. Lemke (1990) also describes classroom interaction with a triadic framework, Question-Answer-Evaluation.

Mortimer and Scott (2003) conducted similar research, focusing on meaning-making processes. They established links between discourse patterns and the communicative approach, which affects meaning-making processes in the science classroom. More recently, Kaya et al. (2016) have investigated secondary school science classrooms through teaching the nature of science. The researchers drew on discourse analysis to examine teacher talk, and they concluded that a discourse pattern which is triadic, chained and adjacently paired, can explicitly change the nature of science teaching and learning processes. Tang (2016) examined the relationship between the communicative approach to classroom talk and the modes of representation used by science teachers. Jin et al. (2016) investigated how physics teachers structured classroom discourse to promote the cognitive and social aspects of IBSE. The research was conducted with 17 physics teachers who were actively involved in teacher education at the university level and teacher training activities in local school quarters. Considering the social aspect of the inquiry, the teachers interacted frequently with the students in a class. However, it was found that facilitating conversations among students and prompting students to talk about their ideas are quite challenging. Besides, Jin et al.'s (2016) research empirically showed that teachers often asked students to follow the procedures of scientific experiments rather than engaging them in active thinking. Teachers were also inclined to associate hands-on activities with inquiry-based teaching, and hence engaged students in activities that were hands-on but not minds-on.

However, there are some studies on the interactions in classrooms, and the analysis in the existing studies has superficial transcriptions and unconvincing patterns. Looking at these studies (Lemke, 1990, Mortimer & Scott, 2003; Rymes, 2008; Ryder & Leach, 2008; Windschitl, Thompson, & Braaten, 2008), it is seen that superficial transcriptions and generic structures (e.g., IRF/E, IRFRF) have been used to gain an understanding of these settings. The researchers in the line of research that has been given so far (e.g., Kelly, 2007; Kelly & Crafword, 1997; Lemke, 1990; Mortimer & Scoot, 2003; Ryder & Leach, 2010; Rymes, 2008; Windschitl, Thompson & Braaten, 2008) seem to analyze classroom discourse based on orthographic transcriptions of classroom interactional instances and examine the data to infer some patterns. They bring evidence to classroom contexts using these relatively minimally detailed transcripts, which might eventually lead to a lack of understanding of the discourse and communication, as well as a lack of identification of the context.

In addition to orthographic transcriptions of talk, it is also of utmost importance to include intonation, stress, interruptions, pauses, gestures, and the physical context in detail in the transcripts (Sert & Seedhouse, 2011; Sert, 2013; Walsh, 2011). Therefore, the studies that investigate the interactional skills among teachers and students and discourse in science education are required to address this multitude of interactional details in the analysis of discourse rather than transcription analysis. Notably, in the last decade, ethnomethodological conversation analysis has frequently been used in classroom interaction studies (e.g., Seedhouse 2004; Evnitskaya & Morton 2011; Sert & Walsh 2012). The first research which draws on CA is Mchoul (1978) regarding the organization of turns during the formal talk in a classroom. He investigated sequential organization rules in classroom settings and found that they are different from informal speech exchanges regarding turn-taking and turn allocation, and also that teachers organize their rules. Mchoul (1978) used audio and video recordings of teacher-fronted classrooms, and he discovered some rules in terms of management of turn-taking in classroom interaction.

Following Mchoul (1978), much research has explored classroom interaction types, and has drawn on a micro-analytic perspective. The bulk of research adopting a CA perspective has been particularly oriented to language classrooms (e.g., Brandt, 2011; Evnitskaya & Morton 2011; Kääntä, 2010; Markee, 2000; Mortensen 2008, 2009; Mortensen & Hazel 2011; Seedhouse, 2004; Sert, 2011; Sert, 2015; Sert & Walsh 2012). Nevertheless, there is some research carried out in the field of science education related to Content and Language Integrated Learning (CLIL) (e.g., Evnitskaya, 2012; Mercer, Dawes, Wegerif & Sams, 2004; Morton, 2012). However, research on interactional organization of science classrooms (e.g., Duschl & Osborne, 2002; Kelly & Chen, 1999; Kelly, 2007; Leach & Scott, 2002; Lemke, 1990, 2001; Mortimer & Scott, 2003; Roth, et al., 2011; Windschitl, Thompson, & Braaten, 2008; Urmeneta, 2008; van Aalst & Trounog, 2011) has drawn on discourse analysis rather than the micro-analytic perspective. The principal methodological power of the micro-analytic CA, apart from discourse analysis, is to bring robust evidence to learning and comprehension at the micro-level in the interaction of teachers and students. Although the discourse patterns reflect the interaction in classrooms to a certain extent, they still need to be complemented with data and robust analytic evidence. Therefore, it is considered that micro-analytic methods are necessary for science education, including CA which provides an in-depth analysis. With this research gap in mind, this study set out to adopt a CA-based approach for the examination of science education settings, given that CA provides evidence of discourse patterns such as IRF (initiation-response-feedback; Sinclair & Coulthard, 1972) or its modifications. However, these patterns have not received enough research attention in various classroom interactional settings (Sert, 2011). These generalizations can give an overview to help us understand classroom interaction and sequential organization.

Given that it will add a new dimension to these issues, this research is deemed essential and valuable. At the same time, it will pave the way to use by achieving the purpose and simplifying the applicability of an IBS education informed by the data and

research evidence. This study will describe classroom interaction in the IBS classroom and look more closely into interaction, adopting a conversation analytic perspective in line with the following research questions:

1. How is teacher-student interaction sequentially organized in IBS classrooms?
2. What are the pedagogical aims used by teachers in IBS classrooms?
3. Which are interactional tools used by teachers to actualize pedagogical aims in IBS classrooms?

METHODOLOGY

The research reported in this paper is part of a study (Kaya, 2017) conducting a micro-analytic investigation of an IBS classroom to unpack the interactional structure of science classrooms. This study examines IBS classroom interaction by the CA method to reveal the interactional phenomena within the classroom. CA has the potential to reveal the interactive nature of science classes by examining naturally evolving interaction data from a data-driven and participant-focused perspective, focusing on the participants' moments of success in social actions.

Empirical data analyzed in this study come from two different classrooms as part of a larger corpus. The data were gathered during the implementation of a science lesson for a term that has four different science subjects at 5th level. This level is the first stage of the lower secondary school in the Turkish educational system. Furthermore, the implementations were conducted at the same level in two different state schools in Ankara, Turkey. The whole corpus includes conversational data that come directly from science classrooms. The corpus consists of audio and video recordings of 24 science lessons, each of which is approximately 45 minutes long. So, there are a total of 12 hours of recordings.

Conversation Analysis (CA)

The current study employs micro-analytic conversation analysis (Sacks, 1992), a methodology which has emerged from ethnomethodology (Garfinkel, 1964). It should be noted that within the research, the terms micro-analytic analysis and CA are used interchangeably. CA is mainly used for examining structures and patterns of interaction in everyday talk and institutional contexts. So, it can be described as "the interaction order", in line with Goffman (1983). According to Sidnell (2010), CA is an approach within the social sciences that aims to "describe, analyze and understand talk as a fundamental and constitutive feature of human social life" (p.1).

Ethnomethodological CA is mainly oriented to developing an understanding of how this order is achieved in social interaction, and it is a data-driven methodology based on micro-analytic studies (Sidnell, 2010). The analysis in this research employs the methods and principles of CA to "uncover social actions through observing and describing turn-taking, repair and preference organization practices" (Sert, 2011, p. 6). "Unmotivated looking" is the crucial principle of CA methods and a starting point for the examination of data to discover what is happening (Liddicoat, 2007). Unmotivated looking involves the analysts' preliminary examination of the data to reflect the participants' points of view, rather than looking for a pre-identified or pre-defined theoretical phenomenon. Therefore, the first and essential step of the analysis is to reveal some phenomena through an unmotivated look at the recorded data. In this study, unmotivated looking is employed for the initial treatment of recorded IBSE classrooms. When a phenomenon emerges from the corpus, it is investigated for further occurrences in other recordings, to discover a pattern in teacher-student interaction. The data also include multimodal features of classroom interaction. However, conducting a multimodal analysis is beyond the scope of the current study, mainly due to some technical problems with the recordings and also to maintain a more specific research focus. Nevertheless, the study addresses multimodal features to increase the readability of extracts and reflect the sense-making mechanisms in interaction.

Participants

The participants were two science teachers at the secondary school science level and 56 (11- or 12-year-old) students in these teachers' classes who were attending their first compulsory secondary education year. Teachers and classes use Turkish at the secondary level in Turkey.

The main focus of this research is on two science teachers who were selected through purposeful sampling. The researcher specified some features before choosing the teachers, such as keeping an open mind for academic and professional development, teaching science at the 5th-grade level, and willingness to do group work. First of all, possible school options were determined for implementation, and then school visits were carried out to inform the principal and science teachers about the details of the research. During this process, the researcher mentioned the research aims and his expectations from the teachers. Following the explanation of the process, the researcher checked whether they would take part in the research as volunteers. Moreover, signed consent forms were collected from participants before the implementation. A similar process was conducted for learners and their parents. Merve and Büşra (pseudonyms) were the main participants in the research.

Data Collection

The data collection process is an integral part of conversation analytic research for identifying verbal and non-verbal actions during an interaction (Jenks, 2011). For this reason, all of the data collection tools were explained and negotiated in terms of classroom settings at the kick-off meeting with the teachers. Three cameras, positioned as shown in Figure 1, recorded the lessons' entire duration.

The researcher did not participate in the lesson to avoid interfering with its naturality. Labov (1970) refers to the negative impact of cameras, and an observer's or researcher's presence in recorded settings, as the observer's paradox. The cameras were set up with an adjustable tripod for every lesson and fixed according to the learner seating plan without any intervention by a controller to minimize negative effects. However, the absence of a researcher to adjust the cameras during the class time caused the loss of some data due to teacher movements in the blind spots. Moreover, in some cases, the cameras did not record the participants' voices clearly because of multilogue interaction, choral responses, and softer sounds. With these factors in mind, the first inquiry-based lesson included three cameras, but this session was not recorded, to allow the participants to get used to the presence of cameras.
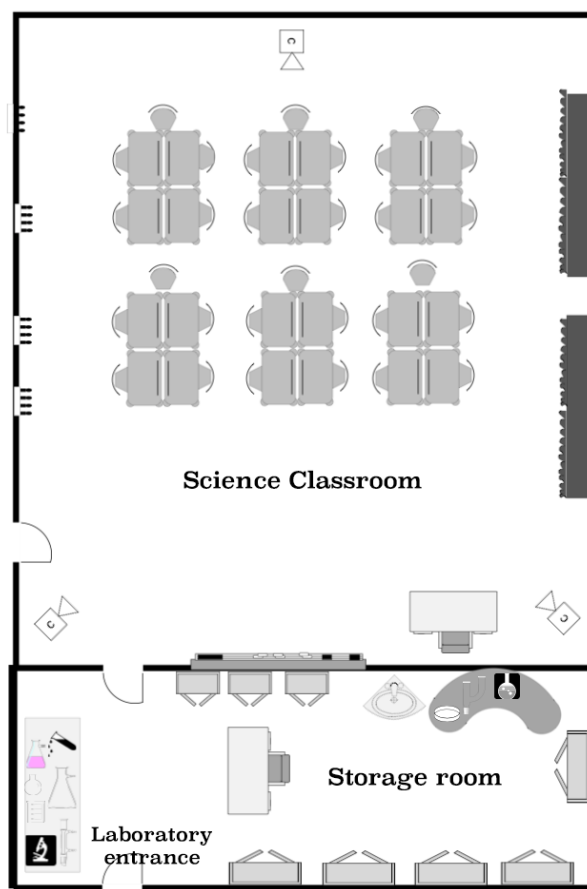
[Figure 1. Classroom settings and location of cameras]

Data Treatment

For representational purposes, each extract in the paper has an identification code for increased readability of the following analyses. For example, Extract 3: Mrv_ax_ lsx, short identification of extract, [time span], where 3 stands for the number of extracts in the whole collection, making it easy to access it in the database and Mrv or Bsr show the teacher's name in the collected data. Following the teacher codes, an inquiry-based task name is given; for instance, "ax" expresses the "sound cups" in the "Propagation of Sound and Light" unit. The "lsx" stands for the classification of the lesson section instead of giving the exact minute. Following the lesson phase demonstration, a brief explanation is given to clarify the subject of the sequence or the main topic of the analysis. The last code in the identification system is the time interval between the opening and closing of an extract in the given lesson phase rather than the entire lesson time. Annotation of data is another significant step while building a database and building a collection of the phenomenon being investigated.

All transcriptions were in the Turkish language, and the data were translated into the English language only for the extracts used in the paper. Due to the difficulties of translation from the primary language to another language, there is no consensus about translation among CA scholars. On the one hand, some of them advocate that all transcripts should be translated word by word, concerning translations of the idiolects (Jenks, 2011). On the other hand, some others maintain that translations of any

transcription might harm the nature of data and the interaction language (ten Have, 2007). Furthermore, CA studies include many notations to present verbal or non-verbal actions, and these notations can be used at the beginning, in the middle, or at the end of a word. Therefore, showing notations in translated turns is troublesome concerning the precision of the moment of unfolding actions. With these considerations in mind, the data translated a turn based on idiolects to provide an overall understanding of the data for all researchers and target groups.

Reliability, Validity and Limitations

Reliability is a crucial concept for CA studies too, as Seedhouse (2004) states: CA research is based on the recordings of the interactional episodes for further examination. It also underscores CA studies' reliability, in that these recordings capture as much of the interaction as possible. For instance, all the participants should be recorded during the communication, and the recordings should not consist of only audio or video. To this end, audio-video recordings are a basic requirement for reliability in CA research. Besides, choosing an excerpt or the micro-moments and presenting quality representations are of utmost importance to ensure the study's reliability.

CA researchers (Jenks, 2011; Heath et al., 2010; Sert, 2011) dwell on the camera locations regarding interaction, participant, natural settings, and different angles. With this concern in mind, the first author located three fixed cameras with three tripods to view the participants from the best angles possible (see Figure 1). One camera is located at the back of the classroom to record the teachers, but teachers usually move around in inquiry-based learning classrooms. Therefore, it was fixed near the blackboard located at the back of the classroom. Two cameras were set up in the left and right corners at the front of the classroom, and they focused on the students and student groups.

Data analysis and data representations are fundamental validity factors of CA research (ten Have, 2007). Moreover, Seedhouse (2004) focuses on the validity concern under four different dimensions, and he links them with the objectivity and credibility of the research. These dimensions are internal, ecological validity, construct validity and generalizability. The current research draws on the next turn proof procedure to show participant orientations based on speaker actions, and all claims are grounded in an "emic perspective". Hence the findings are entirely open for examination by other analysts. Ecological validity is "normally concerned with social research which is conducted in experimental and laboratory-based settings, which may not be transferable" (Brandt, 2011; p. 57). Data comes from classroom settings that are not scripted environments, and participants' actions are observably context-renewing. However, one concern might be a possible departure from natural occurrence due to recording interactions with three cameras.

FINDINGS

Institutional interactions are investigated in terms of specific features such as turn-taking, turn design, sequence organization, lexical choice and asymmetry of roles (Heritage, 1997). Through the first section of the analysis and the findings section, all of these features will be exemplified in IBS lessons and micro-moments of the lesson called 'lesson phase' (LS) in the whole study. It will also focus on how a lesson is initiated, maintained and closed by the teacher within the IBSE. The second question is related to describing and revealing teachers' pedagogical aims and interactional tools oriented to the mediation of emerging educational goals. The second question will also build upon the findings related to the first research question. The pedagogical aims and interactional tools will be discussed considering the different micro-contexts throughout a lesson.

IBS lessons are divided into sub-sections based on some theoretical assumptions (Author, 2016; Pedaste et al., 2015). However, some scholars are unaware of the different stages of inquiry processes in the lesson (Minner et al., 2010). During the micro-detailed analysis, we realized that the teachers divided the inquiry lessons into three different sections: the first section is related to "initiating the inquiry", or a warm-up section before teamwork or investigation of the research question. The second is the primary investigation process, which includes teamwork and experimenting; this section is called "focusing on the investigation". The third section is the "sharing of understanding" time after the inquiry process, which comprises sharing the findings, comparing the investigation process and outputs, discussing with peers, and teacher requests for explanation or checking for understanding. Furthermore, sequence organization, turn-taking structure, and preference organization become distinct in these lesson phases.

Through various teaching series, teachers' pedagogical aims and interactional tools drawn on for implementation purposes were unpacked. To this end, every lesson phase in this section can be investigated in terms of teachers' pedagogical foci and the interactional resources that they deploy. Teachers draw on some pedagogical focus/aims/goals to get the highest level of learning objectives. The learning focus is defined as "task as workplan" (Breen, 1989), "task as a process" (Seedhouse, 2004) or "academic task structure" (Erickson, 2004), while the pedagogical focus is referred to as "task-in-process" (Schwab, 2011). Thus, the learning aim has a static structure, but the pedagogical aim is dynamic. Teachers manage the lesson phases depending on the learning goal, pedagogical aims, and interactional tools. The term 'interactional tools' is favored in the study rather than 'interactures' to refer to the relationship between the lesson phase and its componential interactional tools. An interacture can be defined as a particular tool which 'belongs to' or is typical of the lesson phases. The pedagogical aims and interactional tools were also given in every lesson phase section below.

The Initiating the Inquiry Lesson Phase: Interactional Features and Pedagogical Aims

The inquiry lesson's initiating phase has been defined as the first step of an IBS lesson since it covers the beginning of the task before the investigation process. It can be seen as preparation for the scientific investigation in terms of a research question or a scientific topic. Therefore, this lesson phase requires different patterns, pedagogical aims, sequential organization, and distribution of teachers' and students' roles for the following parts of the lesson phase. The lesson phase frequently has a recurring pattern that reveals how the lesson will go on, thus hinting at the process's general structure. Therefore, the beginning of the inquiry lesson phase can be interactionally identified. The lesson phase definition emerged from the data inductively, as shown in Table 1 from the beginning to the end.

Table 1. Initiating the inquiry lesson interactional structures

Lesson phase	Interactional features
Initiating the inquiry	1. Teacher's questioning process about students' background knowledge or previous lessons as an initiator of the sequence. 2. Responses elicited from more than one student relevant to teacher requests. 3. Teacher's avoidance of the evaluation of students' contributions. 4. Classroom discourse and discussion continued on the research question between teacher and learners or teacher's transmission of the research question. 5. In the final part of this lesson phase, participants get through the investigation process.

Lesson phase	Pedagogical Aims (*pa*)		Interactional Tools (*it*)		Descriptions
Initiating the inquiry	*pa1*.	To introduce the IBS activity	*it1*.	Extended teacher turns which uses explanation or instruction	Teacher turn of more than one clause.
	pa2.	Checking and displaying the answer to elicit responses in relation to previous lesson or scientific subjects	*it2*.	The use of transition markers	Turn openings or topic changes markers (e.g., all right, yes, now) and attention-getter.
	pa3.	To enable increased learner participation	*it3*.	Known-answer question	Asking questions to which the teacher knows the answer.
	pa4.	Ask some questions to prepare for the investigation process	*it4*.	Paraphrasing of learner contributions	Declaration of the learners' response within some lexical changes
	pa5.	To transmit information	*it5*.	Teacher's allocation	Selection of the next speaker among the learners by bidding or direct nomination
			it6.	Absence of feedback	Not giving feedback following the learners' explanation

To illustrate the initiating an inquiry lesson phase, Extract 1 is chosen from the corpus. In Extract 1, Busra draws on student experiences as a warm-up activity before focusing on the investigation stage. Extract 1 illustrates an example during which the participants talk about their experiences concerning the highest hill they have ever seen. Before the extract, the teacher asks a question, "which is the highest hill you have ever seen?" to elicit responses based on the learners' prior knowledge. The question works as an initiator of the sequence. The answers are elicited from more than one student (line 37-48, 49-70, 71).

Extract 1: Bsr_a4_ls1, Teacher (Tchr), Yade and Cenk talk about their experiences concerning the highest hill they have ever seen. [01:02.0-01:49.5]


```
37  Tchr:      peki ↑Yade
               all right ↑Yade

38             +pointing to Yade
39  Yade:      öğretmenim ben şey kayseriye gitmiş[tik birgün]=
               my teacher we have gone to kayseri [one day ]=

40  Tchr:                                         [şi::: ]
41                                                +gaze at another student
42  Yade:      =kayseri akrabalarımız oturuyor or↑da (0.4) görmüştüm
               =our relatives live in kayseri (0.4) I have seen

43             Erciyes dağı
               Erciyes mountain
```

```
44                       (0.4)
45   Tchr:               °hmm° Erciyesi gö[rdün peki
                         hmm you saw Erciyes all right

46   Nese:                             [ama (bizimki sizinkinden daha büyük)
                                       [but (ours is bigger than yours)

47   Tchr:               peki en (.) tepe kısmını görebildin mi.
                         all right did you see its highest point?

48   Yade:               °°onu göremedim öğretmenim°°
                         °°I didn't see it my teacher°°

49   Tchr:               Cenk
50                          +pointing to Cenk
51                          (0.4)
52   Cenk:               ei: saklıkent
53                          (1.9) ((the teacher looks straight up))
54   Tchr:               Saklıkent nerde?
                         where is Saklıkent?

55                          (0.6) +gaze at Cenk
56   Cenk:               ei:: fethiye de hocam
                         ei:: in fethiye my teacher

57                          (1.1)
58   Tchr:               tepeler mi↑ var orda
                         are there hills?

59                          (0.3)
60   Tchr:               arkadaşlarına anlat ben de bilmiyorum çünkü↑
                         tell your friends, because I don't know either

61                          (0.9)
62   Cenk:               ei:::(0.5)°°ben anlatmasam°°
                         ei:::(0.5) if I do not tell

63                             +hand goes to neck
64                          (0.3)
65   Tchr:               na↑sıl bir şeydi
                         what was it like?

66                          (0.8)
67   Cenk:               ei:: şelale vardı çok [yüksek
                         erm:: there is a very high waterfall

68   Tchr:                                     [hıhı
69   Stds:                                     [(unintelligible talks)
70                       ((teacher goes to the blackboard))
71   Tchr:               peki çocuklar ei:: Cren bir de sen şöyle.
                         all right children erm:: Cren say it as well.

72                                       +pointing to Cren
```

Extract 1 consists of two different sequences between Teacher-Yade (line 37-48) and Teacher-Cenk (49-68). Furthermore, a new sequence starts with selecting a speaker for the same question at the end of the extract. Before line 37, a student tells her experiences, and the teacher produces a 'compliance token' (Schegloff, 2007), "all right", to display understanding and allocate the turn to a new speaker without any evaluation of the previous learner's contribution. After the marker, the teacher assigns the turn (line 37-38) to Yade who bids for the floor by raising her hand to explain her experience concerning the requested topic. Therefore, Yade tells her own experiences about the highest hill she has ever seen, between lines 39 and 43. The learner's turn emerges as the second pair part of the sequence. When Yade finishes the turn, the teacher asks a question (hmm you saw Erciyes, all right, all right, did you see its highest point?) as a post-expansion (FPPpost) which functions to shape the learner contribution that is used as the third turn of the IRF pattern (Jacknick, 2011) (line 45-47). However, Yade does not give any further information (I didn't see it), and the teacher allocates the turn (line 47 and 48) to Cenk, who bids for the floor by raising his hand. During this sequence, the teacher does not rework the base first pair part, but Cenk responds to the question. Cenk constructs a turn construction unit that includes a hesitation marker (ei::) and a word (saklıkent), which is the name of a ski resort area, in line 52.

Following this turn, there is a long silence (line 53) and the teacher looks away as if she is thinking about "saklıkent". This silence may be an indicator of an open question, repair, or post-expansion. So, the teacher asks a question to clarify the location of the hill in line 54.

Moreover, she asks more questions (line 58, 65) and requests an explanation (line 60). These turns include two actions, namely request for the elaboration on the students' talk and shaping learner's contributions, thus being 'double-barreled' (Schegloff, 2007), which denotes more than one action to an utterance. After the extract, the teacher continues to elicit student experiences regarding the main topic, and then she passes to the research question that constitutes the learning aim. In the whole process, the teacher avoids any verbal evaluation of students' contributions, in order to elicit more responses. Walsh (2006) notes that the less the teacher gives evaluative responses in the discussions, the longer the controversial topic lasts. Besides, Sert (2015) explains the balance between the timing of evaluation, and if the teacher does not give the right answer immediately, it provides communicative space for other students.

When Extract 1 is analysed with a focus on pedagogical aims and interactional tools (Table 1), the teacher's pedagogical focus dominates the whole series by asking questions to lay the ground for the investigation process and to enable increased learner participation. Throughout the extract, the teacher draws on learner experiences and uses information-seeking questions instead of known-answer questions. The interaction which occurs between the teacher and Cenk emerges differently from the interaction between the teacher and Yade. Cenk starts his turn with a hesitation marker "ei:" and just says "saklıkent", which is the name of the mountain that is the highest he has ever seen (line 52). However, a long silence follows his turn (line 53). The teacher asks a question to clarify the location of the hill in line 56.

Moreover, she asks more questions (line 58, 65) and requests an explanation (line 60). All teacher turns have multitasked features that shape learner contributions and elaboration on student talk. At the end of the sequence, the teacher is still seeking increased student participation, but she does not make any evaluations or give feedback. Furthermore, she allocates the turn to another student to maintain the pedagogical aim. This endeavour also serves the second educational goal, which is to ask a question to prepare for the next lesson phase; in other words, the "focusing on the investigation" sequence.

The initiating of the inquiry lesson phase consists mainly of a question-answer adjacency pair, as is the case in traditional classrooms. A question utterance creates the first pair part (FPP) of a sequence and is frequently constructed by the teachers (e.g. Extract 1). An answer is the second pair part (SPP) of the line as a conditionally relevant constructional unit of an adjacency pair. Students build SPP, and teachers try to elicit multiple SPPs (e.g., Extract 1) throughout the lesson phases, which refer to more than one appropriate pair (Schegloff, 2007) or a candidate answer (Koole, 2010) in response to the same FPP. For this reason, a question is reworked after a possible explanation is provided through a multilogue discussion, or a new recipient is selected without reworking or paraphrasing the FPP (e.g., Extract 1).

The Focusing on the Investigation Lesson Phase: Interactional Features and Pedagogical Aims

The "focusing on the investigation" lesson phase is located in the middle of the IBS lessons, and it is also the longest part of the lesson time. Throughout this lesson phase, students engage in an experimental process to come up with evidence, results, and implications based on a research question. Furthermore, the learners collect data and make inferences as a preparation for the "sharing understanding" lesson phase. The "focusing on the investigation" section has several interactional characteristics, which frequently occur with a recurring classroom discourse pattern, as seen in Table 2.

Table 2. The "focusing on the investigation" phase of the inquiry lesson

Lesson phase	Interactional features
Focus on the investigation	1. Following the beginning of the investigation process, the teacher observes while the learners work on the material and ask questions, or the learners ask for help and guidance from the teacher. 2. Teacher's questioning or learners' requests are mainly related to possible error sources. When the teacher realises there is trouble, he/she delivers some guidance or works as a group member. 3. If the problem is common, the teacher makes an announcement to the whole class. 4. The teacher moves to another group (teacher walks around the research group). 5. At the end of the focus on the investigation process, instructions are given to enable a transition to the last part (sharing understanding) of the inquiry science lesson.

Lesson phase	Pedagogical Aims (pa)		Interactional Tools (it)		Descriptions
Focus on the investigation	$pa6$.	To organise the physical learning environment and rules	$it7$.	An absence of learner contribution	Short or rarely learners' turn.
	$pa7$.	To help students concerning material problems	$it8$.	A single teacher turn which uses instructions	A single, extended teacher turn which uses explanations and/or instructions
	$pa8$.	To ensure following the instruction			

pa9.	To elicit responses about the material or process	it9.	The use of attention-getter devices	Imperatives and high-volume expression turn-initial position
pa10.	To check the investigation process while students are working	it10.	Information-seeking question	Genuine questions to which the teacher does not know the answer.
pa11.	To introduce the research process	it7.	Absence of teacher allocation	Turn-taking without teacher's allocation or nomination.

To illustrate this lesson phase, Extract 2 is chosen from the corpus. In Extract 2, the teacher works as a team member and finds out the problem related to the lighting of the lamp. She steps in to draw students' attention to the connection of the electric circuit. At the beginning of the sequence, the teacher observes a group while they are working on the electrical circuit (line 25). Then she asks a question (FPP) to understand what they have done during the research process (line 26). Arya responds to her with "yes" (SPP). Following the answer, the teacher asks to see the circuit in line 28. Furthermore, she handles the circuit component (line 29-30) and requests an explanation (but why doesn't it work) for trouble related to the practical problem (line 31). However, nobody takes the turn, so the teacher works as a group member, and she identifies the trouble (the cable ends have not connected) (line 33). Then, the students undertake some tests to fix the connection of the cable (line 34). While they are working on the material, the teacher observes the students' interventions, and she gives further instructions (lines 35, 37). Following the short sequence, the teacher again steps into the students' work and takes the crocodile clips to make the connection between the cable and the socket (lines 38-39, 42). While the teacher works on the material (line 45-47), Omer joins the interaction and expresses his idea (my teacher, the problem is there-there) about the problem (line 45, 50). Then Omer displays his intention to interfere with the teacher's work between lines 52 and 54, but the teacher prevents the student's contribution with a strongly negative assessment token (line 55). The students complain about the teacher's intervention in their investigation process, and she verbalises her situation in line 56. The teacher tries to help the students, although the students are disturbed by the teacher's working as a group member.

Extract 2: Mrv_a5_ls2, participants work on an electric circuit-working as a group member [01:02.7-02:01.5]

```
24   Tchr  :    evet
                yes

25              (7.4) ((teacher observes a group))
26   Tchr  :    yaptık ↑mı=
                did we do it↑=

27   Arya  :    =>(evet)< öğretmenim
                =>(yes)< my teacher

28   Tchr  :    hani↑
                where↑

29              (1.8) ((Teacher touches circuit components
30              which are constructed by group members))
31   Tchr  :    ↑ama bu niye yan↑mıyor
                ↑but why doesn't it work

32              (1.7)
33   Tchr  :    bunların uçları ↑BAĞLANMAMIŞ BAĞLANMAMIŞ
                the cable ends haven't connected

34              (4.0) ((Students do some tests for connect to cable))
35   Tchr  :    bağla
                connect it

36              (1.6)
37   Tchr  :    bunu bunu bağla (buraya)
                connect this this (there)

38              ((Teacher struggles to fix the crocodile clips
39              tightly))
40              (17.3)
```

```
41   Tchr  :      °bunu (( )) bağla°
                  °connect this°

42                ((Teacher connects the cables but lamp doesn`t work))
43                (3.6)
44   Tchr  :      bunu yanlış ↑mı bağla mışsınız↑=
                  you connected it wrong↑=

45   Omer  :      °hocam (şurasında sorun var) şurda şurda° ( )
                  °my teacher, the problem is there-there °( )

46   Tchr  :      >tamam tamam< bu boz↑uk
                  >ok ok< this is broken

47                ((As soon as she finished this turn, she turns her
48                head to the teacher`s table that is used as an equipment
49                table and then she tries to fix the cable))
50   Omer  :      ↑öyle birşey olmuyo::r=
                  ↑it isn't like that=

51   Tchr  :      tamam tamam (bir dakka)
                  ok ok (just a moment)

52                (1.0) ((Omer interferes with the teacher`s work, he uses
53                hands to touch the cable, tries to fix the cable problem and
54                he says something. But we don`t hear what he says))
55   Tchr  :      ↑dur işte: (.) dur=
                  ↑stop (.) stop=

56                ((Teacher fixes her gaze on Derya and she
57                turns her body posture to Derya))
58   Derya :      =bende >anlamak< istiyor[um=
                  =i would also >understand< it

59   Tchr  :                              [yapmaya calışalım yani↓
                                          [so let's try↓
```

The section shows different pedagogical aims and interactional features (seen in Table 2) concerning both teacher-student and student-student interactions. At the outset, the lesson phase mainly contains inquiry processes of research questions based on a research plan that can be provided by the teacher or can be learner-driven. The teacher's strategy, in general, is related to organising the investigation environment and ensuring learners do the research regardless of encountering failures in terms of the output. For this reason, the teacher guides the students to manage the research processes and accomplish a transition into sharing their understanding of the lesson phase. Moreover, the teacher studies with the learners as a peer or mentor, which includes the resolution of a source of trouble, and turns it into a success.

In Extract 2, the teacher observes the students while they are working on the material, and she wants to track the progression of their investigation. She realises some difficulties related to the lightening of the lamp (line 31) and starts working as a group member to proceed to the next step of the investigation process. Thus, at the beginning of the extract, the teacher's pedagogical focus is to check the inquiry process while students are working on the material (line 24-33) and following the checking of the process the teacher changes the pedagogical aim to help the students engage in physical problems (line 35-59). Throughout the sequence, the teacher manages both interaction and implementation processes with a single teacher turn (line 33, 41, 44, 46, 51, 55) which she uses for explanation and instruction given as interactional tools. As a consequence of this, learner contribution is limited and blocked by the teacher (line 46, 51, 55).

Sequence opening of the extract is made with the teacher's question to find out whether the investigation is finished (line 26) in line with the pedagogical aims. Arya says "yes teacher" to provide an affirmative response, oriented to finishing the investigation. The teacher wants to see the bulb light up (line 28), but it does not work. Moreover, she realises there is a problem and touches the circuit components that are constructed by the group members. The teacher asks an information-seeking question "Why does it not shine?" to elicit responses concerning the material and process. Nobody answers, and then the teacher changes the pedagogical aim to help the students engage in the physical problems following line 35.

Moreover, the teacher works as a group member to find the problem with the circuit. Thus, she operates on the circuit to fix it (line 37-41). Despite the teacher's attempts, the electric circuit does not work (line 42). Therefore, she identifies another possible source of trouble in line 44 and asks a question to the group members, "Did you connect it incorrectly?". Omer answers the question and explains where the problem is, and the student insists on the trouble source (my teacher there is a problem there-there) in line 45. The teacher acknowledges the student, saying, "ok ok this is broken" when she touches a crocodile cable in line

46. Even though the source of the trouble has been found, the teacher tries to fix it rather than changing it (line 47-49). Furthermore, Omer shows disagreement and explicitly expresses it, saying "it is not like that" in line 50. The teacher rejects this learner contribution despite the absence of learner contributions up to that point.

The "focus on investigation" lesson phase is mainly based on question-answer adjacency pairs in this phase. However, it is different from the initiating of an inquiry lesson phase in that the teacher does not always produce the first pair part, and so the second pair part varies depending on who initiates the sequence (e.g., Extract 2). Furthermore, the third level of the sequence is performed by a participant in the form of an "inverted IRF" pattern (Waring, 2008) which frequently occurs in and through the focus on the investigation process. Besides, before the FPP, the teachers draw on a transitional marker (e.g., Extract 2) as an attention-getter (Pekarek-Doehler & Berger, 2015) for the opening of the sequence oriented to the students' work on the materials within a small group, as though almost isolated from the other parts of the classroom. For that reason, sequence organisation unfolds with a structure that proceeds as follows: transition marker (for opening the sequence)- initiation (FPP)- response (SPP)- and follow-up/feedback.

The Sharing of Understanding Lesson Phase: Interactional Features and Pedagogical Aims

The "sharing of understanding" lesson phase is the last part of an inquiry-based lesson, and two previous lesson phases shape it. Moreover, in this section research questions, discussion of the scientific concept and teaching time also come to an end. Against this background, it can be seen as the most crucial part of the construction of learning and for realising IBS lesson aims. The general structure also points to a frequently encountered pattern based on the science classroom data, as seen in Table 3.

Table 3. The "sharing of understanding" phase of the inquiry lesson

Lesson phase	Interactional features
Sharing of understanding	1. The teacher initiates the lesson phase with a request for presentation of the investigation process. Almost all groups present their findings. 2. Following or during the presentation, the teacher or peers ask questions, 3. Learners explain their process or respond to the question, 4. The teacher paraphrases student contributions and enacts new group selection 5. The teacher or peers evaluate student explanations and presentations 6. Giving feedback and topic shift

Lesson phase	Pedagogical Aims (pa)		Interactional Tools (it)		Descriptions
Sharing of understanding	*pa13*.	To check whole group understanding	*it13*.	Information-seeking question	Genuine questions to which the teacher does not know the answer.
	pa14.	To evaluate learner contributions	*it14*.	Paraphrasing of learners' contribution	Repeating the learner contribution for all recipients.
	pa15.	Giving learning space for students to elicit a clear answer	*it15*.	Confirmation check for the previous speaker or whole class	Making sure that the teacher has correctly understood the learner's contribution.
	pa16.	To elicit responses in relation to the findings	*it16*.	Content feedback	Giving feedback to the message rather than the words used.
	pa17.	To select more than one student for learner contribution	*it17*.	Reformulation	Rephrasing a learner's contribution
	pa18.	To ensure using scientific language	*it18*.	Assessment and positive feedback	Evaluation of learners' response and using some token (good, ok, yes, well done) to show preference for the answer.
	pa19.	To give a chance for group presentations	*it19*.	Limited teacher contribution	Short teacher's turn which is used for flow of the sequence
	pa20.	To find out arguments concerning the learners' claim			

The "sharing of understanding" section includes scientific explanations based on the investigation process, learners' claims, and lesson aims. Therefore, teachers elicit the scientific explanation from learners, or they use scientific terms themselves. For this reason, teachers initiate the sequence with questions that work as a stimulus to reveal the scientific knowledge or to form a coherent argument based on the experimental evidence. For example, in Extract 3, the teacher produces an elaboration question that is related to the research findings in line 62: "According to your findings, how did sound that is obtained from objects happen?" as an FPP of the sequence. Following the question, learners raise their hands to be the next speaker in line 67. However, the teacher nominates Ebru who did not raise her hand, so Ebru starts her own turn with "Pardon me? Teacher". After a long silence, Ebru constructs a TCU that is the abstraction of how they got a sound from the rope.

Extract 3: Mrv_a1_ls3, the teacher elicits the answers to the sound and the characteristics of the sound, taking into account the scientific language [01:34.3-02:24.7]

| 62 | Tchr | : | yap↑tığımız etkinliğin sonucuna göre(0.7)↑BİR (0.7) |
| | | | **according to your findings, how did sound** |

| 63 | | | cisimlerden elde edilen sesler ↑<u>nasıl</u> meydana geldi |
| | | | **that is obtained from objects happen?** |

64			+*readings from worksheet*
65			(1.3)
66	Tchr	:	evet↑
			yes↑

67			(0.8) ((*students raise their hand*))
68	Tchr	:	Ebru
69			((*teacher nominates to Ebru*))
70	Ebru	:	°>efendim hocam<°
			°>pardon me? teacher<°

| 71 | Tchr | : | ci↑simlerden çıkan sesler nasıl meydana geldi↑ |
| | | | **how did sound that is obtained from objects happen↑** |

72			(1.7)
73	Ebru	:	hocam elimizi ıslattık ve iplere sürdügümüzde ei::
			we wet our hands and when we touched the rope erm::

| 74 | | | [farklı sesler. |
| | | | **[different sounds.** |

| 75 | Ayse | : | [°ver° ((*Ayse wants a worksheet from*)) |
| | | | **[°give°** |

| 76 | Tchr | : | ona genel anlamda ne diyoruz na↓sıl (0.4) çıktı nasıl |
| | | | **what do we say for it in general. how did it** |

| 77 | | | olustu |
| | | | **happen** |

78			(1.3)
79	Ebru	:	ei::: kar-
			erm:::

80			(1.9)
81	Tchr	:	↑diyor ki cisimlerden elde edilen sesler nasıl <u>meydana</u>
			↑it says that how did sound that is obtained from objects

82			#*students raise their hand*
83			geldi evet↑
			happen yes↑

84			(0.2) +*pointing to Mert*
85	Mert	:	°titreşti çektiği[mizde]°
			it vibrates when we pull it

86	Tchr	:	[e::]
87			(0.6)
88	Mert	:	dalgalan[dı]
			waveform

| 89 | Tchr | : | [arka↑]daşınız şöyle diyor↑(1.4) ↑KUVVET |
| | | | **your friends say that (1.4) items vibrated** |

| 90 | | | uyguladıgımız cisim titreş↑ti diyor |
| | | | **when we applied force** |

91			(1.6)
92	Veli	:	°°doğru°°=
			°°right°°=

| 93 | Tchr | : | =doğru mu↑ |

```
              =is it right↑
94            +gaze at Ebru
95            (0.2)
96  Ebru  :   evet=
              yes=

97  Tchr  :   güzel
              good

98            (0.3)
```

The answer is dispreferred as the teacher reformulates her question (What do we say for it in general? How did it happen?) to reach the correct answer (line 76). However, Ebru does not give any meaningful answers and uses a hesitation marker in turn-initial position (ei::) in line 78. This line is an indicator of a claim of insufficient knowledge (Sert, 2011), but the teacher gives Ebru enough time to produce a TCU. Following 1.9 seconds, the teacher repeats the main question (FFP), and the learners raise their hands to take the floor. The teacher allocates the turn to Mert, who bids for the turn by raising her hand in turn final position (line 82-83). Then Mert responds to the question by drawing on some scientific terms such as "vibration" (line 84) and "waveform" (line 87). While Mert closes down to the possible TRPs, the teacher overlaps and paraphrases the learner contribution (Your friends say that when we applied force, the object vibrates) in lines 88-89. At the end of the sequence, the teacher gazes at Ebru and composes a TCU which entails checking for confirmation about the paraphrased utterance (lines 92-93). The extract is closed with sequence-closing thirds that are also positive assessment tokens, and with silence after the evaluation in lines 96 and 97. In this example, the teacher chooses favorable scientific terms for the question and the context. Thus, using scientific language is crucial for the teachers. Besides, not only the use of the scientific terms, but also their correction, is preferred.

Teachers' pedagogical aims are centered upon findings and the scientific background both to the conclusions and the learners' claims in the "sharing of understanding" lesson phase (Table 3). Therefore, in most cases, the teacher asks questions to elicit responses with their findings (e.g., Extract 3) and to find out about arguments concerning the learners' claims. Furthermore, the use of scientific language creates core pedagogical aims which are different from the other lesson phases (e.g., Extract 3). The teacher also seeks appropriate scientific explanations. For this reason, the teacher draws on content feedback, which is a valuable interactional tool for the lesson phase. In addition to that, the teacher checks for comprehension of the scientific subject and peers' explanations as to the last point for the learning and co-construction process.

In Extract 3, which comes from the "sound cup" activity, the teacher's pedagogical aims are to elicit responses about the findings (line 62-75) and to encourage the use of scientific language (line 76-95). The teacher draws on some questions during the lesson phase (line 62-63, 76). The sequence opening consists of a question (how did sound that is obtained from objects happen?). The teacher also refers to the learners' research findings in the first position of the TCU (According to your findings).

Following the opening, the learners raise their hands to be the next speaker. However, the teacher nominates Ebru who did not raise a hand, Ebru explains the experimental process, but the teacher does not accept her answer as correct. Therefore, the teacher reformulates the central question to elicit a scientific explanation rather than a description of the research process (line 76). Thus, the teacher's pedagogical aim changes depending on Ebru's response. The new educational goal is to ensure the use of scientific language related to the subject. This goal is also seen in lines 89 and 90, during which the teacher selects the best explanation concerning the scientific terminology used in the formation of the response. At the end of the sequence, the teacher gazes at Ebru, and checks for understanding (line 93). When Ebru makes a confirmation in response to the teacher's check, the teacher uses explicit positive assessments (Fagan, 2014).

This phase has a different characteristic from the other lesson phases which have been illustrated in pedagogical aims and interactional patterns (see Table 3). In the present corpus, some "sharing of understanding" tasks include student-student interactions more than teacher-student interaction. This turns the co-construction into a process which is "the joint creation of a form, interpretation, stance, action, activity, identity, institution, skill, ideology, emotion or other culturally meaningful reality" (Jacoby & Ochs, 1995), which emerges between the students who are K (+) more knowledgeable and K (-) less knowledgeable within the epistemic gradient (Heritage, 2012). On the other hand, in some cases, teacher-student interaction dominates the whole sequence section. Thus, teacher initiation has a role in opening, facilitating the learner contribution, and managing the turn. The situation shows differences from the other parts of the science lesson, and it can be seen in and through the co-construction process.

Discussion

The lesson phases of an IBS lesson are investigated with regard to interactional patterns, pedagogical aims and interactional tools which are used to perform learning objectives. Before each lesson, teachers define the lesson's aims that are stated explicitly in their lesson plans, or they reflect these goals implicitly throughout the lesson. Even though every classroom has its own socio-cultural structure and poses an unpredictable development (Phillips & Soltis, 2004), these lesson plans provide a scripted structure against the nature of the classrooms. The classroom structures also underscore the notion of the context (Seedhouse, 2004; Walsh, 2006; 2011), which is a construct that can be renewed (context-renewing) based on interactions and that can shape the interaction

(context-shaped) (Heritage, 2012). As stated earlier, classroom interaction is evaluated regarding the context and all pertaining claims. Therefore, the pedagogical aims show how science teachers carry out an IBL activity, and which points are followed by the teacher. These pedagogical aims have shed light upon the interactional unfolding of the IBL approach through classroom practices explored based on CA. Furthermore, the pedagogical goals require some interactional tools such as the teachers asking known-answer questions to check for and display learner knowledge, or teachers making embodied corrections or other-initiated self-repairs to increase learner contributions. Thus, the interactional features help the teachers to work as mediators to reach their pedagogical aims (Seedhouse, 2004).

Drawing upon the findings, the question-answer adjacency pair is the primary sequence organisation in all lesson phases, as in traditional teacher-fronted classroom discourse. However, the question-answer sequences are not similar in all the lesson phases. In the "initiating of the inquiry" lesson phase, the teachers produce a question as a first pair part, and the learners respond to the question as the second part of the adjacency pair, according to the 'interactional asymmetry' (Drew & Heritage, 1992) of their roles. The question-answer process is oriented to highlighting pedagogical goals and also reveals the students' 'epistemic domain' (Stivers & Rossano, 2010) or 'epistemic status' (Heritage, 2012) before the investigation process. Epistemic status is distinct from the epistemic stance in that it is encoded moment by moment in turns-at-talk (Heritage, 2012). Thus, the teachers can reveal the learners' epistemic domain by initiating known-answer question sequences also as epistemic search sequences (Sert, 2013). Furthermore, the absence of explicit positive feedback and just paraphrasing learners' explanations instead facilitates successful elicitation of nearly all students' epistemic domains.

On the other hand, the "focusing on the investigation" section comprises both question-answer adjacency pairs and inverted IRF (Jacknick, 2011), which means that the learners construct the question and the teachers give the response. In the last lesson phase, "sharing of understanding", questions initiate the 'dissenting turn' (Hüttner, 2014) between the learners, and the question-answer adjacency pair is expanded as a demonstration of learners' agency (Waring, 2011). To this end, the change in the organisation of the sequence can explain the structures of the lesson phases, the teachers' pedagogical aims, and emergent discourse patterns between the teacher and the students. For instance, the "beginning of the inquiry" lesson phase structure includes preparations for the investigation, and the teachers ask a question to elicit a response related to background knowledge. In contrast, in the "focusing on the investigation" section, the learners ask a question to maintain their investigations. Furthermore, in the "sharing of the understanding" section, all learners reveal their results and inferences about their work, and the teachers' questions lay the groundwork for discussion if there are different inferences among the students. Walsh (2006) explains this with a different structure of micro context. For example, the materials mode requires talk on the material, so the teacher asks a question, and the learners give short answers. The teacher's questions pave the way for the learners to construct the first pair part in the classroom context mode. Thus, the structure of the micro context leads to diversification of the sequence organisation.

The lesson phases also have a distinct difference in terms of turn-taking and turn allocation. Turn allocation emerges based on a learner-bidding and teacher-allocating structure in the "initiating the inquiry" section. In the "sharing of the understanding" section, turn allocation arises as learner-bidding and teacher-allocating when the teachers ask a question related to the findings. The learner-bidding and teacher-allocating turn-taking structure also unpacks 'epistemic stance' (Heritage, 2012) and 'embodied allocation' (Kääntä, 2010). The learners raise their hands to show their epistemic stance as a K (+) more knowledgeable, and the teachers select one of them by calling out the candidate speaker's name and pointing to her/him as well. Thus, the teachers' questions act as an epistemic search sequence (Jakonen & Morton, 2015; Sert, 2013) and learners' bidding acts an 'epistemic stance' that is encoded moment by moment in turns-at-talk (Heritage, 2012). Besides that, teachers' participation as a group member or an expert peer is the most exciting part of the turn-taking in all lesson phases, particularly in that the interactional asymmetry of roles disappears in the "focus on investigation" section. It also shows that the teacher gives space for learning (Walsh & Li, 2013) during this lesson phase by staying one step behind.

As stated before, the "focus on the investigation" lesson phase consists of student-student interactions rather than teacher-student interactions. With this in mind, the teachers' pedagogical aims are explicated in and through their role as an observer and as an expert fellow in the research group. The teachers' educational foci lie at the heart of checking the investigation process and ensuring the learners' trouble-free research engagements. Due to the teachers' strategies (teachers' turn allocation methods, and teacher-student interactions), learner contributions remain minimal, which further underscores reliance on teacher turns, thus decreased student participation even though the teachers draw on attention-getter devices, particularly 'imperatives with high volume' (Pekarek-Doehler & Pochon Berger, 2015) to boost interaction with students. The sequential structure and the teachers' educational goals lead to the emergence of these interactional tools. According to Seedhouse (2004), if the teacher's pedagogical aim changes in micro-moments of lesson time, it causes changes in talk-in-interaction.

The last lesson phase and the last part of the lesson is also to some extent the most crucial episode regarding 'doing learning' (Sahlström, 2011) and 'talking science' (Lemke, 1990; Moje, 1995) based on the evidence-based scientific debate (Author, 2016). Furthermore, this lesson phase is also valuable due to the emergence of the co-construction process in and through student-student discussions with the use of coherent arguments, engagement in experimental data, orientation to evidence and their background scientific knowledge. For that reason, the teachers' pedagogical aims are gathered around creating a learning space for the students, encouraging more than one student's participation in scientific discussions, ensuring the use of scientific language, and eliciting arguments concerning the learners' claims for whole group understanding. These pedagogical aims limit

the teachers' contributions through limited content feedback for the students and limited assessment of the students' contributions. The change in the interactures depending on the pedagogical goals shows the intricate relationship between the pedagogy and the role of interaction (Seedhouse, 2004).

The last important point for this section is to show preference and dispreference organisations in the lesson phases. At the outset of an IBS lesson, which is the "initiating of inquiry" lesson phase, the teachers do not use strongly dispreferred utterances and draw on a preference organisation for shaping learner contributions. They manage the preference organisation by showing alignment with a mitigated answer, which keeps learners' participation alive. Besides that, the teachers draw on turn-initial address terms (Schegloff, 2007) to select the next speaker without explicitly highlighting any dispreference. Pomerantz (1987) notes that using dispreferred utterances is not preferred in social interaction due to the adverse effects on the flow of the conversation. Goffman (1967) also states that openly expressing disagreement leads to face-threatening effects, which causes further adverse effects on participation in a given social community. The interactional pattern which frequently occurs throughout the "initiating of the inquiry" section is as follows: the teachers' questions about students' background knowledge or previous lessons initiates a sequence. The responses elicited from more than one student are usually relevant to the teachers' questions. Finally, the teachers avoid any evaluation of students' contributions. The nature of IBS teaching and scientific investigation reflects a requirement for discussions and forming coherent arguments related to results (Crawford, 2007).

Conclusion

In line with the research questions, two different science classrooms were investigated by employing CA to unpack the interactional structure of IBSE classrooms. The inquiry lessons were firstly defined as 'lesson phases' concerning their interactional differences. Secondly, teachers' pedagogical aims and interactional tools (interactures) were described in all these different phases.

The first research question was "How is teacher-student interaction sequentially organised in IBS classrooms?". As a result of the micro-detailed analysis of the classroom data, it was seen that the lesson was demonstrably divided into various parts. At first, the lesson parts were clearly identified as the pre-inquiry task, implementation of the task, and post-inquiry task. Furthermore, the teachers' and the students' interactions also differed in these lesson parts, such as whole-class discussions in the pre-inquiry task; group research in some experiments oriented to the implementation process; and finally, again whole-class presentations and discussions based on the findings. Due to the various actions occurring throughout the lesson, all sequential organisations between the teacher and students brought about some changes. In line with the micro-analysis and relevant conclusions, an IBS lesson flow was identified in three distinct lesson phases: initiating the inquiry, focusing on the investigation and sharing of understanding.

The present research draws on some inquiry-based tasks that have pre-identified learning aims written in the lesson plan before the lesson. Thus, the lesson plan comprises the entire teaching sequence, and it also targets some goals which are desired points to be enacted at the end of the lessons or activities (Mortimer & Scott, 2003; Seedhouse, 2004). Besides that, the teachers draw on some pedagogical focus/aims/goals to reach the highest level of learning objectives. Learning the purpose of a science lesson has a static structure. However, pedagogical objectives can change depending on the classroom context. 'Interactional tools' were adopted as a term with reference to the 'interactures', to uncover the relationship between the lesson phase and relevant interactional tools.

Implications

The present study includes real classroom data and their in-depth analyses in line with a micro-analytic approach, to unpack interactional unfolding of the IBS classrooms. At the end of the analysis process, various lesson micro-contexts are identified based on the teachers' and students' roles and a great variety of interactional resources. Furthermore, interactional fingerprints are discussed under the lesson phase types, teacher's pedagogical aims, and interactional tools to reach a clear understanding of the IBS lesson flow. These pedagogical objectives and relevant interactional tools can provide effective interactional instances when teachers carry out investigation-based science lessons. Teachers should evaluate their classroom interactions in line with the analyses of the emergent micro interactional cases and check for appropriate pedagogical aims and interactional tools. For instance, if a teacher aims to increase learner contributions in the "initiating of the inquiry" lesson phase, he or she should not give feedback to every student turn.

The pedagogical foci and the interactional features demonstrate the interactional mechanisms of an IBS lesson for all stakeholders, including the teachers, teacher educators and researchers. It also supports teachers' awareness of classroom interactional competence (CIC) concerning both horizontal (interactional features) and vertical discourse (basically pedagogical focus or systematically part of the lesson) that generate "language which relates the internal structure of specialized knowledge, the positional nature of their fields or areas of practice, identity constructions and their change, and the forms of acquisition for successful performances" (Bernstein, 1999; p. 157). The last suggestion is oriented to continuing professional development (CPD) programme that can be designed by adopting the framework discussed in this paper to increase the 'interactional awareness' (Walsh, 2011) of teachers. Later on, the development of teachers' interactional competencies and their skills can be investigated to evaluate the quality of the contextual framework of this study.

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We hereby declare that the study has no unethical issues and that research and publication ethics have been observed carefully.

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The Relationship Between the Effectiveness of School Principals in the Communication Process and the Psychological Capital Levels of Teachers During the COVID-19

COVID-19 Sürecinde Okul Müdürlerinin İletişim Sürecindeki Etkililiği ile Öğretmenlerin Psikolojik Sermaye Düzeylerinin İlişkisi

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Abstract

Purpose: This study was conducted to determine the relationship between the effectiveness of school principals in the communication process and the psychological capital of teachers.

Design/Methodology/Approach: The research was conducted in relational research design, one of the quantitative research approaches. The scope of the study consisted of primary, secondary, and high school teachers in the Güngören district of Istanbul province. The stratified sampling method was determined as the sampling method, and the sample consisted of 353 participants. The Scale of Effectiveness of School Principals in the Communication Process and the Short Form of the Psychological Capital Scale were used as data collection tools. The analysis of the data was executed with the SPSS 21 program.

Findings: Correlation analysis was conducted to determine the relationship between the two variables of the study. As a result of the research, a moderate relationship was found between the effectiveness of school principals in the communication process and the psychological capital of teachers. As a result of this, regression analysis was made, and it was determined that the effectiveness of school principals in the communication process explained 13% of teachers' psychological capital.

Highlights: As a result of the research, it was recommended to organize practical training for school principals and teachers on the use of digital communication platforms due to the pandemic and allocate time for psychological capital and communication process during the seminar periods.

Öz

Çalışmanın amacı: Bu araştırma okul müdürlerinin iletişim sürecindeki etkililiği ile öğretmenlerin psikolojik sermayeleri arasındaki ilişkinin tespit edilmesi amacıyla yapılmıştır.

Materyal ve Yöntem: Araştırma nicel araştırma yaklaşımlarından ilişkisel araştırma deseninde yapılmıştır. Araştırmanın evrenini İstanbul ili Güngören ilçesindeki ilkokul, ortaokul ve lise öğretmenleri oluşturmaktadır. Örnekleme yöntemi olarak tabakalı örnekleme yöntemi belirlenmiştir ve örneklem 353 katılımcıdan oluşmuştur. Veri toplama aracı olarak Okul Müdürlerinin İletişim Sürecindeki Etkililiği Ölçeği ve Psikolojik Sermaye Ölçeği Kısa Formu kullanılmıştır. Verilerin analizi SPSS21 bilgisayar programıyla yapılmıştır.

Bulgular: Araştırmanın iki değişkeni arasındaki ilişkinin tespiti için korelasyon analizi yapılmış olup araştırma sonucunda okul müdürlerinin iletişim sürecindeki etkililiği ile öğretmenlerin psikolojik sermayeleri arasında orta düzeyde ilişki bulunmuştur. Bunun sonucunda regresyon analizi yapılmış olup okul yöneticilerinin iletişim sürecindeki etkililiğinin öğretmenlerin psikolojik sermayelerinin %13'ünü açıkladığı tespit edilmiştir.

Önemli Vurgular: Araştırmanın sonucunda salgının bir sonucu olarak dijital iletişim platformlarının kullanımı konusunda okul yöneticilerine ve öğretmenlere uygulamalı eğitimler düzenlenmesi, seminer dönemlerinde psikolojik sermaye ve iletişim süreci konularına zaman ayırılması önerilmiştir.

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INTRODUCTION

How many people who had plans for the new year towards the end of 2019 thought that they would spend 2020 like in science fiction movies? As of March 12, 2020, the World Health Organization has declared COVID-19 as a pandemic. Due to the pandemic, many areas such as social life, economic situation, transportation, security, and education have begun to change and transform all over the world (Sucu, 2020). On the other hand, organizations established by people to produce services or goods must also achieve their goals (Keleş, 2011). The uncertainty, fear of health, and death that occurs with COVID-19 create a pessimistic mood in individuals. Therefore, individuals need more hope, an optimistic perspective, an increase in their self-efficacy, and the development of resilience characteristics to cope with the situation, both for themselves and for the organization they belong to (Bolelli, 2020). Educational institutions are among these organizations both in terms of having to continue to achieve their goals and being affected by the pandemic.

Ministry of National Education (MoNE) closed schools after the detection of the virus in Turkey and managed the process generally monthly. Each month, MoNE announced the situations of the schools for the next month. With the 2020-2021 academic year, schools started education gradually, and students started to go to schools in a system called hybrid education. Educational activities continued unusually. Finally, MoNE stated that with the increase of the pandemic again in the mid-term holiday in November 2020, education would continue with distance education until the new year (Ministry of National Education, 2020). It is seen that this situation has not changed in 2021. As can be seen, in the process defined as the "new normal," teachers continue to work individually with distance education. Therefore, it can be said that this situation has increased the importance of their psychological capital more. Because according to Luthans et al. (2004), psychological capital is about the individual, and it means more than traditionally known human capital and social capital for organizations to achieve their goals.

As a result of the categorical research of Erkmen & Esen (2012) in international studies, a negative relationship was found between psychological capital and employee absenteeism, intention to quit, job-seeking behavior, deviant behavior of employees, stress, rude behavior variables. However, there is a positive relationship between psychological capital and organizational commitment, job satisfaction, positive emotions, organizational citizenship behavior, job performance, employee performance, effectiveness, creative performance, authentic leadership, transformational and transformational leadership, quality of life, positive organizational climate, sales revenue, and achieving goals.

According to Tösten & Özgan (2017), psychological capital has been studied mainly in business administration until 2013, and there has been limited studies on education management until then. According to the results of the research conducted by Tösten and Özgan (2017) in the field of education, teachers' perceptions of psychological capital were found to be high. During the COVID-19, it is seen that psychological capital is not yet the subject of research in the field of education. On the other hand, it is seen that the only research related to the subject in this process was conducted by Bolelli (2020) in the field of business administration on psychological capital and subjective well-being, and a significant positive correlation was found between these two variables.

In researches on education during the COVID-19, problems with communication stand out. During the COVID-19, Külekçi and Akyavuz (2020) identified communication problems as the most experienced problem by school principals, and according to Akyavuz and Külekçi (2020), this problem experienced by teachers, too. Furthermore, Külekçi Akçakın and Yavuz (2020) listed technical inadequacies, insufficient feedback, lack of feedback, and listed failure to establish face-to-face communication and the absence of internet or connection problems as the reason of the communication problem.

Communication is a very important feature in the success of the principal, who has many different duties and responsibilities within the school (Çınar, 2010). Because, according to Batty (1978), managers spend 75% to 95% of their time (Koçel, 2018), 80% according to Mintzberg, and 70-80% according to Reginald (Orsntein & Lunenberg, 2013). For this reason, the effectiveness of school principals in the communication process is important to communicate well with teachers and to reach the goals of the school (Çınar, 2010).

In the light of the above, during the COVID-19, where people experience negative emotions, the effectiveness of school principals in the communication process and the level of teachers' psychological capital have become even more important to achieve the goals of education. The effectiveness of school principals in the communication process can be explained in the context of a psychological perspective. The psychological perspective is one of the approaches that explain organizational communication (Durğun, 2006). Employees' need for positive emotions has increased as all people need during the pandemic period. The broaden and build theory suggests that positive emotions enhance employees' individual resources (Frederickson, 2001). On the other hand, it is seen that psychological capital, which is one of the individual resources (Gorgievski, Halbesleben & Bakker, 2011) with its measurable and developmental feature, has been handled with many variables in the field, but it is not addressed with communication. During the COVID-19, where communication becomes more important, and afterward, determining its relationship with the communication variable is considered important. Therefore, in the study, it was aimed to determine whether the effectiveness of school principals in the communication process predicted teachers' psychological capital. At the end of the study, it is hoped that the school principals will raise awareness about the effect of teachers' psychological capital with the communication variable and, in this context, their effectiveness in communication processes in achieving the school's goals.

Organizational Communication

Communication is the process of passing information, ideas and emotions from one person to another (Eren, 2017), producing, transferring and making sense of information (Dökmen, 2006), exchanging meaning (Cüceloğlu, 2002), making common meanings (Kocabaş, 2014). In other words, it is the process of passing news according to pre-accepted symbols-symbols between individuals and units (Taymaz, 2011). In the context of educational management, communication is a process of mutual interaction involving the school principal's message sent to the subordinate to influence them and also involves the subordinates' responses to the superior (Başaran, 1994).

A communication process consists of seven elements: the sender, the sender's and the receiver's perception and evaluation styles, message, channel, receiver, feedback, and noise (Eren, 2016). The sender is called the source that sends the message or (Hoy & Miskel, 2015) the person who conveys meaning to another person to achieve a goal (Başaran, 1994).

The receiver is the people to whom the message is intended to be delivered (Önen, 2016). For the sender to communicate effectively while delivering the message, it is necessary to use concrete, conventional symbols in accordance with the knowledge and experience of the receiver. The words that will potentially cause confusion should be explained (Eren, 2017). On the other hand, the sender should take into account the values, goals, and environment of the receiver because individuals think and perceive messages according to themselves. Otherwise, the superior sometimes does not transmit the entire message, thinking that the subordinates can understand the message clearly, which may damage the effectiveness of the communication (Eren, 2016).

The message is the symbol that reveals the sender's ideas, thoughts, desires, attitudes, and wishes (Koçel, 2018). In effective communication, if the message is given closed to interpretation (Kocabaş, 2014) and awakens the same things in both the sender and the receiver, it means that it reaches the target exactly. If this does not happen, the quality of communication will decrease (Eren, 2016). Another element of the communication process is the channel, the way the message is carried from the sender to the receiver (Koçel, 2018). If communication is face to face, it reaches the receiver through the air with the help of words and sound. If it is with a telephone, it will be satellite signals, or if it is via other means of devices as a result of the development of technology, it is various channels (Önen, 2016). It is possible to say that the most important element to make sense of whether this whole process works correctly or not is the feedback.

Feedback is the message sent as a response to the first message, which facilitates their interpretation or allows them to make corrections (Hoy & Miskel, 2015). It can also be defined as a response of the receiver to the sender to see whether the message is fully understood or not. This means that each receiver is also a sender (Koçel, 2018). Feedback has benefits in management, such as increasing the effectiveness of communication by ensuring regular and continuous communication, motivating individuals, working as a team, reinforcing their behavior, and being more efficient. It also helps to check whether the results are achieved and the results targeted by the communication are consistent (Coffey, Cook & Hunsaker, 1994, as cited in Koçel, 2018).

Finally, noise is anything that reduces the accuracy or reliability of communication. If the message is not explained with meaningful, sufficient symbols, noise will occur. The message may contain unnecessary repetitions, misspellings, or other errors (Eren, 2016). The effectiveness of communication processes can be expressed as the compatibility of the elements mentioned above. On the other hand, the influence of the direction of communication cannot be denied in this process.

When the literature is reviewed, communication in the organization is listed as hierarchically downward communication, upward communication, lateral communication, and cross-communication. In downward communication, information, opinions, suggestions, and orders are transferred quickly from superiors to subordinates. It is an important and widely used form of communication for management effectiveness (Erdoğan, 2014). Communication comes down from the superior, easy to implement but inadequate in some ways. For example, subordinates choose directives that will prioritize them based on the character and style of the manager, or they do not spend enough time and effort in obtaining information that the message from the superior has been received and understood. Another is that the upper hierarchy hides basic information on certain topics by closing the communication channel (Lunenburg & Ornstein, 2013).

Upward communication enables information to move from the lower unit to the upper unit in the organization. In this communication, correct communication is difficult for many reasons. One of the reasons is that subordinates hide information from their superiors that could potentially harm their careers. If the subordinate does not trust the superior, the rate of information retention may increase even more. Another reason is the practice of censorship in transferring information to the superiors of the subordinates because compatible groups harm the group (Canary, 2011, as cited in Lunenberg & Ornstein, 2013). Besides, the physical distance between subordinates and superiors, inability to reach or change information at hierarchical levels during the flow of information from lower to upper levels can be added (Kocabaş, 2014). On the other hand, this communication has benefits such as showing whether the decisions sent from superior are adopted by the subordinates, encouraging members of the institution to contribute to the institution by identifying with the goals and programs of the institution, preventing undesirable situations in the management and promoting the development of internal democracy (Erdoğan, 2014)

Lateral communication becomes a necessity, especially in cases such as the excessive specialization or growth of organizations (Kocabaş, 2014). The main purpose of lateral communication is to coordinate tasks, solve problems, share information with colleagues, resolve conflicts and create friendly relations (Harris, 1993, as cited in Hoy & Miskel, 2015). An example of this is that school principals communicate with each other and exchange ideas about what they are doing at their schools. While the task

ensures coordination, lateral communication also serves as a socialization process for the organization by providing emotional and social support among peers (Lunenberg & Ornstein, 2013).

Diagonal is important when participants cannot communicate effectively through other channels. For example, the deputy manager of the urban school district may want to analyze a curriculum cost for each high school. In one part of the analysis, it would cross-cross the communication if the school district deputy principal chooses to send special reports directly to each school principal - rather than the traditional detours (Lunenburg & Ornstein, 2013).

In the subtitle of organizational communication, the communication process and the direction of communication in the organization is mentioned. According to Özmen and Yörük (2007), cited from Giannantonio (2002), 21st-century organizations will be formed from individuals with high communication skills. Communication skills are one of the most important skills of an effective organizational manager. In this context, it can be said that school principals should be chosen of people who can be active in the communication process in this century.

School principals should use some strategies to maintain effective communication. These strategies are to cooperate with the leaders in the environment and to ensure the participation of those around, to motivate the participants, to reveal the achievements, to repeat important news, to prevent rumors by putting forward the facts against rumors, to know the communication barriers, to benefit from all communication tools, to recognize support and opposing forces and to communicate uninterruptedly (Bursalıoğlu, 2015). Also, a school principal should be a role model for his staff (Karaköse & Kocabaş, 2009) in terms of communication. It can be said that the main purpose of the school principal who uses these strategies is to achieve the goals of the school. According to Acaray (2018), it is possible for managers to provide an effective communication process in the organization and to achieve organizational success by sending the right information to the right receivers at the right time.

As the result of COVID-19, the communication process in schools also requires to be carried out on digital platforms, so it also requires school principals to carry out the communication process effectively on these platforms to achieve the goals of the school as an organization. Also, since the necessity of maintaining an isolated life as a result of the pandemic brings an individual working style, it is thought that the importance of communication skills of school principals increased more. It can be said that the increase in individual work has increased the importance of employees' individual resources. In managing the distance education process, it is thought that the effectiveness of the communication process of school principals is related to teachers' psychological capital, which is an individual resource.

Psychological Capital

With the Second World War, the direction of psychology started to change. After the Second World War, the paradigm of psychology started to change. It can be said that after the war, to solve psychological problems, psychologists started to focus on the strengths of individuals rather than the negatives. Because psychology is a science that not only treats weaknesses, damages, and ailments but also deals with strengths, development, education, and love (Seligman, 2002). Maslow and Rogers have criticized the field of psychology, which constantly focuses on negative aspects. As a result of their studies, the field of psychology has started to focus on the positive aspects of individuals. According to them, the important characteristics of being human, such as love, creativity, and a tendency to develop, are ignored (Gillham & Seligman, 1999). As a result of the change of perspective, positive psychology is a concept that Seligman and his colleagues laid the foundation of in the early 2000s. Positive psychology is a scientific and clinical intervention that deals with the determination of factors that improve well-being and is a branch of psychology used to understand and improve the positive aspects of life (Carr, 2015).

Psychological capital is a concept derived from the positive psychology trend. Psychological capital is about improving the advantage of capital owned in the workplace for competition because managers now realize that not only money is enough, but human capital is also important, and therefore they have started to think about the development of this capital (Luthans & Youssef, 2004). Psychological capital deals with the question of "who you are" rather than the questions of "what do you have" of traditional economic capital, "what do you know" of human capital, and "who do you know" of social capital (Luthans et al., 2004).

Psychological capital has four sub-dimensions: self-efficacy, hope, optimism, and resilience. Self-efficacy refers to a person's belief in activating his/her cognitive capacity to achieve certain goals. It is a developmental feature, as Bandura tells us about in his workplace studies (Luthans & Youssef, 2014). Leaders who are respected in the organization, using the language, can develop the self-efficacy capacity of employees' psychological capital through persuasion (Luthans et al., 2004). In this context, it is thought that the attitude of school principals in the communication process is important. Because, according to Luthans et al. (2004), statements such as "you can" have positive effects in increasing trust, while negative statements such as "you cannot" have negative effects.

Although fewer studies have been done on hope than other sub-dimensions, it is a sub-dimension that the results of the studies conducted in the workplace have both an academic and sportive effect on performance. Hope refers to the individual's strong will to achieve their goals (Luthans & Youssef, 2004). Luthans and Jensen (2002) identified several steps to improve the hope of employees in organizations. These steps can be expressed as determining personal and organizational goals challenging and clearly, breaking these goals into small steps if employees' hopes are low, making action plans for the purpose, being ready for obstacles and finding solutions, preparing alternative plans, and setting new targets when necessary (Luthans et al., 2004). The importance of school principals in determining and conducting these steps in school organizations cannot be denied. In this context, it is thought that school principals should be effective in the communication process to improve teachers' hopes.

Optimism, another component of psychological capital, is to have positive thoughts about the individual's success, now and in the future (Luthans et al., 2006). Optimism is a sub-dimension that can be associated with psychological capital more than others, thanks to the studies of Seligman. According to Seligman's (1998) studies at the workplace, he/she found that sales were positively affected as a result of the optimism of the sales representatives. According to Luthans et al. (2004), optimists consider bad events as a temporary process (tired); pessimists interpret it as a permanent process (I am destroyed). Considering that school principals spend most of their time at school through communication, it is estimated that the language they use is important in teachers' optimism levels.

Resilience is the power to overcome difficulties, failures, and even overwhelming positive change (Luthans & Youssef, 2014). As clinical and positive psychology put forth, it is a sub-dimension that will contribute positively to workplace performance. Additionally, it is the capacity to make positive changes in the turbulent environment of today's business world (Luthans et al., 2004). Considering the functioning of schools during the COVID-19, it is believed that schools as an organization are also in a turbulent process, so the contribution of teachers' resilience capacities in the positive management of the process cannot be ignored. The effectiveness of school principals in the communication process can contribute to the resilience of teachers against the uncertainties brought by the pandemic, the possible problems of distance education, and the stress that it may bring to teachers. In this context, according to Luthans et al. (2004), preventing negative thoughts when things go wrong, testing the accuracy of thoughts about problems and finding useful solutions, staying calm, and focusing in times of overwhelming emotions or stress are steps to be taken to improve the resilience of employees.

With these sub-dimensions, positive psychological capital has characteristics such as being unique, measurable, developmental, and affecting performance (Luthans & Youssef, 2004). Being measurable and developmental is an important characteristic of psychological capital. For this reason, managers who want to increase the efficiency of their organizations should find the strengths, weaknesses, positive and negative aspects of the individuals they work with and take measures to improve them. So they need to invest in their psychological capital (Keleş, 2011). In short, during the COVID-19, the functioning of life started to change in various ways.

Educational organizations have also been affected by this change. Effective communication has become an even more important responsibility of school principals, who normally spend most of their work in communication. This situation reveals the necessity of conducting an effective communication process to achieve the goals of the school, which is one of the educational organizations. On the other hand, the fact that teachers have to work remotely and take on more individual responsibilities has also increased the importance of psychological capital, which means more than traditional concepts such as human capital and social capital. For this reason, it is thought that the relationship between the effectiveness of the communication process in which school principals spend so much time and the psychological capital of teachers is important. In this context, the following questions were sought in the research:

1. What is the level of teachers' perception of the effectiveness of the communication process of school principals?

2. What is the psychological capital level of teachers?

3. Do teachers' perceptions of the effectiveness of the communication process of school principals differ according to school levels?

4. Do teachers' psychological capital differ according to their school levels?

5. Do teachers' perceptions of the effectiveness of the school principals' communication process and the psychological capital levels of teachers show a significant relationship?

6. Do teachers' perceptions of school principals' communication process effectiveness significantly predict teachers' psychological capital levels?

METHOD

The information about the method and other details is explained in this section.

Research Design

The research has been carried out with a quantitative research approach and is in a relational survey pattern. Relational studies reveal the relationships between two or more variables (Sönmez & Alacapınar, 2014) without affecting them in any way (Fraenkel & Wallen, 2009), providing the opportunity to make predictions about the results (Creswell, 2012) and the opportunity to analyze these relationships in-depth (Karakaya, 2014). In this study, as it was examined whether the effectiveness of school principals in the communication process is related to teachers' psychological capital, it was deemed appropriate to design the study as relational research. In relational research, the relationship between the independent variable of the research and the dependent variable is examined in a correlational manner (McMillan & Schumacher, 2014). In this context, this study examined whether the effective communication processes of school principals as an independent variable during the COVID-19 pandemic significantly predicted the psychological capital levels of teachers as the dependent variable of the study.

Scope of the Study

The scope of the research consisted of teachers working in the Güngören district of Istanbul province. The population is the beginning of which the research is intended to be generalized, and it is defined according to certain criteria. Those who meet these criteria constitute the more concrete study scope, which is called the population that can be reached (Karasar, 2016). The study scope of the research consisted of teachers working in official primary, secondary, and high schools in the Güngören district of Istanbul province. According to Ekiz (2015), the population of the study refers to the whole that can be generalized through sampling since it is often difficult to reach the entire study scope; it is studied with a sample called a small cluster, which is selected from the relevant scope according to certain criteria and can represent the population (Karasar, 2016). The sampling type of this research is random sampling. The reason for using the random sampling method is to be able to generalize objectively because the basic rule for the sampling to be generalized to the population is neutrality (Karasar, 2016). Therefore, the stratified sampling method, which is one of the random sampling methods, was used in the study to make an unbiased generalization. According to Ekiz (2015), stratified sampling is the selection of participants to represent the population by looking at their specific characteristics. In the stratified sample, the study scope is divided into certain strata according to the characteristics of the units in the population. Subsequently, the sample of the research is created by taking the proportions of the strata in the study population into consideration to represent the strata at the same rate. At this point, randomness is achieved by choosing the units randomly from each layer (Yamane, 2006). According to Şahin (2014), using the appropriate method ensures that the sample is valid, reliable, and has a high representation power. In this context, it is thought that the sampling method used for this research in the relational survey design coincides with the aims of the research and is suitable for generalization to the population. Therefore, it can be said that the stratified sample increases the validity, reliability, and external validity of the study together with its power to represent the population.

The strata in the study were determined according to the grades of the schools. According to the National Education Basic Law No. 1739, schools are divided into levels according to the development levels of the students, and the establishment and functioning of the levels may differ from each other (Mevzuat, 2020).

According to the regulations of the Ministry of National Education for preschool and primary education institutions, all classes except Religious Culture and Moral Knowledge and English lessons must be taught by primary school teachers in primary schools. However, if no teachers from these branches can be found under any circumstances, these courses can also be taught by the teacher of the class (Mevzuat, 2020). In this context, classroom teachers have responsibilities for only one class, and they spend the whole week, month, or even year with the class they are responsible for. Also, the same law states that it is essential that classroom teachers teach the same class in the following year. In this respect, it is thought that the level of their psychological capital will reflect on the class for which they are responsible.

On the other hand, branch teachers in secondary and high schools take the responsibility of more students by teaching different classes. In this respect, it is estimated that the level of their psychological capital will affect a large number of students. For this reason, stratified sampling was preferred, as it is important to examine the relationship between school principals 'effective communication process and teachers' psychological capital. Therefore, three layers were determined as primary school, secondary school, and high school in accordance with the population of the study. Thus, it was examined whether there was a difference between these grades in accordance with the purpose of the research. As of the fall semester of 2020, a total of 1595 teachers were working in Istanbul province, Güngören district, 583 in public primary schools, 506 in secondary schools, and 506 in high schools (Güngören District Governorship, 2020). In this study, according to the number in the population of the study, the sample size should not be less than 316 (Yamane, 2006). Accordingly, it was necessary to reach 114 teachers corresponding to 36% from primary schools and 102 teachers corresponding to 32% from secondary and high schools.

Data Collection and Tools

In this study, the Effectiveness of School Principals in the Communication Process Scale (ESPCPS) developed by Özmen and Yörük (2007) was used as a data collection tool. The scale consists of 18 items, 6 of which are negative and 12 of which are positive, and it is a one-dimensional scale. Also, the Cronbach Alpha internal consistency coefficient of the scale was determined as .90.

On the other hand, the Psychological Capital Scale Short Form (PCSSF) adapted to Turkish by Oruç (2018) was used to examine teachers' psychological capital. The scale is 12 items. It consists of 4 sub-dimensions: self-efficacy, hope, resilience, and optimism. The Cronbach Alpha internal consistency coefficient of the scale was found to be .93. Both scales are in Likert type, and the ESPCPS was prepared as a 5-point Likert, and the PCSSF was prepared as a 6-point Likert. Two experts examined the scales whether they were appropriate to be used in the scope of the research and also their suitability in terms of appearance validity.

The data collection phase was completed via e-mail on the internet. While writing the items of the scales, all items were marked as mandatory questions, thus avoiding lost data in the incoming data. At the same time, a research information form, which includes information on the content, scope, purpose of the research, and the participants' ability to withdraw from the study if they wish, was added.

Since there might be forms that could be filled incorrectly, forms were delivered to 20% more participants than needed. 366 participants filled out the forms. Since 127 of the participants were primary school teachers, 120 were middle school, and 119 were teachers working in high schools, 7 forms from middle school participants and 6 forms from high school participants were randomly selected from the analyses to equalize the ratios in the strata to the sample representation ratio. Thus, as calculated in the sample, the number of participants who were primary school teachers was achieved as 127, 36%. The number of participants,

consisting of middle school and high school teachers, provided a 32% rate of 113. The total number of participants was 353. The analyses were based on these numbers.

Reliability Analysis

Cronbach alpha values were calculated to examine the reliability of the scales used in the study, based on internal consistency. If the alpha coefficient is greater than 0.40 and less than 0.60, it means that the measurements of the scale are at low reliability if greater than 0.60 and less than 0.80 are quite reliable, and greater than 0.80 and less than 1.00 are highly reliable (Alpar, 2013, as cited in Yıldız & Uzunsakal, 2018). Reliability coefficients of the scales are given in Table 1 and Table 2.

Table 1. Cronbach Alpha Reliability Coefficients of the ESPCPS

Scale	Number of items	Cronbach's Alpha
ESPCPS	18	0.66

According to Table 1, the Cronbach alpha value of the scale of effectiveness of school principals in the communication process was determined as 0.66. According to this result, it can be said that the reliability of the scale of effectiveness of school principals in the communication process is sufficient.

Table 2. Cronbach Alpha Reliability Coefficients of the PCSSF

Scale	Dimension	Number of items	Cronbach alfa
PCSSF	Self-efficacy	3	0.80
	Hope	4	0.84
	Resilience	3	0.58
	Optimism	2	0.80
	PCSSF Overall	12	0.88

According to Table 2, the Cronbach's alpha coefficients calculated for self-efficacy, hope, resilience, and optimism of the short form of the psychological capital scale were 0.80; 0.84; 0.58; 0.80, respectively. Accordingly, self-efficacy and optimism were quite reliable, and hope was highly reliable. On the other hand, the resilience sub-dimension was at a low level of reliability. The overall alpha coefficient of the scale was calculated as 0.88. According to the results, it can be said that the calculated internal consistency coefficients of the psychological capital scale short form were sufficient.

Data Analysis

The skewness and kurtosis coefficients were examined to calculate the effectiveness of school principals in the communication process and psychological capital scale short-form scales whether the scores obtained from the scales used in this study were normally distributed or not. The fact that the coefficient of skewness is less than ± 3 and the kurtosis coefficient is less than ± 10 is considered sufficient to assume that the data are distributed normally (Kline, 2011). The skewness and kurtosis coefficients for all scales ranged from -1 to +1. According to the results, it can be said that the data showed a normal distribution.

To determine the levels of teachers participating in the study related to the variables of the study, it was assumed that the intervals in the measurement tool were equal, the effectiveness of school principals in the communication process (4/5), psychological capital (5/6). First, the lower and upper limits for the options were determined. Accordingly, the scoring of the statements in the effectiveness of school principals in the communication process; between 1.00-1.79 was calculated as "very low," between 1.80-2.59 as "low," between 2.60-3.39 as "medium," between 3.40-4.19 as "high" and between 4.20-5.00 as "very high." T scoring of the statements in the psychological capital short-form scale was 1.00-1.83 "very low," 1.84-2.67 "low," 2.68-4.35 "medium" (2.68-3.51 partially disagree / 3.52-4.35 partially agree), 4.36-5.19 " high, " calculated as 5.20-6.00" very high." Besides, in accordance with the purpose of the study, the ANOVA test was used to determine the difference between groups. Pearson correlation analysis was performed to determine the relationship between the effectiveness of school principals in the communication process and the psychological capital of teachers. A simple linear regression analysis was conducted to determine the effect of school principals 'effectiveness in the communication process on teachers' psychological capital.

FINDINGS

The results of the descriptive statistical analysis conducted to determine the average scores of the teachers participating in the study. Teachers' perceptions of the effectiveness of school principals in the communication process (3.45 ± .37) were seen at a high level. When the average psychological capital levels of teachers were examined, self-efficacy sub-dimension was high (5.02 ± .71); hope sub-dimension was high (4.91 ± .71); resilience sub-dimension was high (4.50 ± .74); optimism sub-dimension was high (4.66 ± .97). It was observed that they agreed with the psychological capital general score at a high level (4.79 ± .62).

Table 3. ESPCPS and PCSSF Scores, Standard Deviation and ANOVA Results by School Levels

Variables	School level	N	$\bar{X}$	Std	F	P
ESPCPS	Primary	127	3.47	0.37		
	Secondary	113	3.36	0.32	4.58	0.01
	High school	113	3.50	0.38		
Self-efficacy	Primary	127	4.99	0.75		
	Secondary	113	4.94	0.70	2.38	0.09
	High school	113	5.13	0.63		
Hope	Primary	127	5.00	0.76		
	Secondary	113	4.80	0.64	2.43	0.08
	High school	113	4.92	0.69		
Resilience	Primary	127	4,55	0,78		
	Secondary	113	4,43	0,73	0,80	0,44
	High school	113	3,46	0,68		
Optimism	Primary	127	4.78	1.05		
	Secondary	113	4.57	0.96	1.45	0.23
	High school	113	4.62	0.87		
PCSSF overall	Primary	127	3.35	0.76		
	Secondary	113	3.40	0.73	0.83	0.16
	High school	113	3.38	0.71		

According to Table 3, it was understood that self-efficacy, hope, resilience, optimism, and the total score of psychological capital did not differ significantly by school levels (p> 0.05). It has been determined that the psychological capital perceptions of the teachers working in primary, secondary, and high schools are similar according to the school levels. On the other hand, it was seen that teachers' perceptions of the effectiveness of school principals in the communication process showed a significant difference according to school levels (p< 0.05). ANOVA test results regarding this difference are given in Table 4.

Table 4. ESPCPS ANOVA Results

	N, SS ve $\bar{X}$ Values				ANOVA Results					
Score	Group	N	$\bar{X}$	SE_x	Var. K.	K.T.	Std	K.O.	F	p
ESPCPS	Primary	127	3,47	0,03	Between G.	1,20	0,37	0,60		
	Secondary	113	3.36	0.03	Within G.	45.96	0.32	0.13	4.58	0.01
	High school	113	3.50	0.03	Total	47.17	0.38			
		353	3.45	0.01			0.36			

The total score of the school principals' effectiveness in the communication process was determined as 0.23 as a result of Levene's test. (p> 0.05). This result showed that the variance is distributed homogeneously. Also, the Gabriel test can be used to test the difference in cases where the number of participants between groups was not exactly equal and close to each other (Field, 2005). For this reason, the Gabriel test, one of the post hoc analyses, was used to understand which school level showed the difference. Results are given in Table 5.

Table 5. Post-Hoc Gabriel Test Results on the ESPCPS Scores

School level (i)	School level (j)	Mean D. (i-j)	SE_x	p
Primary	Secondary	.10201	0.4	.087
	High school	-.03909	0.4	.788

Secondary	Primary	-.10201	0.4	.087
	High school	-.14110*	0.4	.011
High school	Primary	.03909	0.4	.788
	Secondary	.14110*	0.4	.011

*p<0.05

According to Table 5, it was seen that teachers' perceptions of the effectiveness of school principals in the communication process differ among middle school and high school teachers. After this analysis, in accordance with the purpose of the study, Pearson correlation analysis was conducted to test the relationship between the effectiveness of school principals in the communication process and the psychological capital of teachers. The results obtained are given in Table 6.

Table 6. Pearson's Correlation Coefficients Regarding the Relationship Between ESPCPS and PCSSF

	Variables	1.	2.	3.	4.	5.	6.
1.	ESPCPS	1					
2.	Self efficacy	.318**	1				
3.	Hope	.376**	.636**	1			
4.	Optimism	.306**	.402**	.585**	1		
5.	Resilience	.186**	.475**	.608**	.503**	1	
6.	PCSSF Overall	.370**	.776**	.899**	.751**	.798**	1
	X̄	3.45	5.02	4.91	4.66	4.50	4.79
	SS	0.36	0.70	0.70	0.97	0.73	0.61

**p<0.01 N=353

According to Table 6, the scores of effectiveness of school principals in the communication process and resilience (r = 0.186; p <0.01) were low, self-efficacy (r = 0.318; p <0.01), hope (r = 0.376). ; p <0.01), optimism (r = 0.306; p <0.01), and psychological capital scale total scores (r = 0.370; p <0.01) were found to have moderately positive significant relationships. According to this result, as the effectiveness of school principals in the communication process increased, teachers' psychological capital also increased.

Table 7. Results of Regression Analysis to Test the ESPCPS on PCSSF of Teachers'

Variable	B	Standart Error	B	t	P
(Independent)	2.64	0.29		9.10	0.00
ESPCPS	0.62	0.08	0.37	7.46	0.00
R=0.370		R²=0,137		F=55.767	p<0.001

Dependent variable= Psychological Capital

According to Table 7, it was understood that the effectiveness of school principals in the communication process had a significant relationship with psychological capital (R=0.370; F=55.767; p<0.001). The effectiveness of school principals in the communication process explained 13% of the change in teachers' psychological capital. When the significance values of the standardized beta coefficients were examined, it was understood that the effectiveness of school principals in the communication process (β= 0.37; p <0.01) was a significant predictor of psychological capital. The effectiveness of school principals' effectiveness in the communication process had a positive effect on psychological capital.

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

In this study, the effects of the effectiveness of school principals in the communication process on the levels of teachers' psychological capital were examined. Because of COVID-19, face-to-face education was largely suspended in almost all countries. This situation led authorities to search for different solutions, with distance education has emerged as the key alternative

(Karaköse & Demirkol, 2021). Soon fully-online education started to play an important role in education systems (Karaköse, 2021). So, teachers started to work from home alone, and the school principals worked at schools communicating with teachers online. This online education process is seen as a panacea for the education crisis (Dhawan, 2020). Therefore, it is thought that effective communication and teachers' psychological capital have become more important.

First of all, teachers' perceptions of school principals' communication process effectiveness and teachers' psychological capital levels were analyzed. Accordingly, it was found that teachers' perception of the effectiveness of the school principals in the communication process was high. According to this result, although the effectiveness of school principals in communication processes can be evaluated as sufficient, it can be said that they were not at a very high level. Similarly, Çınar (2010) supports this result. Considering the importance of school principals in the realization of the goals of the school, workshops can be developed to improve the communication process of school principals. The content should be created by taking the opinions of school principals. It is evident that digital communication tools gained more importance, especially as a result of the COVID-19. In this context, the content of the workshops can include the use of digital communication tools.

On the other hand, teachers' psychological capital levels were also found to be very high. The self-efficacy sub-dimension, one of the sub-dimensions of psychological capital, is seen at the highest level. The research results of Keser and Kocabaş (2014) and Tösten and Özgan (2017) reveal that teachers' psychological capital is at a very high level. Considering the importance of psychological capital as an individual resource for employees to achieve the goals of the organization, it can be said that it is a positive result that teachers' psychological capital levels and especially their self-efficacy are very high in achieving the goals of schools during the COVID-19.

In line with the aims of the study, it was tested whether the effectiveness of the communication process of school principals and the psychological capital of teachers differed according to school levels. Accordingly, the psychological capital of teachers did not differ according to school levels. On the other hand, the effectiveness of the communication process of school principals varied according to secondary school and high school levels. In some studies, no difference was found in the effectiveness of the communication process of school principals based on primary school teachers and branch teachers (Kösterelioğlu & Argon, 2010; Çınar, 2010). In this study, a difference was determined according to school levels. However, considering that the teachers working in secondary and high schools are branch teachers, qualitative research can be conducted on why the difference between the levels occurs.

In the study, a moderately significant positive relationship was found between the communication process effectiveness of school principals and teachers' psychological capital and its sub-dimensions. In the analyses made based on these results, it was seen that the effectiveness of school principals in the communication process explained 13% of teachers' psychological capital and had a positive effect as a significant predictor. This shows that if school principals manage the communication process effectively, especially during the COVID-19, the psychological capital of teachers will also increase. Therefore, it can be said that the effectiveness of the communication process of school principals and the work of teachers individually due to distance education are important for achieving the goals of the school. Psychological capital, one of the individual resources, is the concept of positive organizational behavior in organizations that emerges from positive psychology (Luthans & Youssef, 2007). This core structure, taken from the broaden and build theory, has theoretically contributed to individual resources with its sub-dimensions of self-efficacy, hope, optimism, and resilience (Luthans et al., 2007). According to the broaden and build theory, positive emotions broaden people's repertoire of thought and action and constitute permanent individual resources (Frederickson, 2004). As a new situation, the access of students, especially in the context of communication in distance education and the communication problems experienced by school principals and teachers, unlike face-to-face education, is the main problem (Külekçi Akyavuz & Çakın, 2020; Çakın & Külekçi Akyavuz, 2020). According to the theory of broaden and build theory, it can be said that positive emotions are important to improve the psychological capital level of teachers to find new solutions to usual and unusual problems because individuals become more resilient with the effect of positive emotions (Frederickson, 2004). If the managers express what they expect from the employees through an effective communication process, the positive feelings of the employees towards the job are reinforced (Eroğlu, 2013). According to the psychological perspective, the communication between the receiver and the sender can be determined by the characteristics of the individuals (Gizir & Şimşek, 2005). According to this perspective, there are numerous stimuli in the communication environment of individuals, and individuals can choose these stimuli according to their perceptions, interests, and attitudes (Durğun, 2006). Therefore, school principals should be aware of this perspective in the communication process because the pandemic may have caused teachers to have a negative perception and attitude about the situation. Therefore, the negative statements of school principals about the process may affect teachers who have negative feelings especially due to the pandemic more and cause their psychological capital and thus their performance to decrease. Besides, since direct observation of internal processes is limited according to the psychological perspective (Jensen 2003 cited in Durgun, 2006), it is thought that it will be effective for school principals to conduct a positive communication process regarding the pandemic. According to the psychological perspective, it is possible that negative discourses negatively affect teachers. In this context, it can be thought that the effectiveness and positive discourse of school principals in the communication process can create positive emotions. These feelings can play an important role in reaching the goals of school in the pandemic process by contributing to the development of teachers' psychological capital. In this respect, psychological capital can be chosen as one of the subjects that teachers make presentations on during the seminar periods of schools. In connection with this, school principals can also make a presentation by researching the communication process or organize a workshop on these issues with the decision of the district national education directorate.

Since this research was carried out during the COVID-19, online data were collected due to teachers not being present in schools. Since the data were collected only from the district of Güngören, the results of the research can only be generalized to this district. Similar research can be done in other districts or throughout the province. Another limitation of the study is that it is not known whether the participants were randomly selected by the school principals or not. For this reason, similar research can be repeated by collecting data face to face. Also, research was conducted during the pandemic. For this reason, when the pandemic is over, similar research can be conducted, and the results obtained can be compared with the results of this research.

As a result, in this study, the effect of the effectiveness of school principals in the communication process on teachers' psychological capital was examined. As a result of the research, although the effectiveness of the communication process of school principals was found to be high, it was seen that it should be improved. On the other hand, the psychological capital levels of the teachers have been determined at a very high level, and it seems to be a positive result in the pandemic period when the realization of the goals of the school becomes difficult. For the study, a moderately positive and significant relationship was found between the effectiveness of school principals in the communication process and the psychological capital of teachers, and it was understood that the effectiveness of school principals in the communication process as a predictor of teachers' psychological capital.

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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.

Author contribution statements

İbrahim Kocabaş encouraged Aydın Karabay to do this research on teachers and school administrators during the COVID-19 process, and he helped during the study. Aydın Karabay conducted the research from beginning to end and turned it into a report. Mithat Korumaz read each step in detail and gave feedback. He also contributed significantly to the research in determining the sample and statistical analysis.

Ethics Committee Approval Information

This research has Yıldız Technical University Ethics Committee Approval Document dated 09/01/2021 and numbered E.2101090035.

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